YAMAHA

YZ125X

OWNER'S SERVICE MANUAL

1G8-28199-11

TO THE NEW OWNER

Yamaha's YZ125X is designed and built by Yamaha engineers for both the rigors of motocross competition and off-road use. It offers many outstanding features, not found on previous Yamaha machines.
This owner's servise manual provides the basic information for operation and proper care and maintenance. Careful attention to the procedures described in this manual will help insure trouble free operation and optimum performance.
Additional information regarding major repairs, such as crank case disassembly, can be found in the service manuals and other information available from your authorized Yamaha dealer.

YAMAHA MOTOR COMPANY, LTD.
SERVICE DEPARTMENT
OVER SEAS ENGINEERING DIVISION
IWATA, JAPAN

CHAPTER IV. MECHANICAL ADJUSTMENTS

CHAPTER V. ENGINE MAINTENANCE AND MINOR REPAIRS

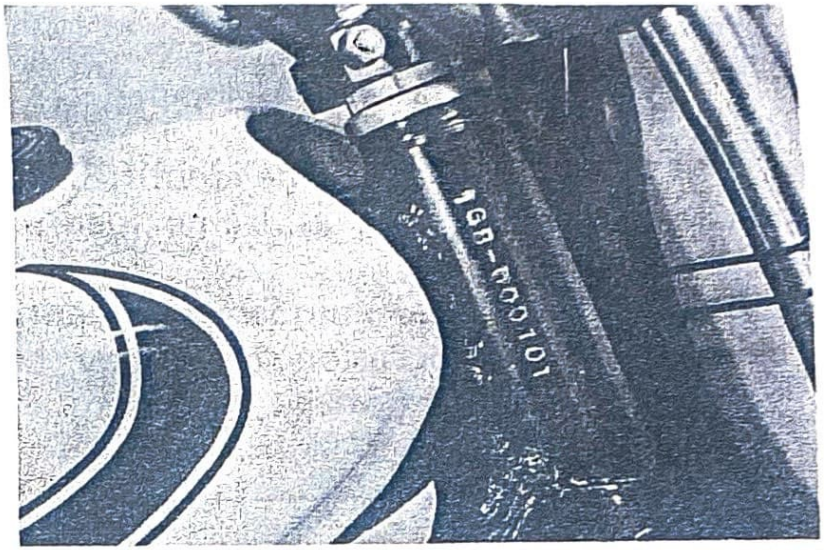
Right side view

Left side view

SECTION A. MACHINE IDENTIFICATION

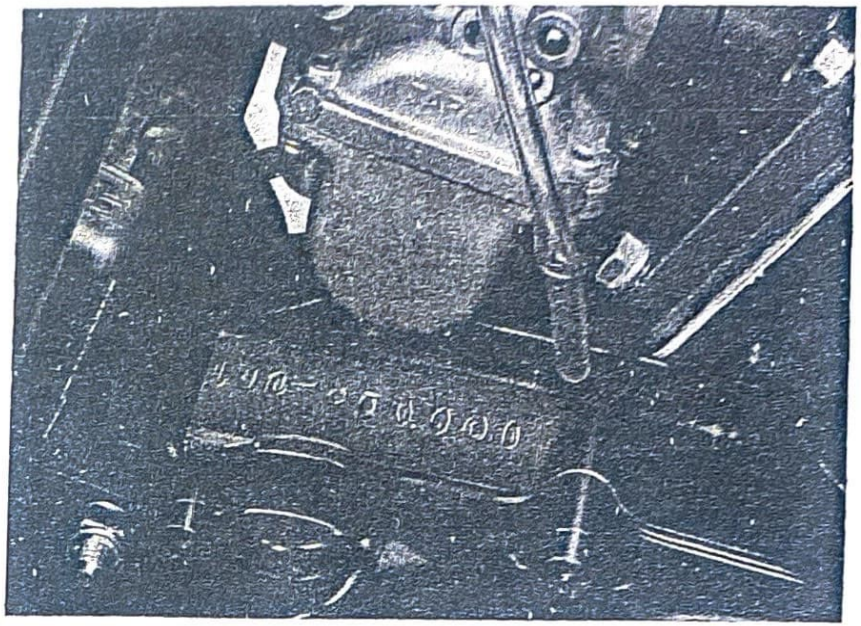
1. Frame Serial Number

The frame serial number is located on the right-hand side of the headstock assembly. The first three digits identify the model. This is followed by a dash. The remaining digits identify the production number of the unit. Yamaha production begins-000101.



2. Engine Serial Number

The engine serial number is located on a raised boss on the upper rear, right-hand side of the engine on. Engine identification follows the same code as frame identification.
Normally, both serial numbers are identical; however, on occasion they may be two or three numbers off.



NOTE:

Always check your registration papers against the actual machine serial numbers. If any discrepancy is found, have it corrected immediately.

SECTION B. GENERAL SPECIFICATIONS

These specifications are for general use. For a more complete list, refer to Maintenance Specifications and/or the Service Manuals (DT100C~DT175C).

DIMENSIONS/WEIGHT	
Overall length	2,095 mm (82.48 in)
Overall width	985 mm (38.78 in)
Overall height	1,140 mm (44.88 in)
Wheelbase	1,410 mm (55.51 in)
Minimum ground clearance	285 mm (11.22 in)
Seat height (Unloaded)	870 mm (34.25 in)
Machine net weight	86 kg (189.6 lb)
ENGINE	
Type	Air cooled, 2-stroke, single
Bore/Stroke	56 x 50 mm (2.20 x 1.97 in)
Displacement	123 cc (7.51 cu.in.)
Compression ratio	7.4 : 1
Starting system	Kick starter
Lubricating system	Mixed Gas 20 : 1
CARBURETION	
Manufacturer/Type	MIKUNI VM34SS
Effective venturi size	34 mm (1.338 in)
Main jet	#310
Needle jet	P – 8

GENERAL SPECIFICATIONS

Jet needle	6F15–2
Pilot jet	#60
Air screw (Turns out)	1.0
Cut away	3.5
Float level	23.4±1 mm (0.92±0.04 in)
Air cleaner type	Oiled foam rubber x 2 PCS.
CLUTCH	
Type	Wet multipe disc type
Primary drive system	Gear
Primary drive ratio	71/22 3.227
TRANSMISSION	
Type	
Reduction ratio 1st	33/13 2.538
2nd	29/15 1.933
3rd	28/18 1.555
4th	26/20 1.300
5th	24/21 1.142
6th	23/22 1.045
SECONDARY DRIVE	
Drive/Driven sprocket	46/12
Type/Size/No.of links	Chain/HD520/97L
Reduction ratio	3.833
ELECTRICAL	
Ignition type/Manufacturer	C.D.I. Magneto M100–20 HITACHI
Coil/Manufacturer	HITACHI CM61–20
C.D.I. unit/Manufacturer	HITACHI TIA01–16

GENERAL SPECIFICATIONS

CHASSIS	
Frame type	Tubular steel double cradle
Front suspension Travel	195 mm (7.68 in)
Rear suspension Travel	195 mm (7.68 in)
Caster/Trail	59°/ 140 mm (5.51 in)
Front tire Size	3.00-21—4PR
Thread type	Full konbby
Nominal pressure (Psi)	0.9
Rear tire Size	4.10-18—4PR
Thread type	Full knobby
Nominal pressure (Psi)	1.1
Front brake type	Drum (Leading trailing)
Actuating method	Cable
Rear brake type	Drum (Leading trailing)
Actuating method	Link rod
VOLUMES/TYPE FLUID	
Gasoline tank/Type (Ratio)	5.5 lit. (1.45 gal) Premium (20:1)
Transmission/Type	650±50 cc (SAE 10W30)
Front fork (each)/Type	394 cc/10,20,30 wt Fork oil
Rear shock nitrogen gas pressure	199 psi * [199 to 426]

* [ALLOWABLE]

NOTE:

The Research and Engineering Departments of Yamaha are continually striving to further perfect all models. Improvements and modifications are therefore inevitable.
In light of this fact, the foregoing specifications are subject to change without notice to the owner. Information regarding changes is forwarded to all Authorized Yamaha Dealers as soon as available. If a descrepancy is noted, please consult your Yamaha dealer.

SECTION C. MAINTENANCE SPECIFICATIONS

CDI IGNITION	
Secondary ignition coil Resistance (Primary)	0.61 Ω ± 10%/20°C
Secondary ignition coil Resistance (Secondary)	6.0 KΩ ± 20%/20°C
Ignition timing	1.2±0.15 mm (0.047±0.001 in) B.T.D.C.
Spark plug (constant Hi-speed)	Champion N57G
(Normal)	Champion N59G
Spark plug gap	0.5 – 0.6 mm (0.020–0.023 in)
ENGINE – TOP END	
Piston clearance	0.045 – 0.050 mm (0.0017 – 0.002 in)
Piston wear limit	0.1 mm (0.004 in)
Ring end gap (Installed)	0.4 – 0.5 mm (0.016 – 0.020 in)
Connecting Rod/Piston pin side clearance	0.8 – 1.0 mm(0.031–0.039 in)*[2mm(0.079 in)]
Connecting Rod/Crank side clearance	0.4 – 0.5 mm (0.016 – 0.020 in)
ENGINE – CLUTCH	
Friction plate thickness	3.0 mm (0.12 in) *[2.7 mm (0.11 in)]
Clutch plate warp allowance	None
Clutch spring free length	36 mm (1.42 in) *[35 mm (1.38 in)]

* [ALLOWABLE]

MAINTENANCE SPECIFICATIONS

CHASSIS			
Front brake shoe diameter	130 mm (5.12 in)		
Front brake shoe replacement limit	2 mm (0.08 in)		
Rear brake shoe diameter	130 mm (5.12 in)		
Rear brake shoe replacement limit	2 mm (0.08 in)		
Wheel run-out limits vertical	2 mm (0.08 in)		
Wheel run-out limits lateral	2 mm (0.08 in)		
Rear shock spring free length	231.1 mm (9.1 in)		
TORQUE VALUES			
(Also see Torque chart page 10)			
Cylinder head holding nut	M 8	2.0 m-kg	(14.47 ft-lb)
Clutch bass securing nut	M14	4.2–6.5 m-kg	(30.38–47.02 ft-lb)
Primary drive gear securing nut	M12	3.0–5.0 m-kg	(21.70–36.12 ft-lb)
Drive sprocket securing nut	M16	6.5–10.0 m-kg	(47.02–72.33 ft-lb)
Engine mounting nut (Front)	M 8	2.0–3.0 m-kg	(14.47–21.70 ft-lb)
(Rear upper)	M 8	2.0–3.0 m-kg	(14.47–21.70 ft-lb)
Engine mounting bolt (Rear lower)	M10	3.0–4.8 m-kg	(21.70–34.72 ft-lb)
Front fork tube pinch bolt	M 8	1.1–1.8 m-kg	(7.96–13.02 ft-lb)
Steering shaft pinch bolt	M 8	1.1–1.8 m-kg	(7.96–13.02 ft-lb)
Steering shaft securing bolt	M14	4.2–6.5 m-kg	(30.38–47.02 ft-lb)
Steering shaft nut	M25	6.0–9.5 m-kg	(43.40–68.71 ft-lb)
Handle securing bolt	M 8	1.1–1.8 m-kg	(7.96–13.02 ft-lb)
Front wheel shaft securing nut	M14	7.0–10.0 m-kg	(50.63–72.33 ft-lb)

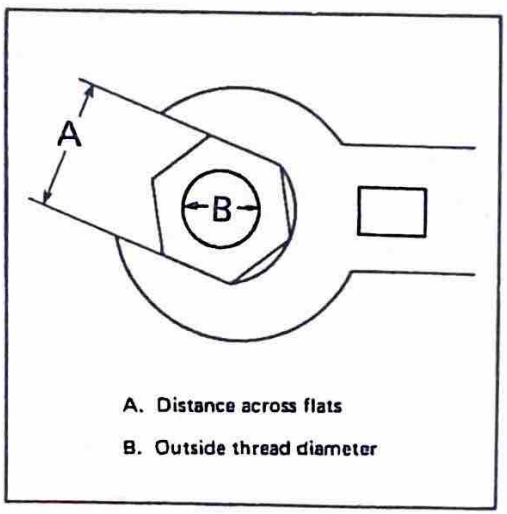
Pivot shaft securing nut	M12	3.5–5.0 m-kg M12 (25.32–36.12 ft-lb)
Rear wheel shaft securing nut	M14	7.0–10.0 m-kg M14 (50.63–72.33 ft-lb)
Driven sprocket securing nut	M 8	3.0–4.8 m-kg M 8 (21.70–34.72 ft-lb)
Tension bar and brake plate bolt	M 8	1.1–1.2 m-kg M 8 (7.96–15.91 ft-lb)
Tension bar and rear arm bolt	M 8	1.4–2.2 m-kg M 8 (7.96–15.91 ft-lb)
Rear cushion unit holding nut (frame)	M14	3.8–6.0 m-kg M14 (27.50–43.40 ft-lb)
Rear cushion unit holding nut (rear arm)	M 8	2.0–3.0 m-kg M 8 (14.47–21.70 ft-lb)
Muffler stay securing bolt	M 8	0.8–1.3 m-kg M 8 (5.79–9.40 ft-lb)
C.D.I. Rotor securing bolt	M18	4.0–4.5 m-kg M18 (28.93–32.55 ft-lb)

*[ALLOWABLE]

SECTION D. TORQUE CHART

The chart covers those stud/bolt sizes with standard I.S.O. pitch threads. Torque specifications for components with thread pitches other than standard are given within the applicable chapter.

Torque specifications are for dry, clean threads. Components such as the cylinder or cylinder head should be at room temperature prior to torquing. A cylinder head or any other item with several fasteners should be torqued down in a cross-hatch pattern in successive stages until torque specification is reached. The method is similar to installing an automobile wheel and will avoid warping the component.



A. Distance across flats

B. Outside thread diameter

A	B	TORQUE SPECIFICATION		
		m-kg	ft-lb	in-lb
10 mm	6 mm	1.0	7.2	85
12 mm	8 mm	2.0	15	175
14 mm	10 mm	3.5–4.0	25–29	300–350
17 mm	12 mm	4.0–4.5	29–33	350–400
19 mm	14 mm	4.5–5.0	33–36	400–440
22 mm	16 mm	5.5–6.5	41–49	480–570
24 mm	18 mm	5.8–7.0	42–50	500–600
27 mm	20 mm	7.0–8.3	50–60	600–700

SECTION E. MAINTENANCE AND LUBRICATION SCHEDULE

The maintenance and lubrication schedule chart should be considered strictly as a guide to general maintenance and lubrication intervals. You must take into consideration that weather, terrain, geographical locations, and a variety of individual uses all tend to demand that each owner alter this time schedule to match his environment. For example, if the motorcycle is continually operated in an area of high humidity then all parts must be lubricated much more frequently than shown on the chart to avoid rust and damage. If you are in doubt as to how closely you can follow these time recommendations, check with the Yamaha dealer in your area.

MAINTENANCE AND LUBRICATION SCHEDULE CHART – NOTES

No. 1 At ambient temperatures of 45°–90° F, use Motor oil 10W/30. Do not use "additives" in oil.

No. 2 Use 10W/30 "SE" Motor oil (If desired,specially lubricants of quality manufacture may be used.)
Drive chains – lube every meet.
In severe conditions every third races.

No. 3 Use cable/chain lubricant (speciality types available-use name-brand, quality manufacture).

No. 4 Light duty: smooth, light-weight, "white" grease.
Heavy duty: soft chassis lube grease (do not use lube grease on throttle/housing).

No. 5 Use a soft chassis lube grease (short fiber).

No. 6 Meduim-weight wheel bearing grease of quality manufacture (preferably waterproof).

No. 7 Lightweight machine oil.

No. 8 Air filters foam element air filters must be damp with oil at all times to function properly. Clean and oil monthly or according to mileage. In severe conditions, clean and lube daily. Do not over–oil.

No. 9 Use SAE20 fork oil (nonfoaming hydraulic fluid).

MAINTENANCE AND LUBRICATION SCHEDULE CHART

Page	Item	RACE/MEET INTERVAL: Every meet	Every second	Every third	Every heat (moto)	Every 6 months of racing	As required
	PISTON						
72 – 73	• Inspect	X					
	• Clean	X					
	• Replace						X
	PISTON RING						
74 –76	• Replace	X					
	CYLINDER						
70 – 71	• Inspect (Compression Check)	X					
	• Clean	X					
	• Replace						X
	• Check head bolt torque				X		
	CLUTCH						
33 – 34	• Adjust	X					
85 – 95	• Replace (Plates)	X					
	TRANSMISSION						
24 – 25	• Change Oil		X(1)				
96 – 99	• Inspect gears					X	
	• Replace bearings					X	
	• Inspect shift forks					X	

MAINTENANCE AND LUBRICATION SCHEDULE CHART (Continued)

Page	Item	RACE/MEET INTERVAL					
		Every meet	Every second	Every third	Every heat (moto)	Every 6 months of racing	As required
	ENGINE MAIN BEARINGS						
	• Replace					X	
	CONNECTING ROD						
76 – 80	• Check bearings	X					
	• Replace big end bearing					X	
68	• Replace small end bearing						X
	CARBURETOR						
36 – 38	• Check/Adjust/Tighten	X					
50 – 60	• Clean & Inspect	X					
	PISTON PIN						
	• Inspect	X					
	• Replace						X
	EXHAUST SYSTEM						
	• Inspect	X					
	FLYWHEEL NUT						
	• Torque	X					
	KICK STARTER						
85 – 93	• Inspect idler gear					X	
	• Replace						X

MAINTENANCE AND LUBRICATION SCHEDULE CHART (Continued)

Page	Item	Every meet	Every second	Every third	Every heat (moto)	Every 6 months of rading	As required
	FRAME						
	• Clean & Inspect	X					
	SWING ARM						
36	• Check	X					
	• Lubricate			X(5)			
	CONTROLS & CABLES						
29 – 34	• Check & Adjust	X					
	• Lubricate	X(3)					
	BRAKES						
29 – 34	• Clean/Check/Adjust	X					
110 – 113	• Replace						X
	WHEELS AND TIRES						
115	• Check pressure	X					
114	• Check runout	X					
	• Check spoke tension				X		
112	• Check bearings	X					
112	• Replace bearing						X
	STEERING HEAD						
124 – 126	• Check	X					
	• Clean and repack			X(6)			

MAINTENANCE AND LUBRICATIONS SCHEDULE CHART (Continued)

Page	Item	Every meet	Every second	Every third	Every heat (moto)	Every 6 months of racing	As required
	CDI WIRING						
82 – 84	• Check connections	X					
	AIR FILTER						
46 – 49	• Clean and oil	X (8)					
	• Replace						X
	SPARK PLUG						
39 – 40	• Replace				X		
	DRIVE CHAIN						
	• Clean & lubricate				X (2)		
34 – 36	• Check tension and alignment				X		
103 – 105	• Replace						X
	FITTINGS AND FASTENERS						
	• Tighten	X					
	FUEL TANK						
	• Clean/Flush						
	• Clean petcock filter	X					
	SHOCK ABSORBERS						
	• Drain & refill			X (2)			
120	• Retightening torque				X	X	
121 – 122	• Check air pressure						X
	FRONT FORKS						
117 – 119	• Drain & refill			X (9)			
	• Replace seals						X

MAINTENANCE AND LUBRICATION SCHEDULE CHART (Continued)

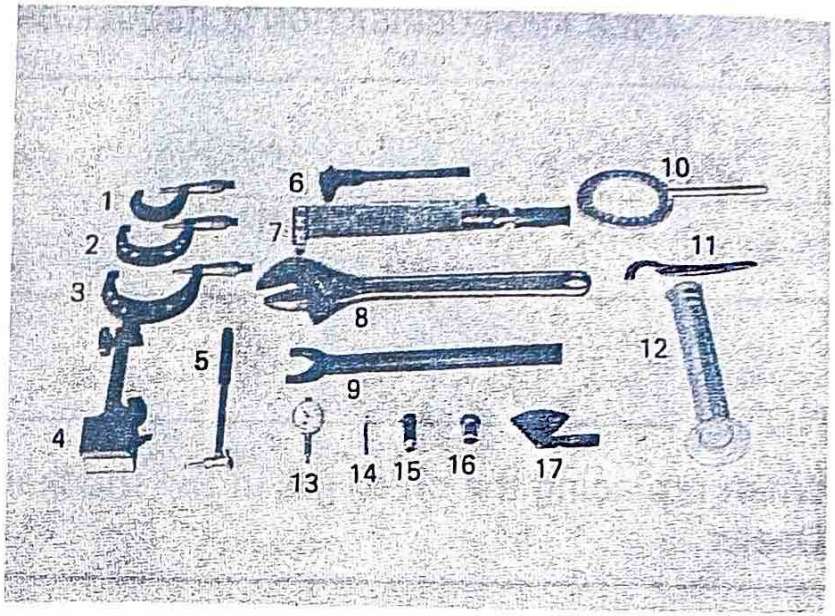
Page	Item	Every meet	Every second	Every third	Every heat (moto)	Every 6 months of racing	As required
33	CLUTCH AND BRAKE SHAFTS Lubricate	X(4)					

NOTE:

When replacing the oil or gas in the shockabsorber, consult your nearest Authorized Yamaha Dealer.

SECTION F. SPECIAL TOOLS

The maintenance procedures outlined within this manual require special tools and instruments. A comprehensive list of the special tools is given below.



*1. Outside Micrometer (0 – 25mm)
*2. Outside Micrometer (25 – 50mm)
*3. Outside Micrometer (75 – 100mm)
4. Magnetic Base
*5. Cylinder Gauge (50 – 100 mm)
6. Verner Calipers (0 – 150 mm)
7. Torque Wrench
8. Adjustable Wrench
*9. Ring Nut Wrench
*10. Clutch Holding Tool
*11. Steering Nut Wrench
12. Measuring Cylinder (0 – 250 cc, 10 cc increments)
*13. Dial Gauge
*14. Needle length=56mm
*15. Dial Gauge Stand # 2
*16. Flywheel Puller
17. Thickness Gauge

NOTE:

Those items marked with an asterisk (*) available from Yamaha.

NOTE:

The Research and Engineering Departments of Yamaha are continually striving to further perfect all models. Improvements and modifications are therefore inevitable.

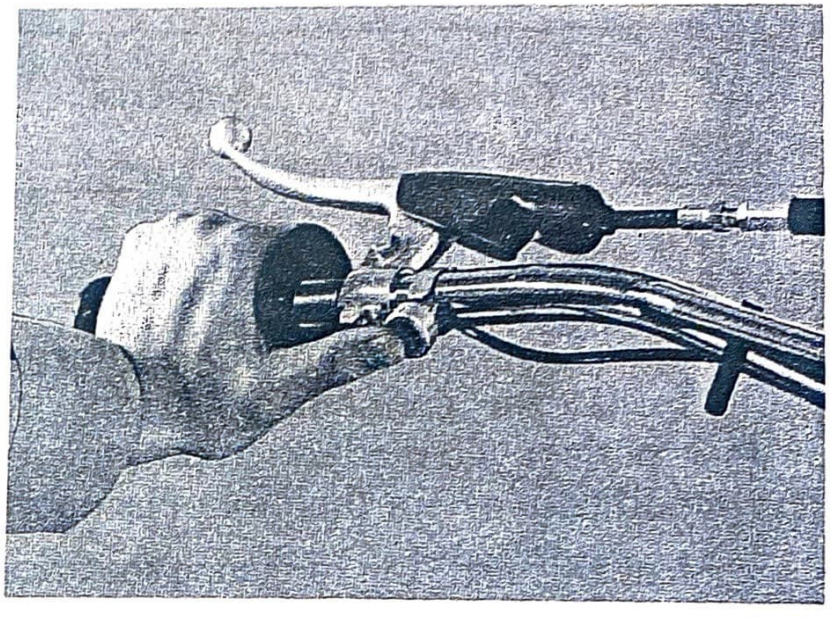
In light of this fact, the foregoing specifications are subject to change without notice to the owner. Information regarding changes is forwarded to all Authorized Yamaha Dealers as soon as available. If a discrepancy is noted, please consult your Yamaha dealer.

CHAPTER II.
BASIC INSTRUCTIONS

SECTION A. CONTROL FUNCTIONS

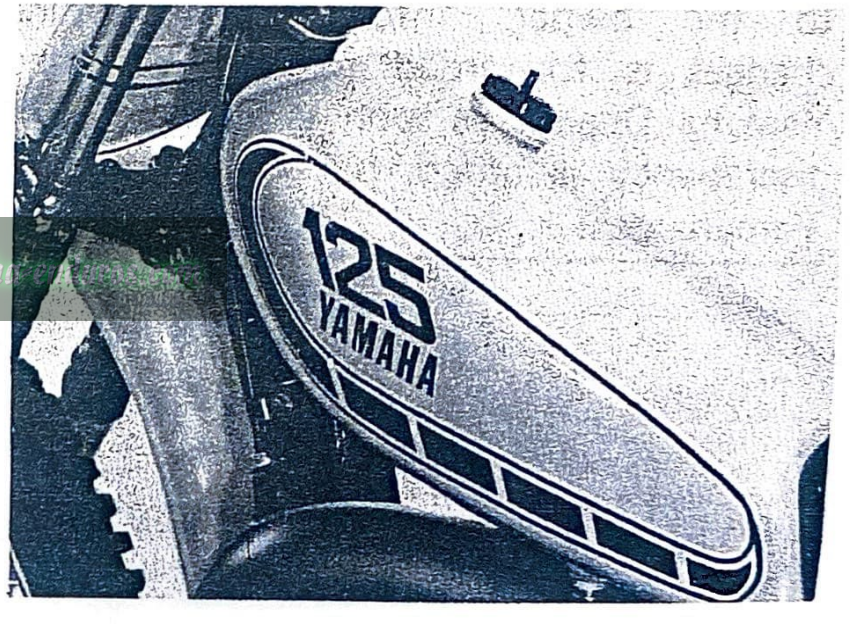
1. Enging Stop Button

The Engine stop button is located on the left handlebar. Push and hold for ignition off.



2. Fuel Tank and Petcock

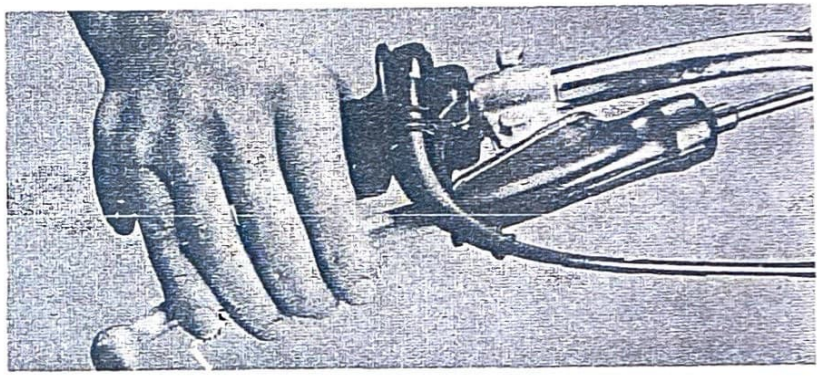
The fuel tank incorporates a threaded plastic filter cap. The cap has a vent tube which is routed to the front of the tank and down alongside a frame down tube.



The fuel tank petcock is located on the rear left-side of the fuel tank. Turn the petcock lever to the vertical position and fuel will flow to the carburetor. Turn lever to the horizontal position to shut off fuel supply to the carburetor.

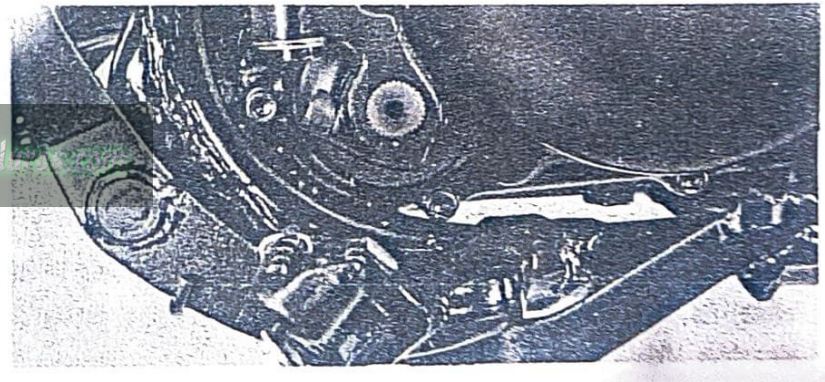
3. Front Brake Lever

Located on the right handlebar. The front brake lever actuates the single leading-shoe front brake when brake lever is squeezed.



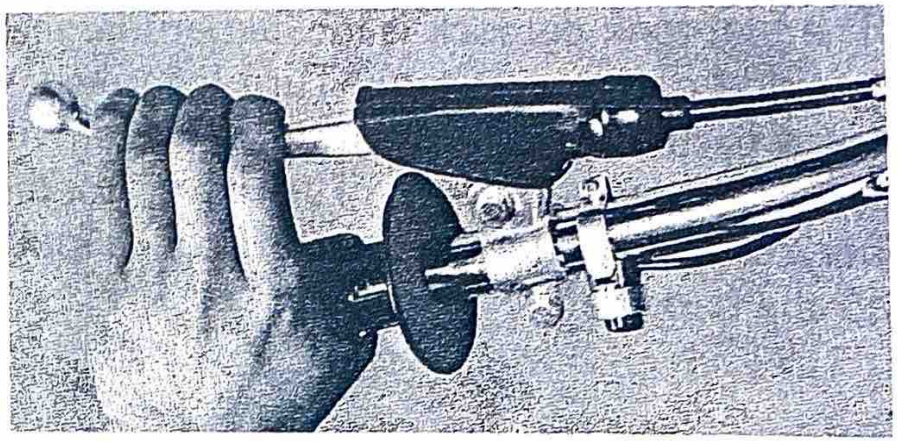
4. Rear Brake Pedal

Located directly in front of the right-hand rider's foot rest. The rear brake pedal actuates the single leading-shoe rear brake when the pedal is depressed.



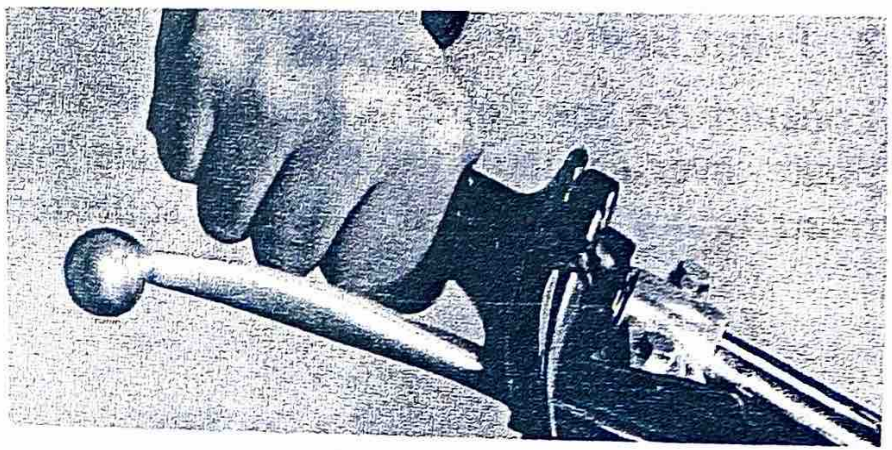
5. Clutch Lever

Located on the left handlebar. The clutch lever will disengage the wet-type, multi-plate clutch when the lever is squeezed.



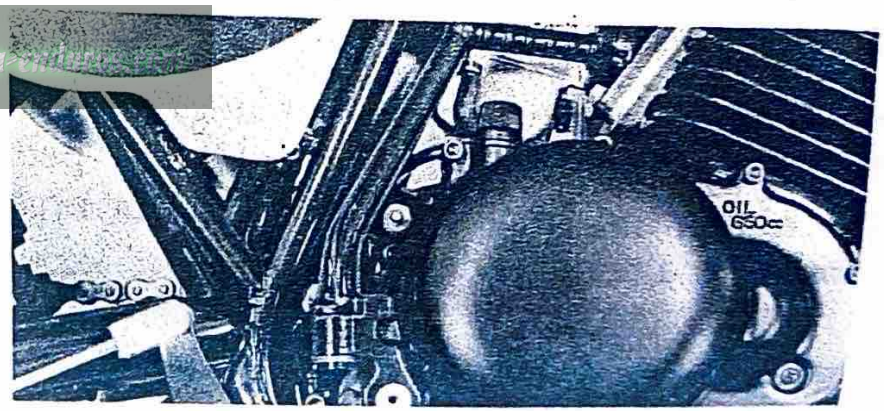
6. Throttle

The throttle is the positive-return type, and is located on the right handlebar.



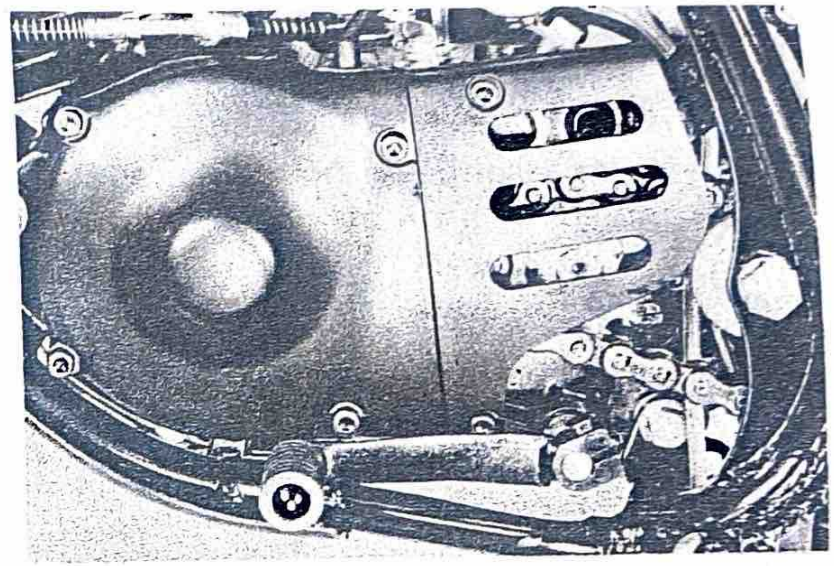
7. Kick Crank

The kick starter crank is located on the right, rear side of the engine. Rotate the crank out, press your foot upon it firmly, push down until the gears engage the primary drive train and kick briskly to start the engine. Fold the crank in after engine starts.



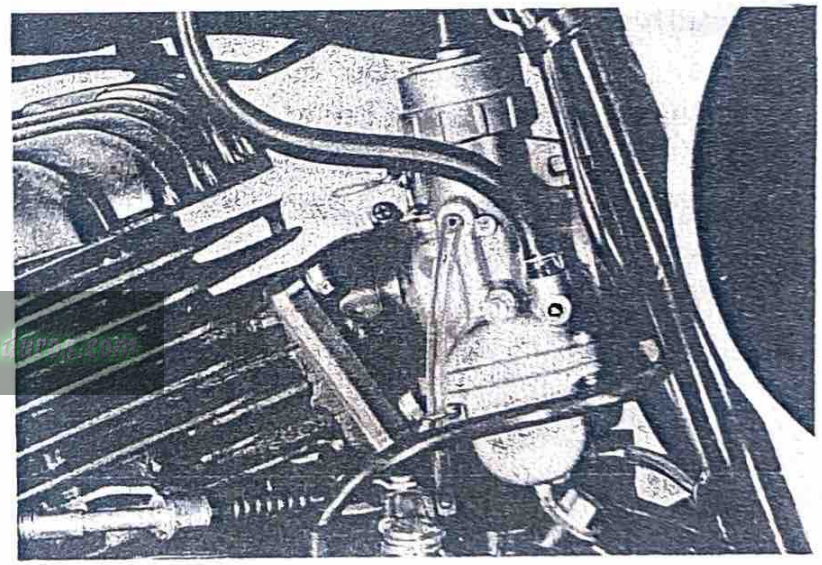
8. Shift Lever

The transmission shift lever is located on the left-hand side of the machine directly in front of the rider's foot rest. The shift mechanism is of the ratcheting type and controls gear selection for the 6-speed transmission.



9. Carburetor Starter Jet

The carburetor starter jet is located on the left side of the carburetor assembly. The jet is designed to supply an extra-rich fuel/air mixture for cold engine starts. It is actuated by starter lever on the YZ125X When the starter lever is turned downward, the starter jet opens.



SECTION B. FUEL AND OIL

1. Fuel

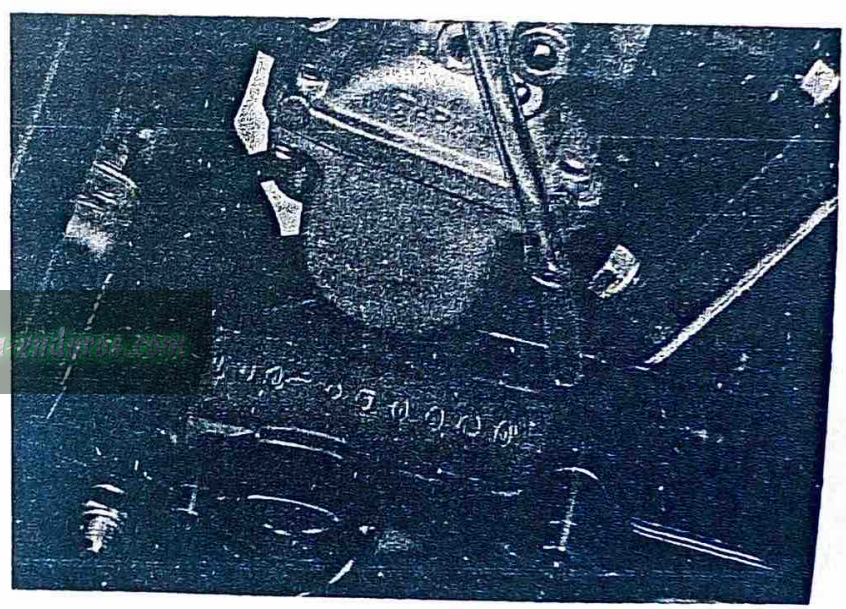
Use premium gasoline with an octane rating of 90+ mixed with oil at a gas/oil ratio of 20:1. Always use fresh, name-brand gasoline.

Always mix a fresh batch of fuel the morning of the race and do not retain a mixed batch overnight.

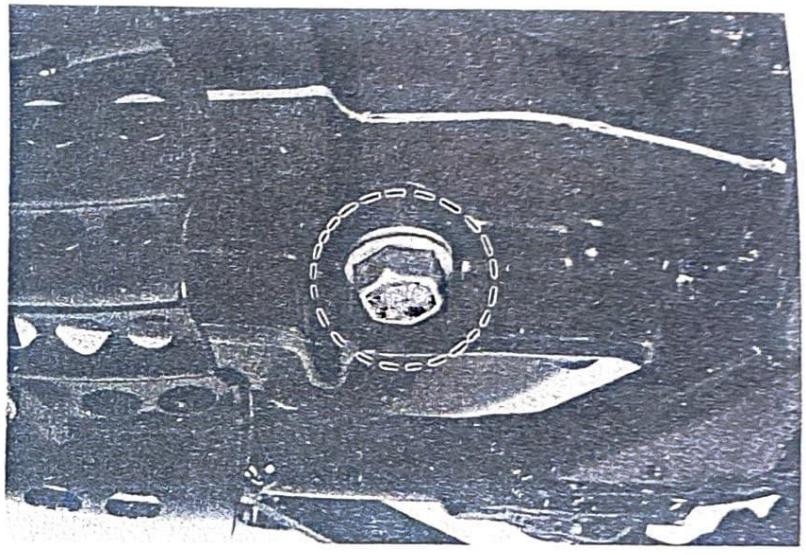
2. Oil

a. Engine Mixing Oil. We recommend that your first choice be R—30 and sheel super M (vegetable base) oil. If for any reason you should use another type, the oil should meet or exceed BIA certification "TC-W". Check the container top or label for service specification and mixing ratios.

b. Transmission Oil. The transmission filler plug is located above the kick-starter. Recommended oil: 10W/30 SAE type "SE" name-brand motor oil.



On the bottom of the engine there is a drain plug. Remove it and drain all the oil from the transmission. Reinstall the drain plug (make sure it is tight). Add oil through filler hole.



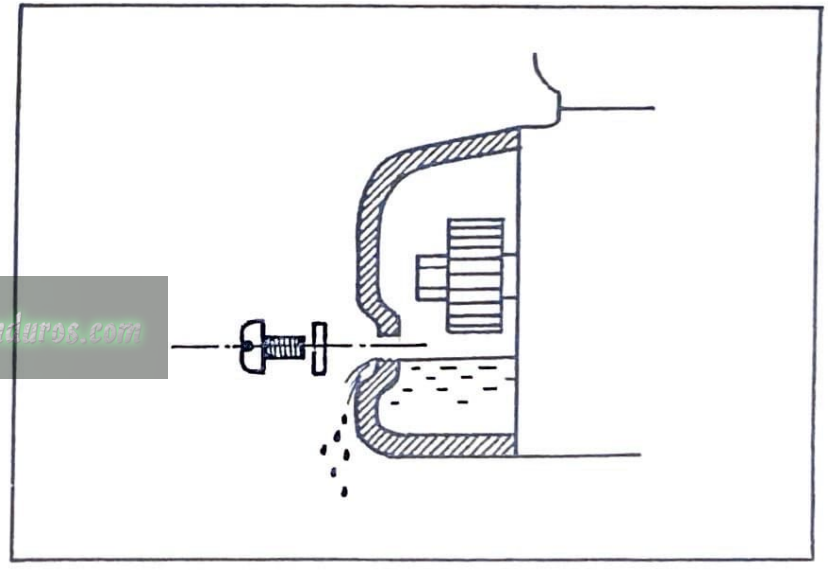
Transmission oil capacity:
650 ± 50 cc (39.7 ± 3.05 cu.in.)

The transmission should be drained and refilled every second race meet.

NOTE:

Do not add any chemical additives. Transmission oil also lubricates the clutch and additives could cause the clutch to slip.

c. Oil level
   Remove the bolt in the illustration and supply oil until it overflows. Then fit the gasket and bolt.



NOTE:

In the above oil supply, keep the motorcycle standing upright with both wheels on ground.

CHAPTER III. OPERATION

CAUTION:

1. Before riding this motorcycle, become throughly familiar with all operating controls and their function. Consult your Yamaha Dealer regarding any control or function you do not throughly understand.
2. This model is designed for competition use only. It is not equipped with highway approved lighting, mirrors, horn or directional signals. In most instances, it is illegal to ride this model (either day or night) on any public street or highway.
3. Observe the break-in procedures to preclude mechanical failures.

SECTION A. PRE-OPERATION CHECK LIST

ITEM	ROUTINE
BRAKES	Check operation/adjustment
CLUTCH	Check operation/lever adjustment
FUEL TANK	Fill with proper fuel/oil mix
TRANSMISSION	Change oil as required
DRIVE CHAIN	Check alignment/adjustment/ lubrication ·
SPARK PLUG	Replace each race (moto)
THROTTLE	Check for proper cable operation
AIR FILTER	Foam type—must be clean and damp with oil always
WHEELS & TIRES	Check pressure/runout/spoke tightness/axle nuts
FITTINGS/FASTENERS	Check all/tighten as necessary

NOTE:

Pre-operation checks should be made each time the machine is used. Such an inspection can be thoroughly accomplished in a very short time and the added safety it assures is more than worth the time involved.

SECTION B. BREAK-IN PROCEDURE

1. Prior to starting, fill tank with a break-in gasoline/oil mixture of 12:1 to 14:1.
2. After fueling and pre-operational checks have been made, refer to Starting and Operation (Section C) and start engine.
3. Allow engine to warm up. Check engine idle speed. Check operating controls and "Engine stop" button operation.
4. Operate machine is lower gears at moderate throttle settings for 3 – 5 minutes. Check spark plug condition.
5. Allow engine to cool. Repeat procedure, running for 5 minutes. Very briefly, shift to higher gears (4th, 5th or 6th) and check full throttle response. Check spark plug condition.
6. Allow engine too cool. Repeat procedure, running for 5 minutes. Full throttle and higher gears may be used, but avoid sustained full throttle operation. Check spark plug condition.
7. Allow engine too cool. Remove top end and inspect. Remove "high" spots on piston with No. 600 grit, wet sandpaper. Clean, and carefully reassemble.
8. Remove break-in fuel/oil mixture from tank. Refill with 20:1 operation fuel/oil mixture. Check entire unit for loose or mis-adjusted fittings/controls/fasterns.
9. Re-start engine and check through entire-operating range thoroughly. Stop. Check spark plug condition. Re-start. After 10 – 15 minutes operation, machine is ready to race.

SECTION C. STARTING AND OPERATION

CAUTION:

Prior to operating the machine, perform steps listed in pre-operation check list.

NOTE:

Observe break-in procedures for initial operation. Agitate machine prior to starting and fuel prior to filling to provide correct mixture. Never leave the fuel in tank for long periods. The fuel/oil mix will denature. Turn fuel pet-cock lever to open (vertical) position.

1. Starting Cold

Lift and rotate the starter shaft on the YZ125X models. Keep the throttle completely closed. Engage the kick starter and start the engine.

The kick mechanism is of the primary type. There-fore, the engine may be started in any gear, provided the clutch is disengaged. The engine may be started in neutral with clutch engaged or disengaged.

2. Starting with Engine Warm

Do not engage starter jet. Open throttle slightly. Engage the kick starter and start the engine.

3. Warm-up

Run the engine at idle or slightly higher using the starter jet as required until the engine is warm. This procedure normally takes 1 to 2 minutes. To check, see if the engine responds normally to throttle with starter jet off.

CAUTION:

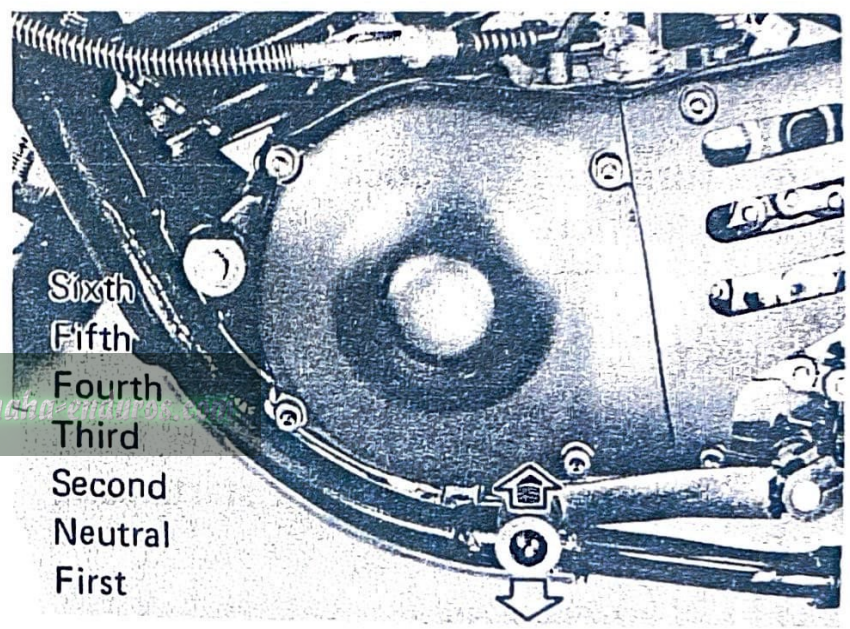
Do not operate engine for extended warm-up periods.

4. Shifting

A 6-speed transmission is used. Low gear is at the bottom of the shift pattern; high hear at the top of the shift pattern; neutral is located half-way between first and second positions.

The shift mechanism is of the ratcheting type common to most motorcycles. Allow the lever to return to its "at rest" position prior to selecting another gear. Neutral is selected by pulling up or depressing on the shift lever halfway between first and second gears.

With the engine running in the neutral position, disengage the clutch (pull in clutch lever), press down on the shift lever until low gear is engaged, remove foot from shift lever, increase engine speed slightly, slowly release clutch lever while advancing throttle. Repeat procedure for remaining gears.

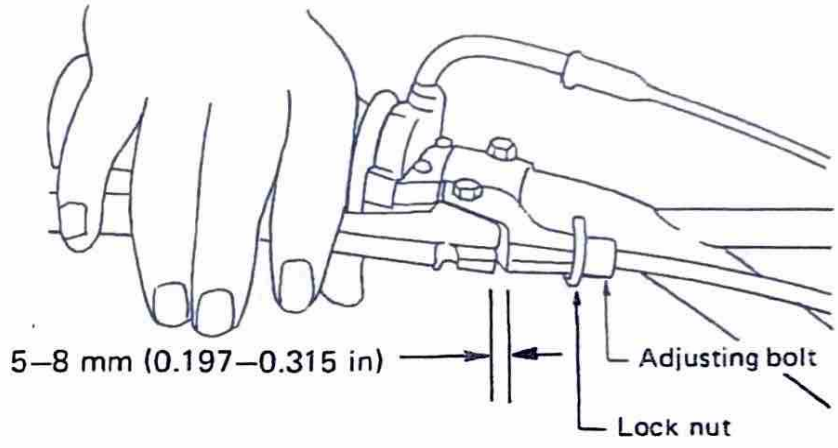


CHAPTER IV.
MECHANICAL ADJUSTMENTS

SECTION A. BRAKES

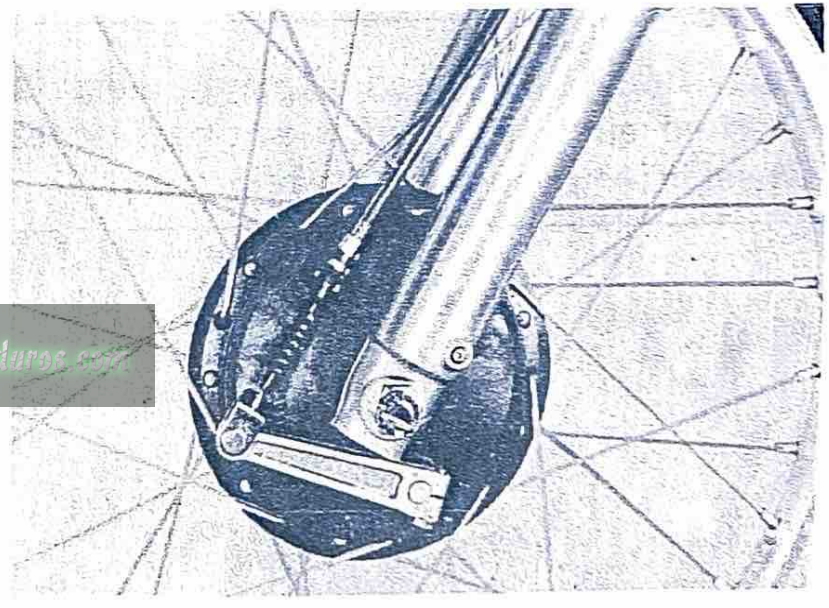
1. Front Brake

Front brake should be adjusted to suit rider preference with a minimum cable slack of 5–8 mm (0.197–0.315 in) play at the brake lever pivot point.



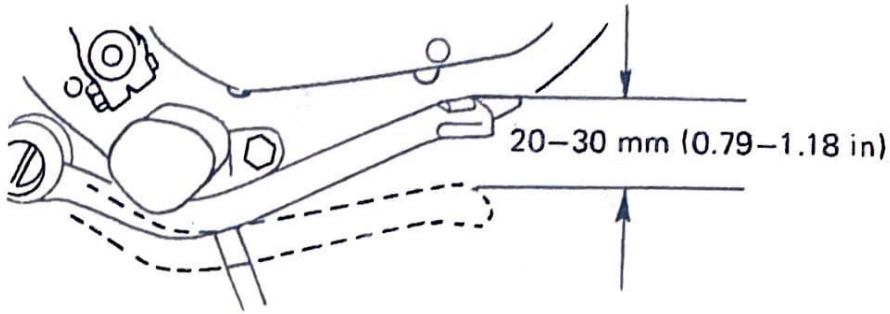
Adjustment is accomplished at one of two places; either the handle lever holder or the front brake hub.

a. Loosen the adjuster locknut.
b. Turn the cable length adjuster in or out until adjustment is suitable.
c. Tighten the adjuster locknut.



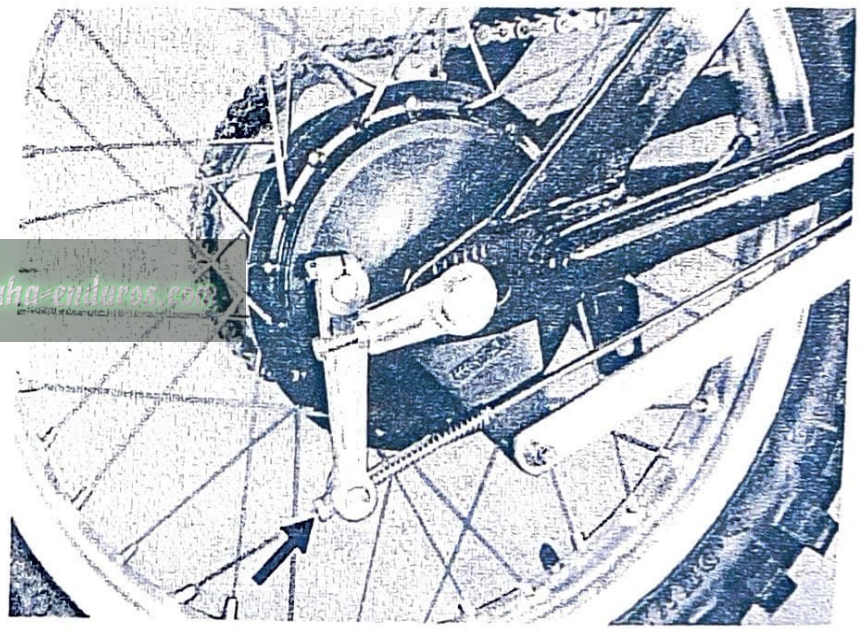
2. Rear Brake

Adjust rear brake pedal play to suit, providing a minimum of 20–30 mm (0.79 –1.18 in) freeplay. Turn the adjustment nut on the rear brake ferrule in or out until brake pedal freeplay is suitable.



NOTE:

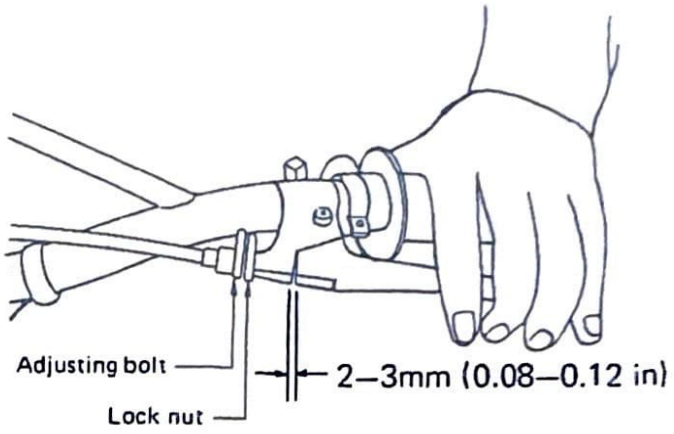
Rear brake pedal adjustment must be checked anytime chain is adjusted or rear wheel is removed and then reinstalled.



SECTION B. CLUTCH

Proper clutch adjustment requires two separate procedures.

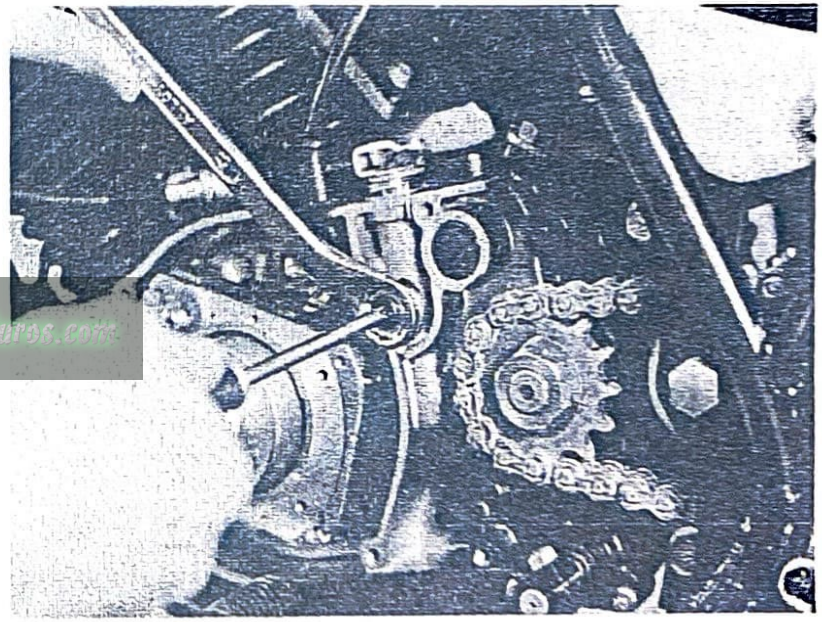
1. Loosen cable adjusting screw locknut (at lever).
2. Turn clutch cable adjusting screw all the way into the lever



NOTE:

The above procedure provides for maximum cable freeplay to allow for proper clutch actuating mechanism adjustment.

3. Remove crankcase side cover (L).
4. Loosen adjusting screw locknut. Back the nut off 2 or 3 turns.
5. Using a Phillips-screwdriver, turn adjusting screw in or out until adjust arm (located on top of the engine directly above the adjusting screw) is directly in line with the main axle center line.

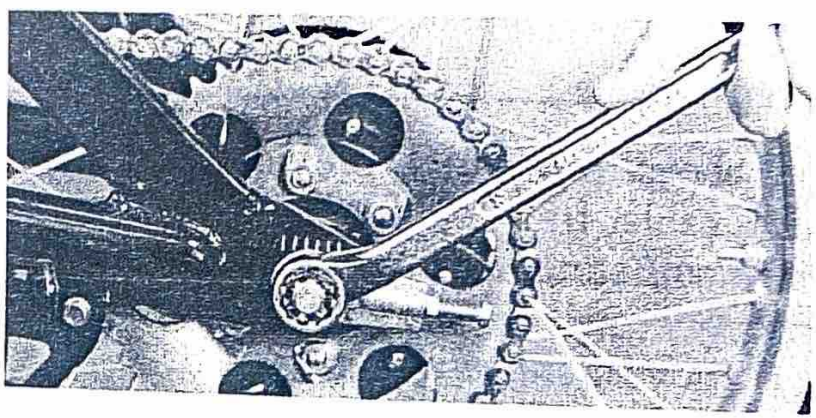


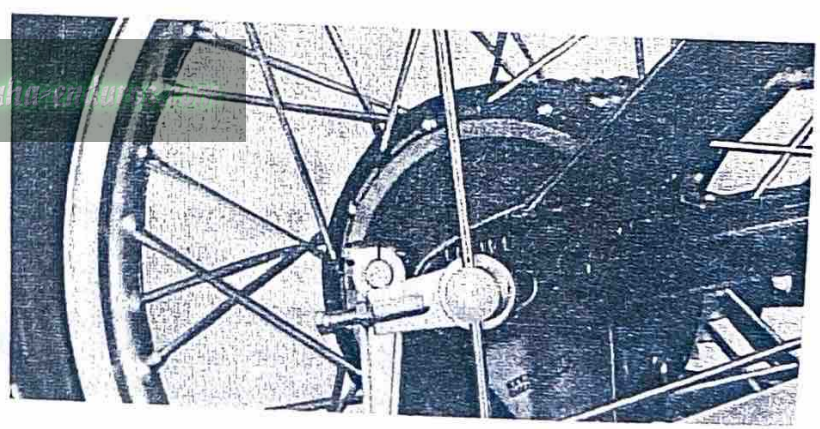
6. Tighten locknut while holding adjusting screw in place.
7. At clutch lever assembly, left handlebar, turn the adjusting screw in or out until freeplay at lever pivot equals 2–3 mm (0.08–0.12 in).
8. Tighten adjusting screw locknut.
9. Reinstall the crank case cover (L).

SECTION C. DRIVE CHAIN

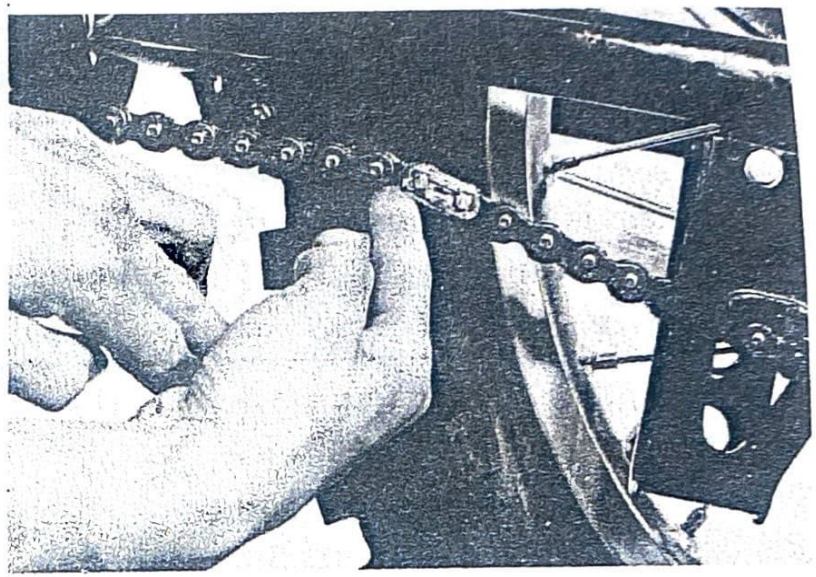
To adjust drive chain, proceed as follows:

1. Straighten the cotter pin, and pull it off using pliers.
2. Loosen axle securing nut whilyholding the opposite side with a cross bar.





3. With rider in position on machine, both wheels on ground, set axle adjusters until there is 40 – 45 mm (1.57 – 1.77 in) slack in the drive chain at the bottom of the chain at a point midway between the drive and driven axles.

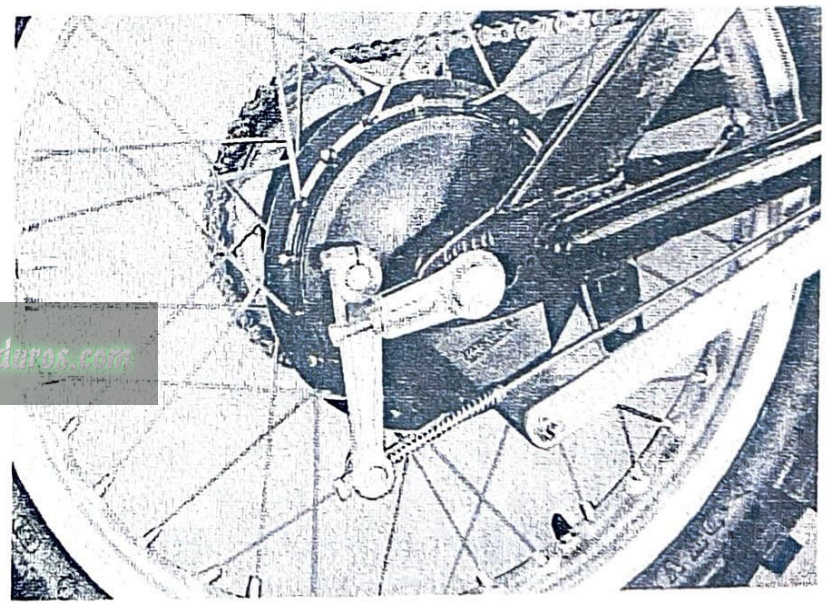


NOTE:

To adjust correct chain tension, release chain tensioner as photograph.

4. Turn adjusting bolts both left and right until the adjust marks on the adjusters are aligned with the adjust marks on the swing arm. Tighten locknuts on adjust bolts.
5. Tighten the rear axle securing nut.

   Install the cotter pin.



NOTE:

Always use a new cotter pin.

Torque: 7–10 m-kg (50.63–72.33 ft-lb)

6. Check brake pedal freeplay.

CAUTION:

Whenever the chain is adjusted and/or the rear wheel is removed, always check the rear axle alignment and brake pedal freeplay.

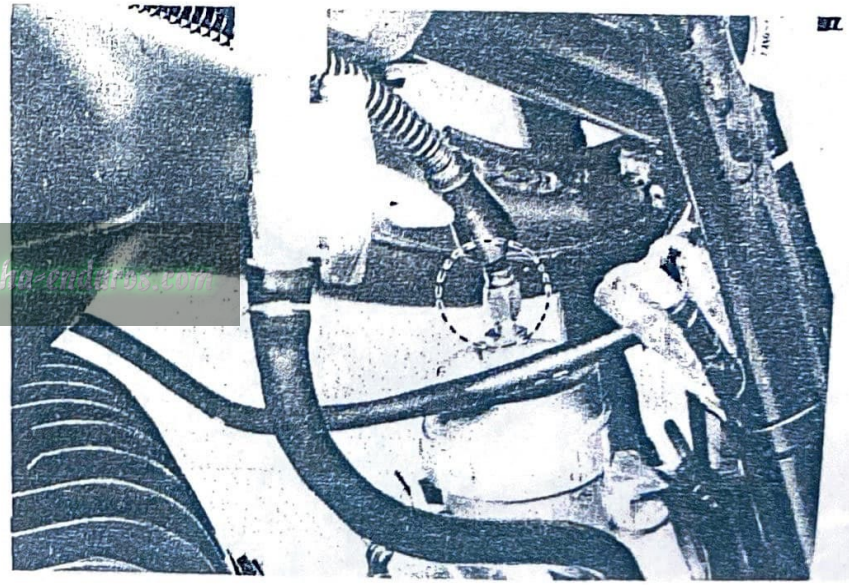
SECTION D. CARBURETOR

Under normal operating conditions, there are only three adjustments to be made to the carburetor.

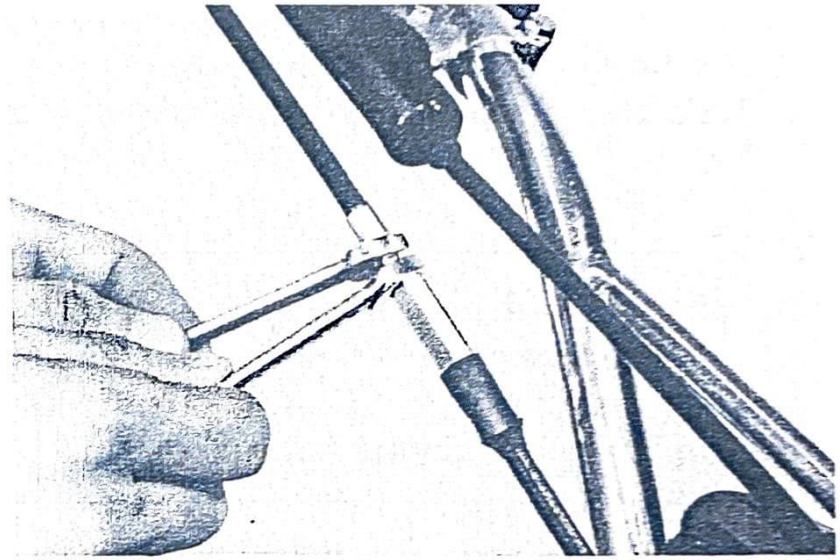
1. **Throttle cable adjustment:**

a. Slide the rubber cover off the top of the carburetor.

b. Grasp the outer cable housing. Lift it up.
Slack should equal 1mm (0.04 in) at the adjuster. If slack is incorrect, loosen adjusting bolt locknut and turn adjusting bolt in or out as required to achieve correct slack. Tighten the adjusting bolt locknut. Reinstall the cap cover.

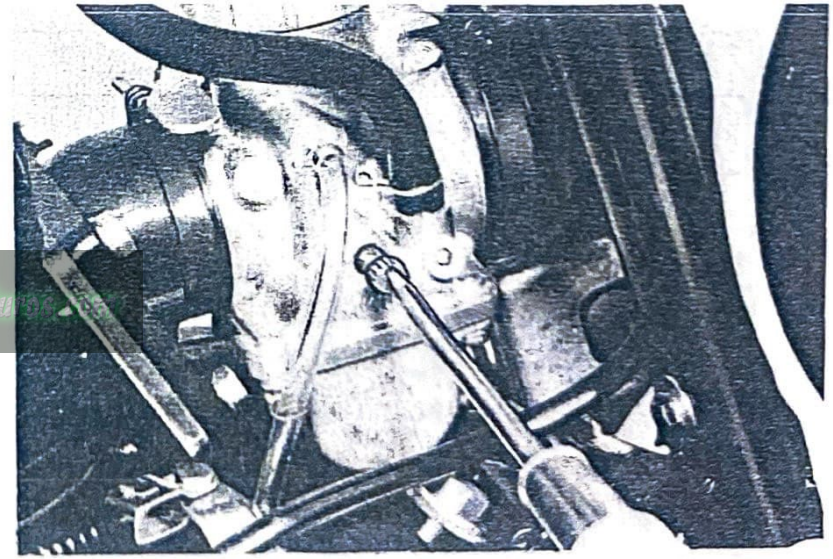


c. Grasp the throttle cable housing at the adjuster on the throttle cable near the handle bar, pull in out.
Slack should equal 1 mm (0.04 in). If not loosen cable length adjuster locknut and adjuster cable length as required.



2. Idle speed and idle air adjustments:

a. Turn idle air screw in until lightly seated.
b. Back out 1.0 turn.
c. Turn the idle speed adjust screw until idle is at desired rpm.

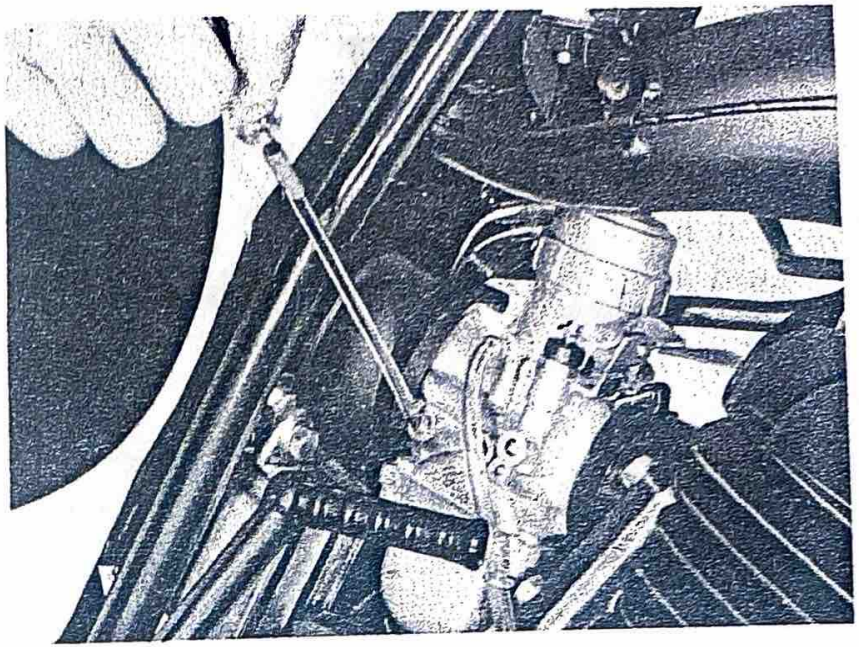


NOTE:

A locknut is incorporation on the YZ125X screws for positive retention.

Lock nut tighten torque: 0.15—0.2 m-kg (1.1 — 1.5 ft—lb)

d. Turn the idle air mixture screw in or out until idle speed is at highest rpm.
e. Turn the idle speed adjusting screw in or out until idle speed is at desired rpm.



NOTE:

Idle air mixture and idle speed adjusting screws should be so adjusted that engine response to throttle changes from idle position is rapid and without hesitation.

Idle air screw: Back out 1.0 turn.

Idle speed: As desired.

If the engine, when warm, hesitates after adjusting as described, turn the idle air mixture screw in or out in 1/4 turn increments until the problem is eliminated.

SECTION E. SPARK PLUG

The spark plug in your machine indicates how the engine is operating. If the engine is operating correctly, and the machine is being ridden correctly, then the tip of the white insulator around the positive electrode of the spark plug will be a medium to light tan color. If the porcelain "donut" around the positive electrode is a very dark brown or black color, then a plug with a hotter heat range may be required. This situation is quite common during the engine break-in period.

If the insulator tip shows a very light tan or white color or is actually pure white or if the electrodes show signs of melting, then a spark plug with a colder heat range is required.

Remember, the insulator area surrounding the positive electrode of the spark plug must be a medium-to-light tan color. If it is not, check carburetion, timing, and ignition adjustments. If the situation persists, consult your Authorized Yamaha Dealer.

Do not attempt to experiment with different heart range spark plugs. This takes an experienced eye to gauge the proper spark plug heat range tc use and to determine if the spark plug itself is at fault.

For constant high speed operation use: Champion N57G
For normal operation use: Champion N59G

Spark plug gap : 0.5—0.6 mm (0.020—0.023 in)

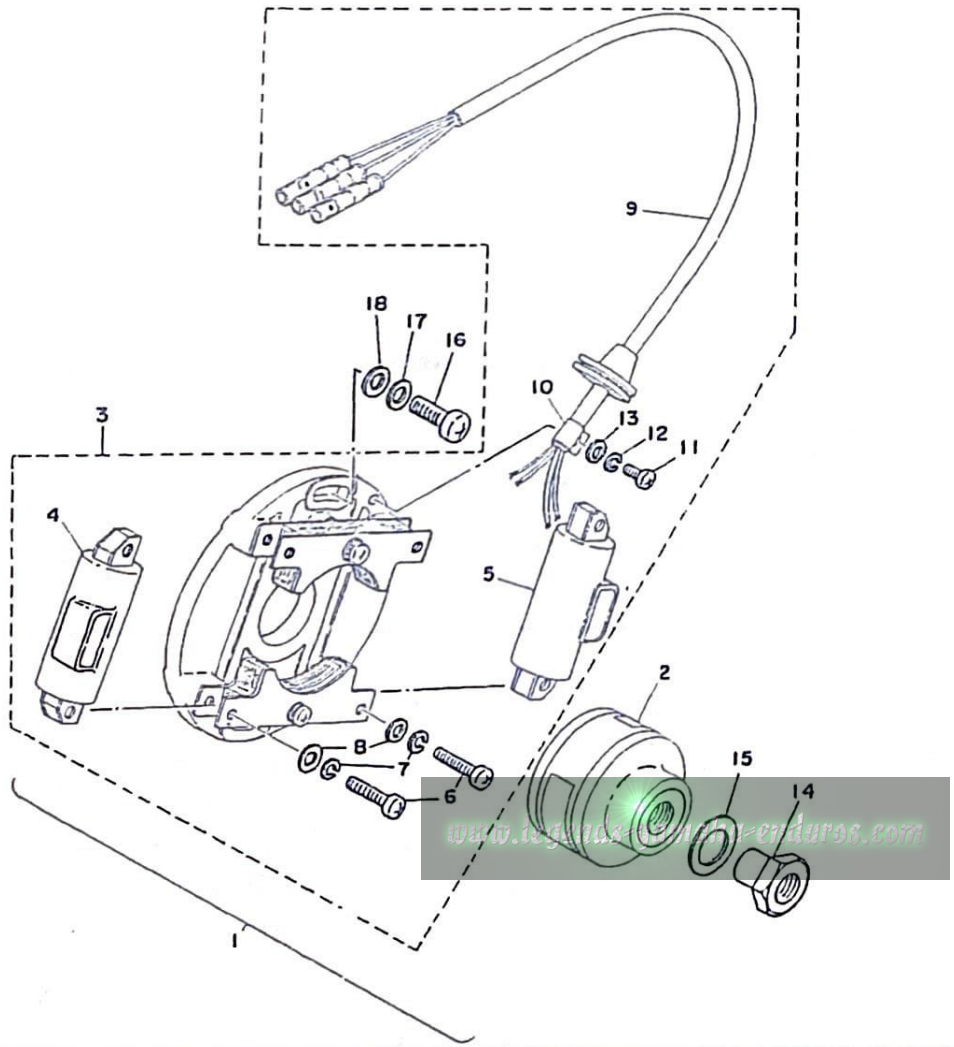
Engine conditions will cause any spark plug to slowly break down and erode. If erosion begins to increase, or if the electrodes finally become too worn, or if for any reason you believe the spark plug is not functioning correctly, replace it.

When installing the plug, always clean the gasket surface, use a new gasket, wipe off any grime that might be present on the surface of the spark plug, torque the spark plug properly.

Spark plug torque:
2.7 – 2.9 m-kg (19.5 – 21.0 ft-lb)

The spark plug must be removed and checked prior to using the machine. Check electrode wear, insulator color, and negative to positive electrode gap.

C.D.I. MAGNETO



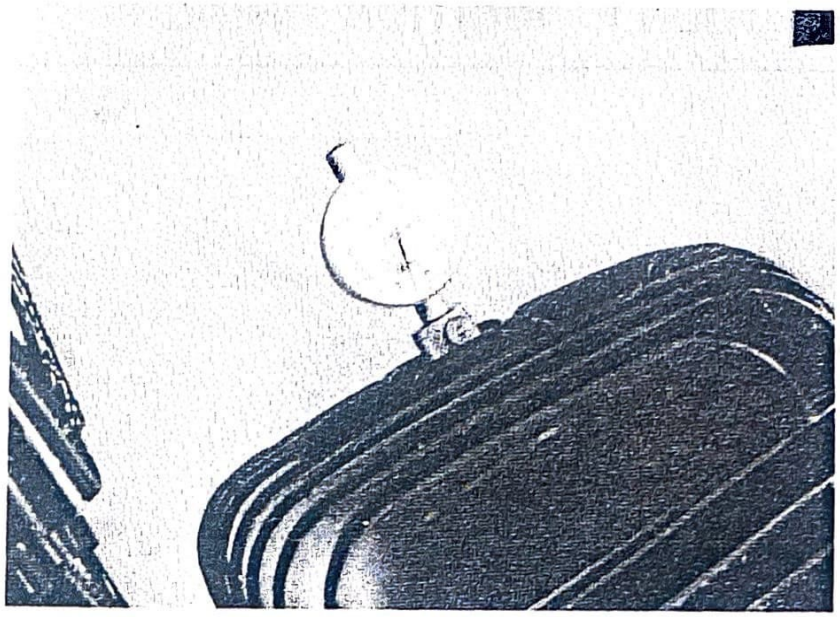
1. C.D.I. Magneto ass'y
2. Rotor ass'y
3. Stator ass'y
4. Charge coil 1
5. Charge coil 2
6. Panhead screw
7. Spring washer
8. Plate washer
9. Lead wire ass'y
10. Lead wire clamp
11. Panhead screw
12. Spring washer
13. Plain washer
14. Rotor nut
15. Rotor washer
16. Panhead screw
17. Plain washer
18. Plate washer

Ignition timing must be set with a dial gauge (to determine piston position). Proceed as follows:

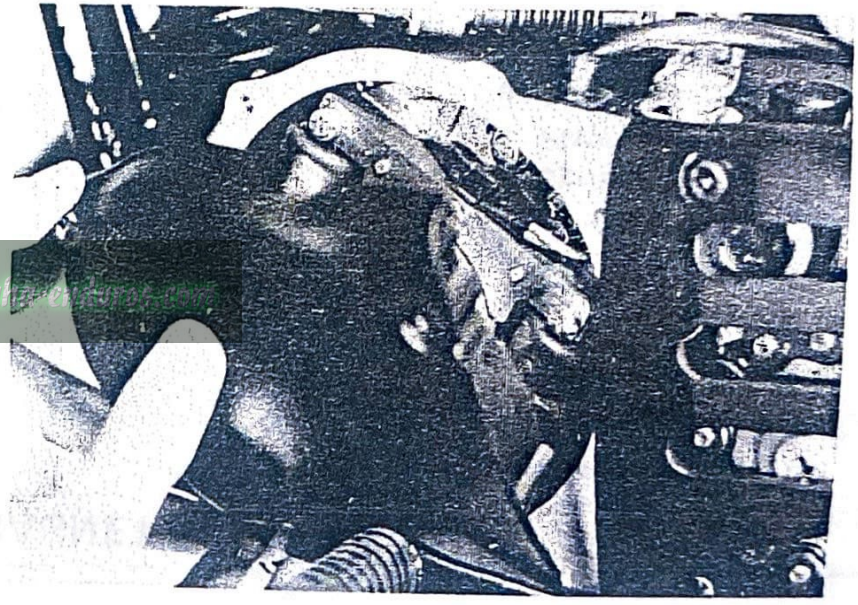
1. Remove the muffler assy.
2. Remove spark plug and screw Dial Guage Stand #2 into spark plug hole.
3. Insert Dial Gauge Assembly into stand #2.

NOTE:

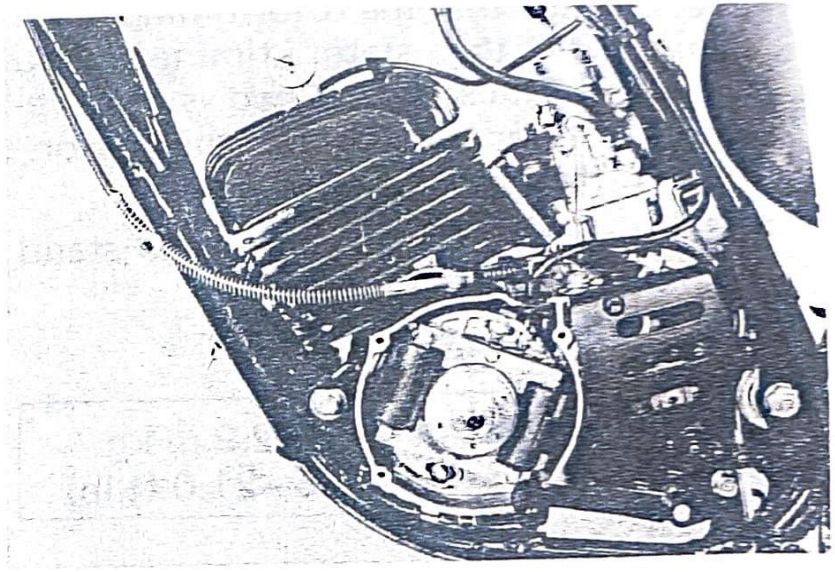
Install the needle (56 mm, (2.184 in)) on the dial gauge.



4. Remove left engine crankcase cover.

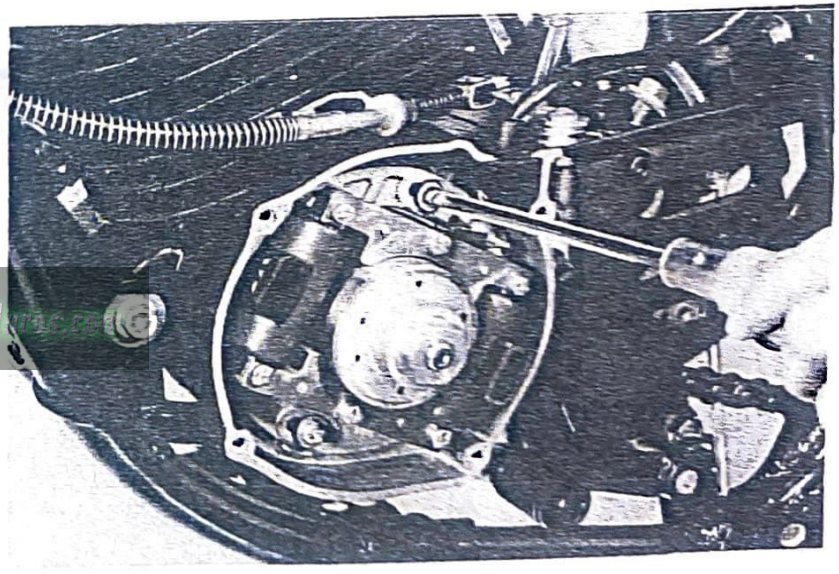


5. Rotate rotor until piston is at top-dead center (T.D.C.). Tighten set screw on spark plug stand to secure dial gauge assembly. Set the zero on dial gauge face to line up exactly with dial gauge needle. Rotate rotor back and forth to be sure that gauge needle does not go past zero.



6. Starting at T.D.C., rotate rotor clockwise until dial indicator reads approximately 1.2 mm (0.047 in)

Ignition timing:	1.2 mm (0.047 in). B.T.D.C.



8. Check to see that the rotor timing mark aligns with the stator timing mark. To adjust, loosen the two stator retaining screws and rotate the stator. Tighten screws.
9. Remove dial gauge assembly and stand #2. Replace spark plug.

Spark plug torque:	2.7 – 2.9 m-kg (19.5–21.0 ft-lb)

10. Replace engine crankcase cover.

CHAPTER V.
ENGINE MAINTENANCE AND MINOR REPAIRS

SECTION A. AIR FILTER

The following sections provide information for the disassembly, troubleshooting, and maintenance of various components of the machine. If you do not have the necessary tools and an understanding of the mechanical principles involved, please refrain from attempting repairs. The use of improper tools and/or procedures can cause major damage to units with resultant additional repair costs.

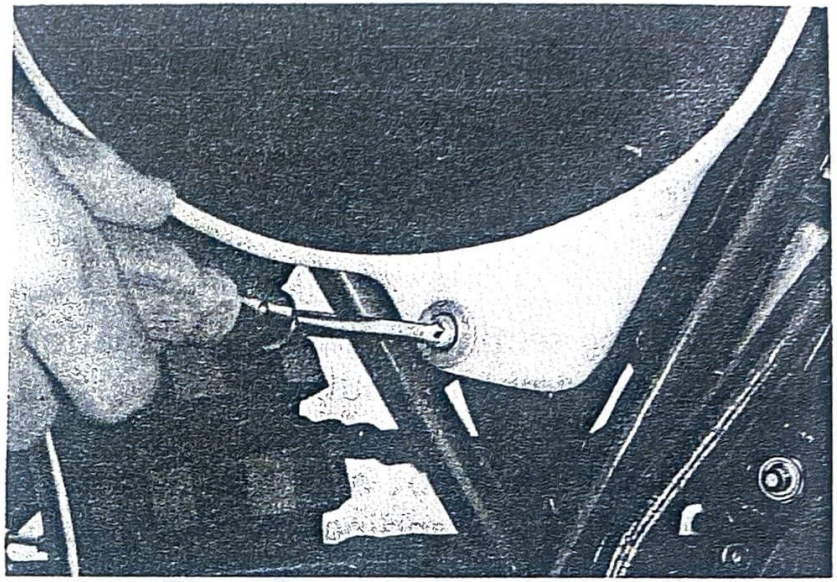
To properly understand the procedures outlined, we suggest you consult the Service Manuals and the various other technical publications produced by Yamaha Motor Company or Yamaha International Corporation.

Finally, we suggest you consult your Yamaha Dealer prior to attempting any repair procedures.

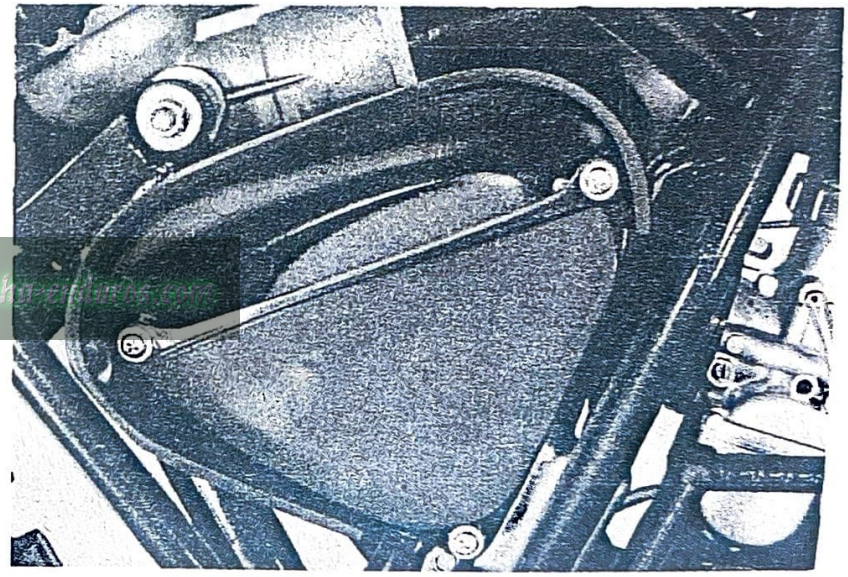
1. Air Filter

The filter is a split-type which can be separated into the two sections, right and left. Therefore, it can be replaced one by one.

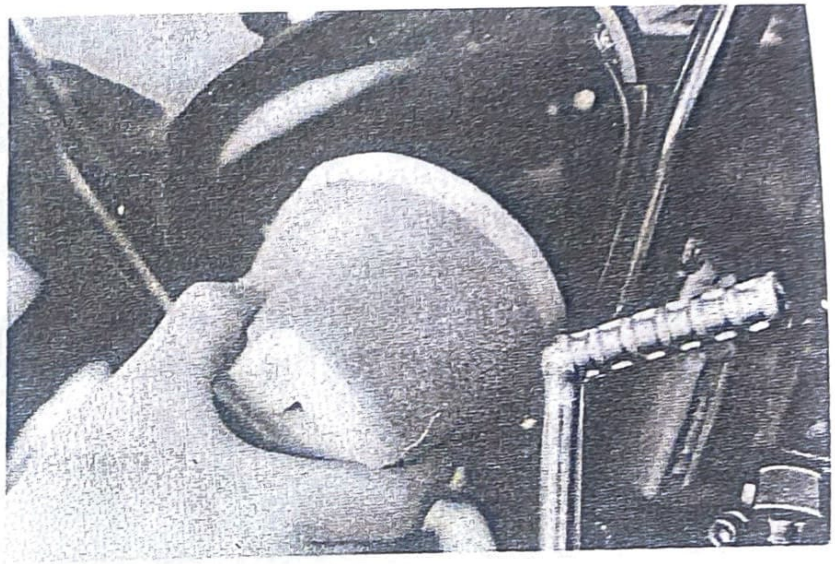
a. Remove the screws (1) and number plate.



b. To remove the air filter, first remove the Phillips-head screw (3) from the filter case.



c. Remove the air filter from the filter case.



d. Slip the filter from the wire mesh guide.

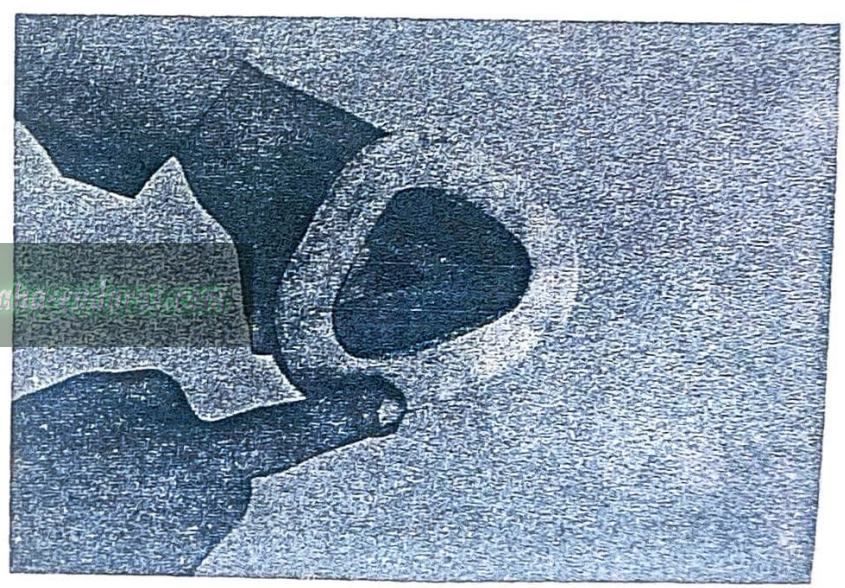
2. Air Filter Cleaning

a. Wash the element gently, but thoroughly, in solvent.
b. Squeeze the excess solvent out of the element and let dry.
c. Pour a small quantity of 10-30W "SE" motor oil onto the filter element and work thoroughly into the porous foam material.
d. Re-insert the wire mesh filter element guide into the element.

NOTE:

In order to function properly, the element must be damp with oil at the times.....but not "dripping" with oil.

e. Coat the upper and lower edges of the filter element with light grease. This will provide an air-tight seal between the filter case cover and filter seat.



f. Reinstall the element assembly and parts removed for access.

NOTE:

Each time filter element maintenance is performed, check the air inlet to the filter case for obstructions. Check the air cleaner joint rubber to the carburetor and manifold fittings for an air-tight seal. Tighten all fittings thoroughly to avoid the possibility of unfiltered air entering the engine.

CAUTION:

Never operate the engine with the air filter element removed. This will allow unfiltered air to enter causing rapid wear and possible engine damage. Additionally, operation without the filter element will affect carburetor jetting with subsequent poor performance and possible engine overheating.

SECTION B. CARBURETOR AND REED VALVE

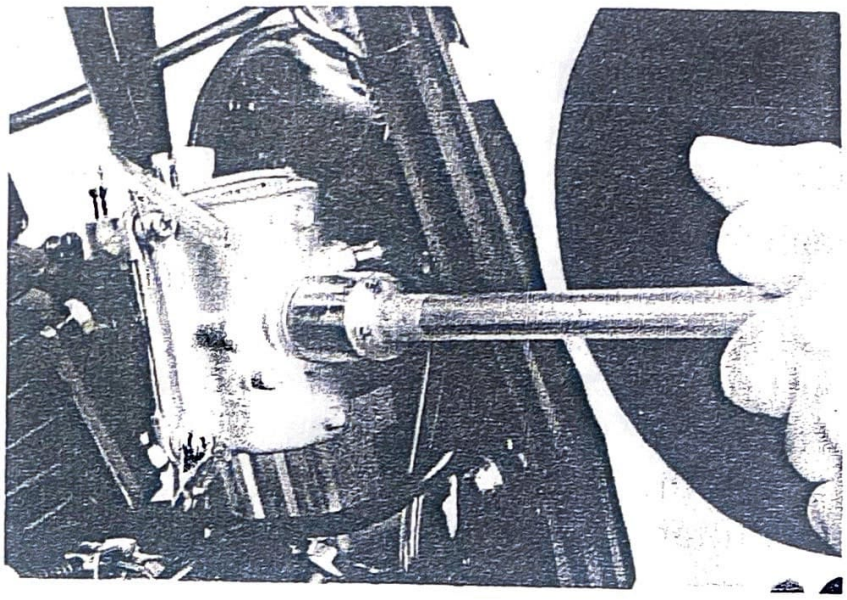
1. Carburetor

a. Turn fuel petcock lever to the "OFF" position.
b. Remove the gasoline tank fuel into from the fitting at the carburetor.
c. Loosen the manifold and inlet joint bands (hose clamps).

NOTE:

For carburetor main jet replacement only, follow steps a through c then:

1) Rotate carburetor, exposing main jet cover bolt.
2) Remove bolt. Main jet is located directly behind bolt.



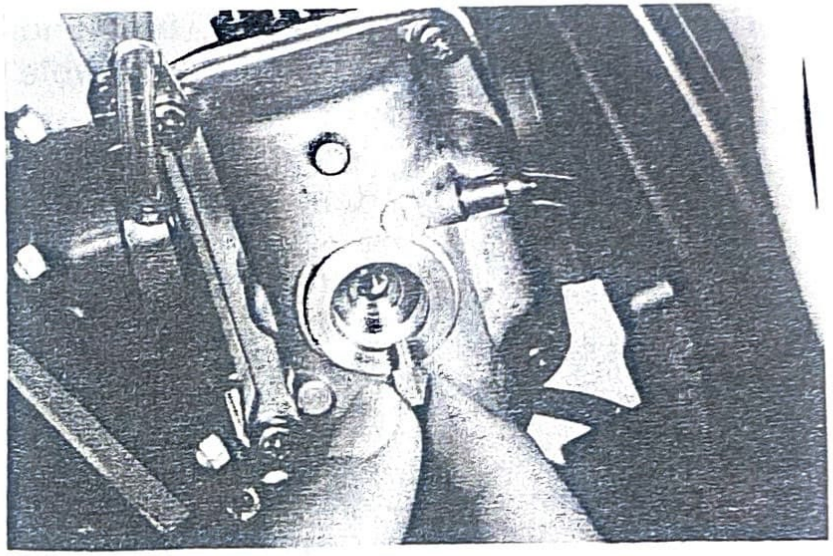
WARNING

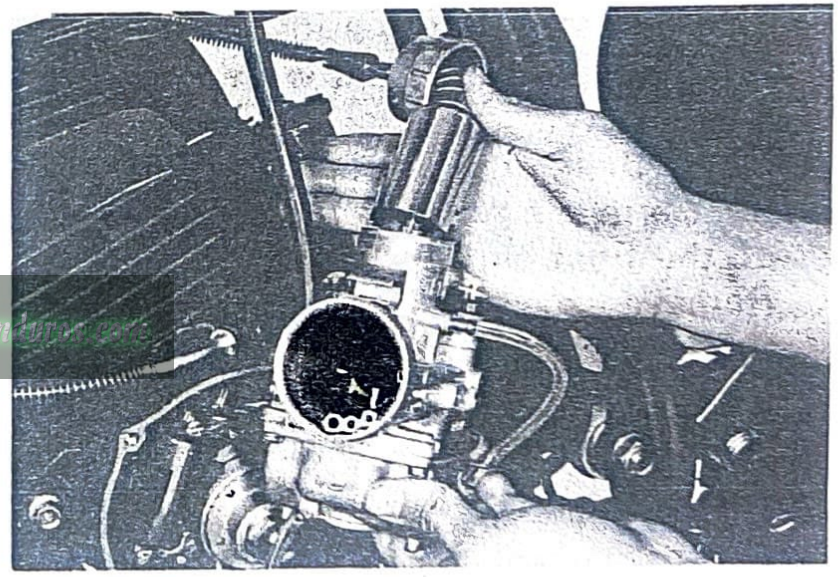
Removing the main jet cover bolt will allow the fuel in the float bowl to drain. Do not remove if engine is hot. Place a rag under carburetor to catch overflow. Remove bolt in well-ventilated area. Do not remove near open flame. Always clean and dry machine after reassembly.

3) Using a 7mm socket or "Spin-tite," remove the main jet. Change as required. Reinstall cover bolt and reassemble, reversing steps 1 through 3.

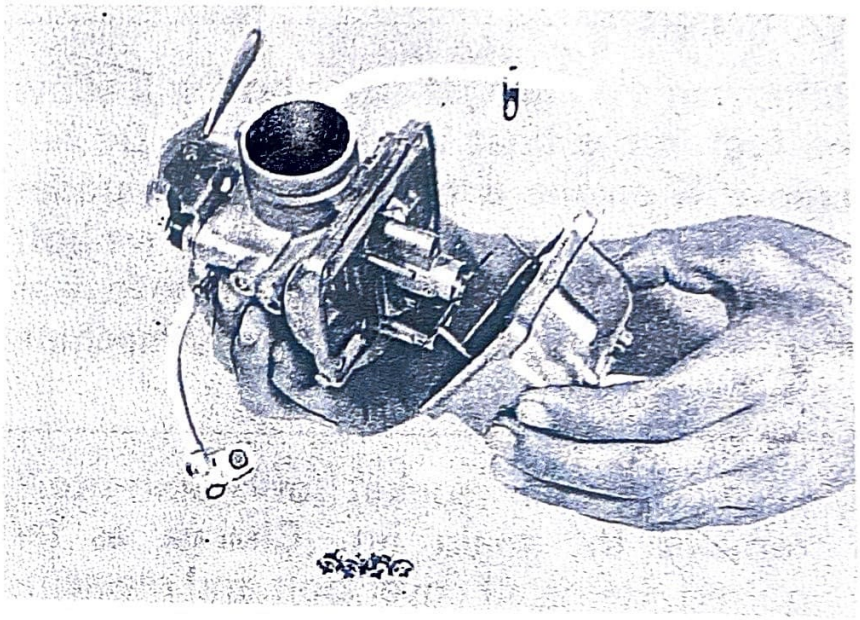
Main jet:	No. 310

d. Push the air cleaner joint (hose) off the carburetor inlet.
e. Rotating the carburetor body, work it off the cylinder manifold joint.
f. Nothing the presence, location, and routing of all vent and overflow tubes, pull the carburetor toward you.
g. Unscrew the mixing chamber top. Remove the slide and needle assembly.

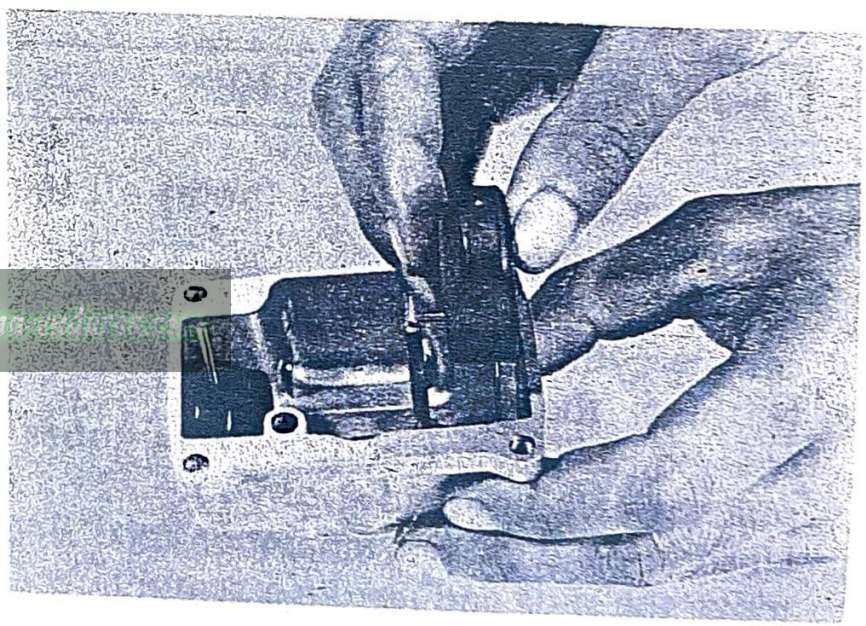




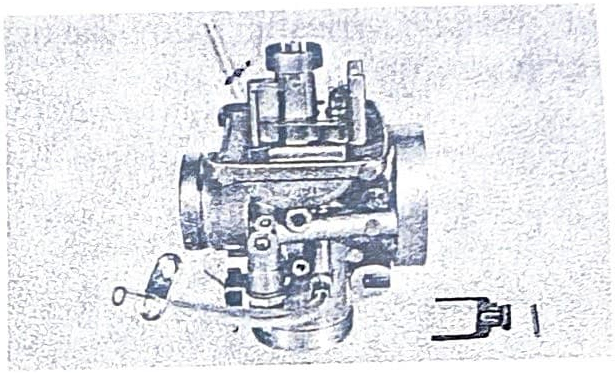
h. Remove the main jet cover bolt and drain the float bowl fuel into suitable receptacle.
i. Remove the Phillips-screws (4) holding float bowl to body. Remove float bowl.



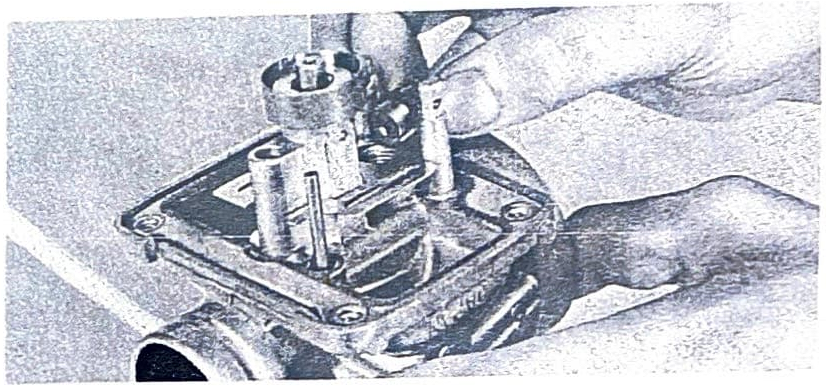
j. Carefully set body aside and inspect each independent float within the float bowl cavity.
Note their installation position. The float arm pin must be on the lower side of the float and in, towards the center.
k. Remove each float. If fuel has entered a float, replace it. If a pin is loose or missing, or if the floats are damaged in any fashion, replace them.



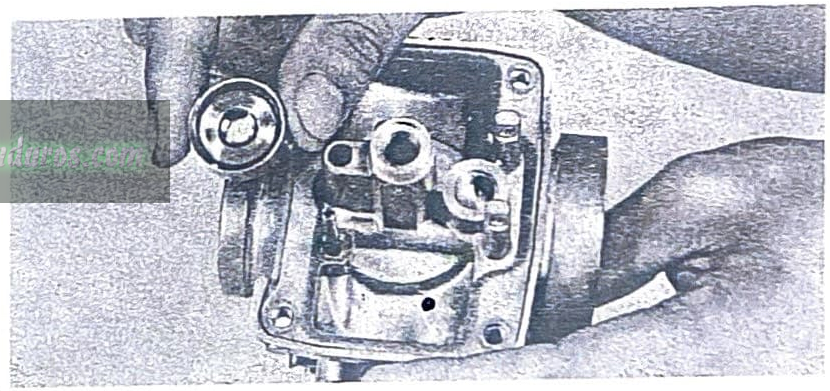
l. On the carburetor body, remove the pin securing the float arm. Remove the arm.



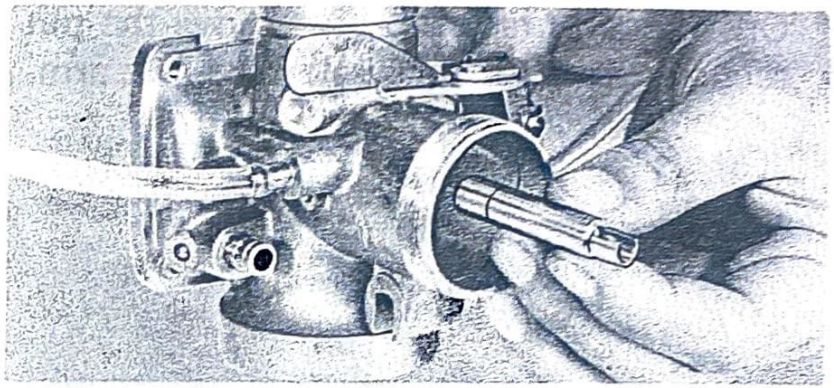
m. Remove the inlet needle directly beneath the float arm tang. Inspect the needle and seat for signs of excessive wear or attached foreign particles. Replace as required. Replace inlet needle and inlet valve seat as an assembly.



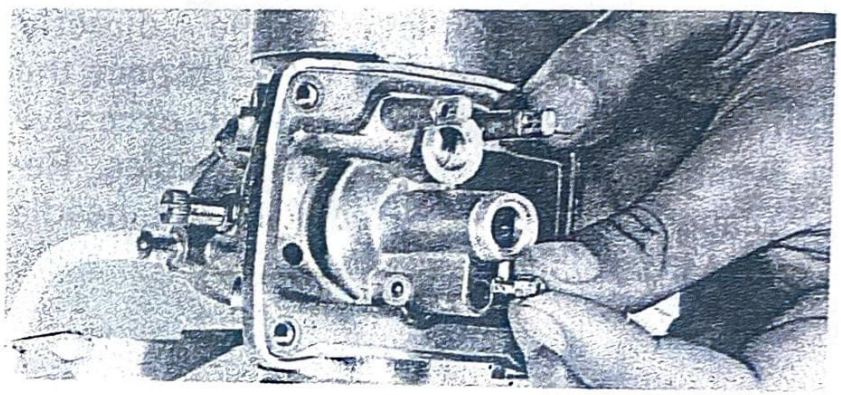
n. Remove, in order, the following components.
1) Main jet and Washer.



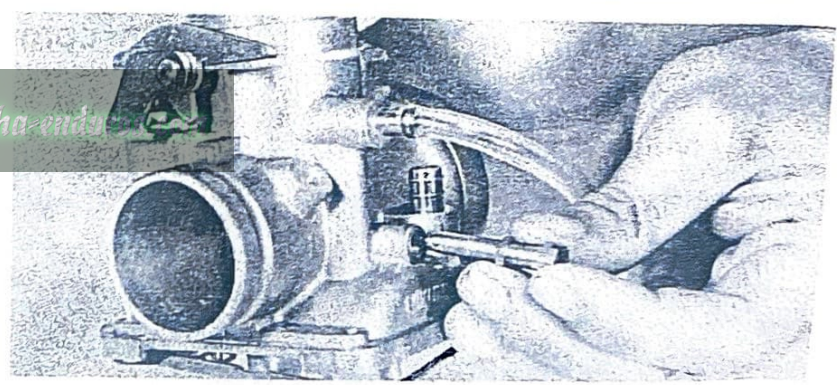
2) Main Nozzle (push from bottom through venturi).



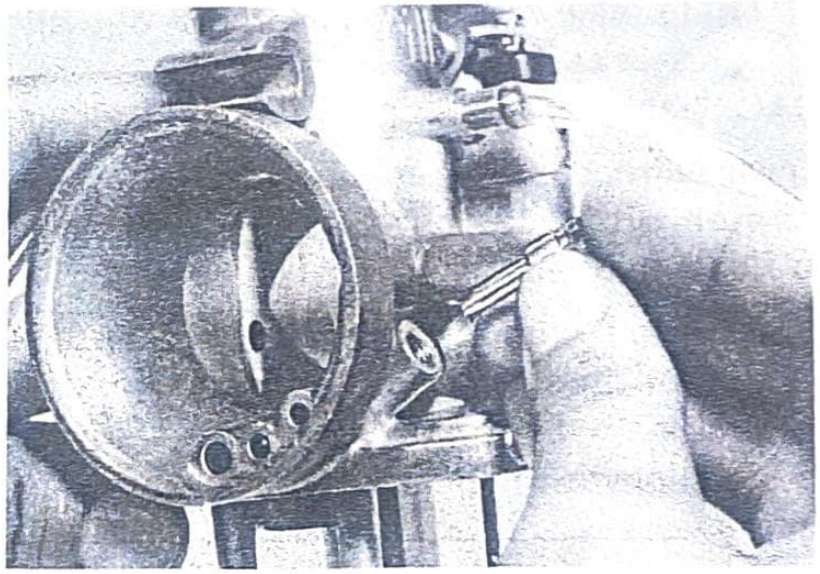
3) Pilot jet



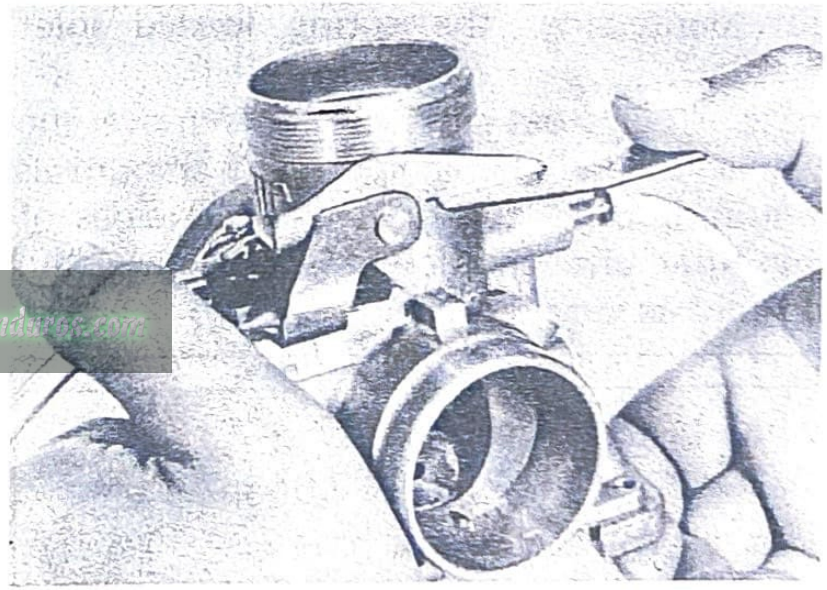
4) Throttle Screw (Idle Speed Screw)



5) Air Adjusting Screw (Idle Mixture Screw)



o. Actuate the Starter Jet control to open the circuit.
p. When the carburetor in mild solvent. Wash all associated parts.



NOTE:

It is rarely necessary to "boil" the carburetor in a warm or hot carburetor bath. If deposits warrant this procedure, remove the Starter Jet Assembly to avoid damaging the jet's neoprene valve seat.

q. Using high pressure air, blow out all passages and jets.

CAUTION:

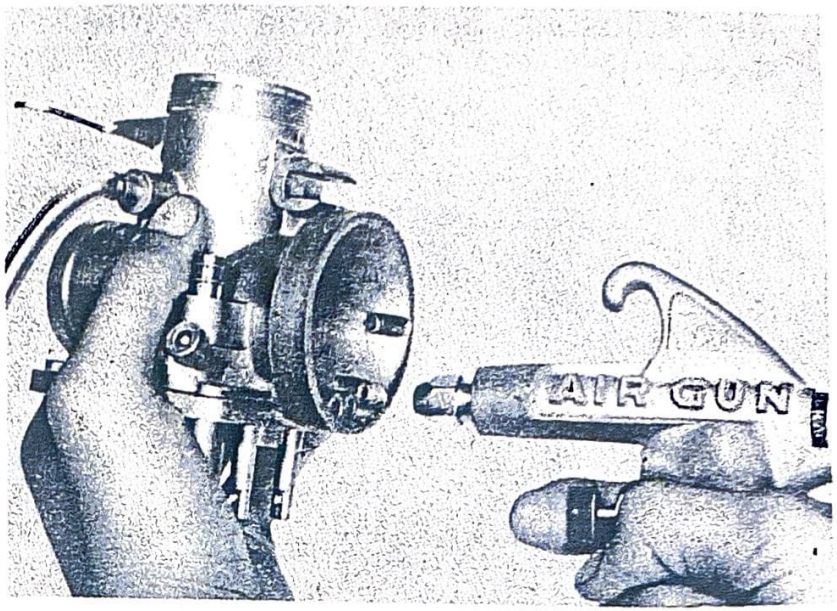
Never direct high pressure air into carburetor with float bowl installed. Damage to floats may occur.

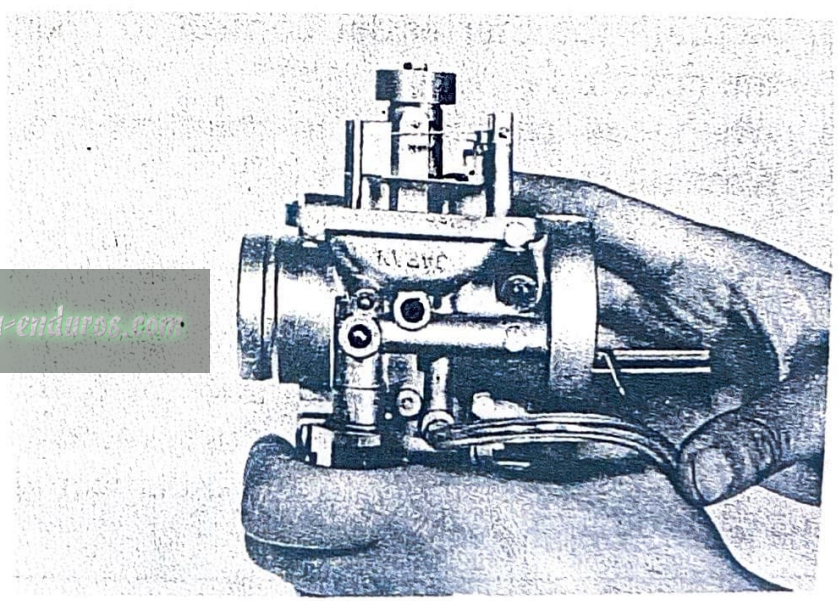
r. Reinstall components, with the exception of the float bowl.
s. Check to ensure that the float arm is parallel with the carburetor base.

NOTE:

The float arm should be just resting on, but not depressing, the spring loaded inlet needle.
To correct float arm height, remove the arm and bend the tang a slight amount as required. Both the right and left sides of the float arm should measure identically. Correct as required.

Float arm height:
23.4±1mm (0.92±0.04 in)
Level with carburetor base

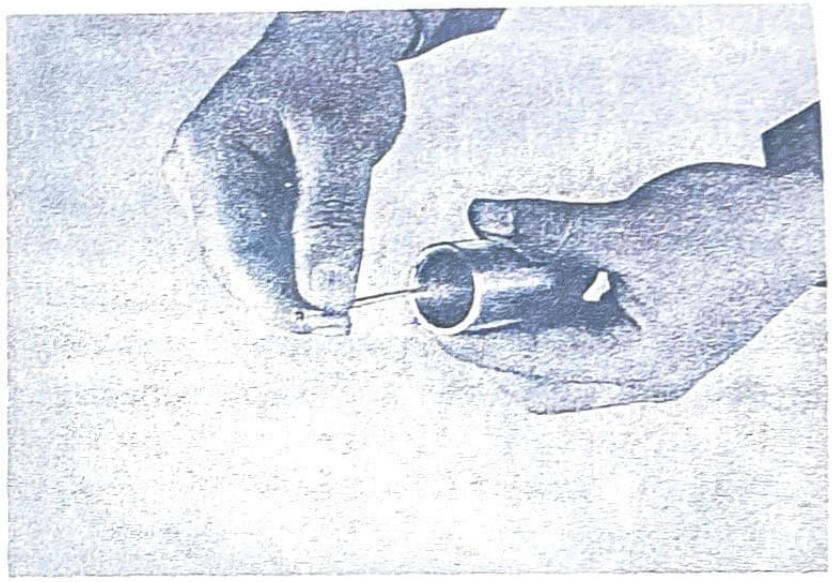




t. Install the float bowl and main jet cover bolt.

u. Moving to the machine, push needle out of seat in throttle valve (slide). Inspect for signs of bending, scratches or wear. Replace as required.

v. Check needle clip position. Clip position is counted starting with the first clip groove at the top of the needle.



Jet needle type: 6F 15

Clip position: No. 2 Groove

w. Check throttle valve (slide) for signs of wear. Insert into carburetor body and check for the movement. If slide, or body, is out of round causing slide to stick, replace as required.

x. Install throttle valve and needle assembly in carburetor mixing chamber. Tighten mixing chamber top as tight as possible by hand.

CAUTION:

Do not use pliers or vise-grips as they may deform the mixing chamber shape, causing the throttle valve to stick during operation.

y. Install the mixing chamber top cover and all overflow and vent tubes. Reinstall carburetor. Check tightness of all fittings. Make sure carburetor is mounted in a level position.

NOTE:

After installation, check throttle cable adjustment and check to ensure that slide is free by turning and releasing throttle.

TROUBLESHOOTING

A Motocross machine requires immediate, predictable throttle response over a wide operating range. Cylinder porting, combustion chamber compression, ignition timing, muffler design, and carburetor size and component selection are all balanced to achieve this goal. However, variations in temperature, humidity and altitude, to name a few, will affect carburetion and consequently, engine performance.

The followilist gives each of the major components of the carburetor that can be readily changed in order to modify performance if required. If you are unfamiliar with carburetor theory, we suggest you refrain from making changes. Quite often, a performance problem is caused by another related component, such as the exhaust system, ignition timing or combustion chamber compression.

NOTE:

See MECHANICAL ADJUSTMENTS for additional carburetor adjustments.

Idle Air Mixture Screw:

Controls the ratio of air-to-fuel in the idle circuit. Turning the screw in decreases the air supply giving a richer mixture.
OPERATING RANGE MOST AFFECTED BY THIS ADJUSTMENT: ZERO TO 1/8 THROTTLE.

Pilot Jet:

Controls the ratio of fuel-to-air in the idle circuit. Changing the jet to one with a higher number supplies more fuel to the circuit giving a richer mixture.
OPERATING RANGE MOST AFFECTED BY THIS JET: ZERO TO 1/8 THROTTLE.

Throttle Valve (Slide):

The throttle valve (slide) has a portion of the base cut away to control air flowing over the main nozzle. A wider angle (more "cutaway") will create a leaner mixture. Throttle valves are numbered according to the angle of the cutaway. The higher the number, the more cutaway, the leaner the mixture.
OPERATING RANGE MOST AFFECTED BY THE THROTTLE VALVE: 1/8 to 1/4 (+) THROTTLE.

Jet Needle:

The jet needle is fitted within the throttle valve. The tapered end of the needle fits into the main nozzle outlet. Raising the needle allows more fuel to flow out of the nozzle outlet giving a richer mixture. There are five circlip grooves at the top of the needle. Moving the needle clip from the first, or top groove, through the fifth, or bottom groove, will give a correspondingly richer mixture.
OPERATING RANGE MOST AFFECTED BY THE JET NEEDLE: 1/4 to 3/4 (+) THROTTLE.

Main Jet:

The main jet controls overall fuel flow through the main nozzle. Changing the jet to one with a higher number supplies more fuel to the main nozzle giving a richer mixture.

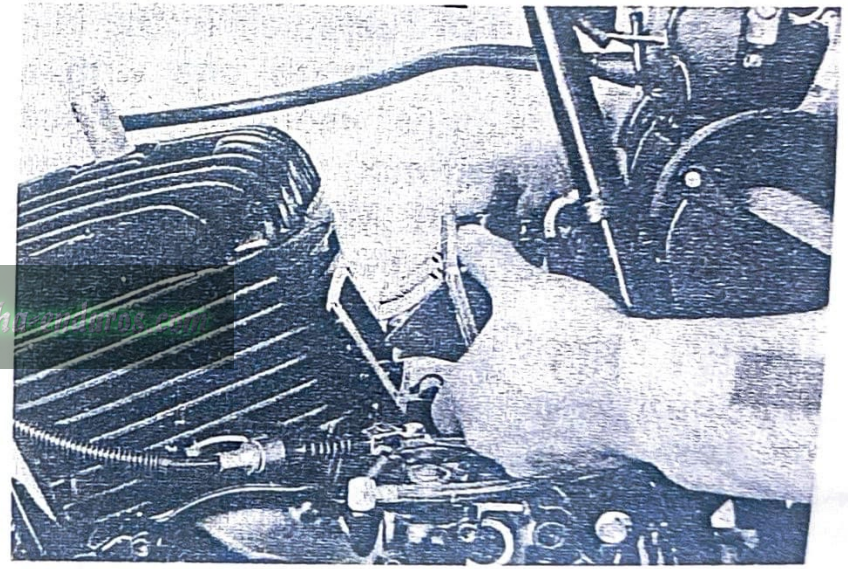
OPERATING RANGE MOST AFFECTED BY THE MAIN JET: 3/4 TO FULL THROTTLE.

NOTE:

Excessive changes in main jet size can affect performance at all throttle positions.

CAUTION:

The fuel/air mixture ratio is a governing factor upon enging operating temperature. Any carburetor changes, whatsoever, must be followed by a thorough spark plug test.

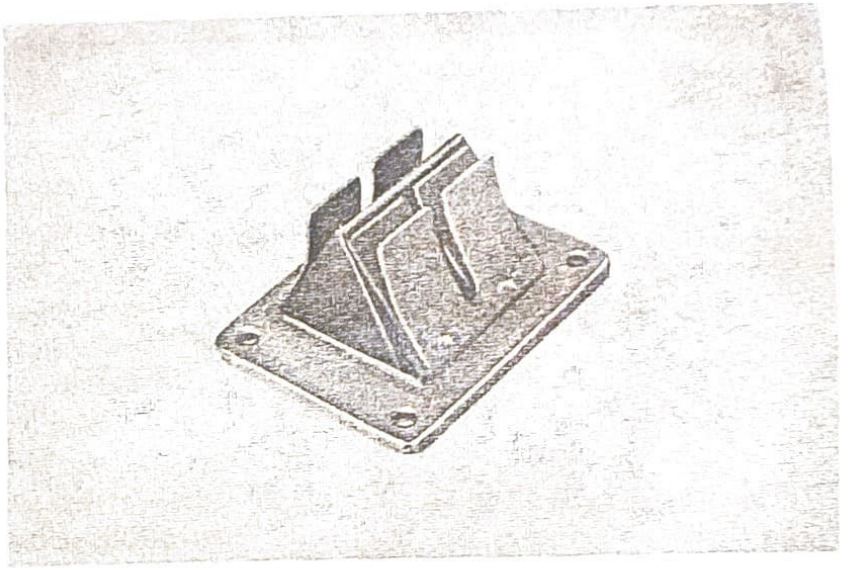


2. Reed Valve

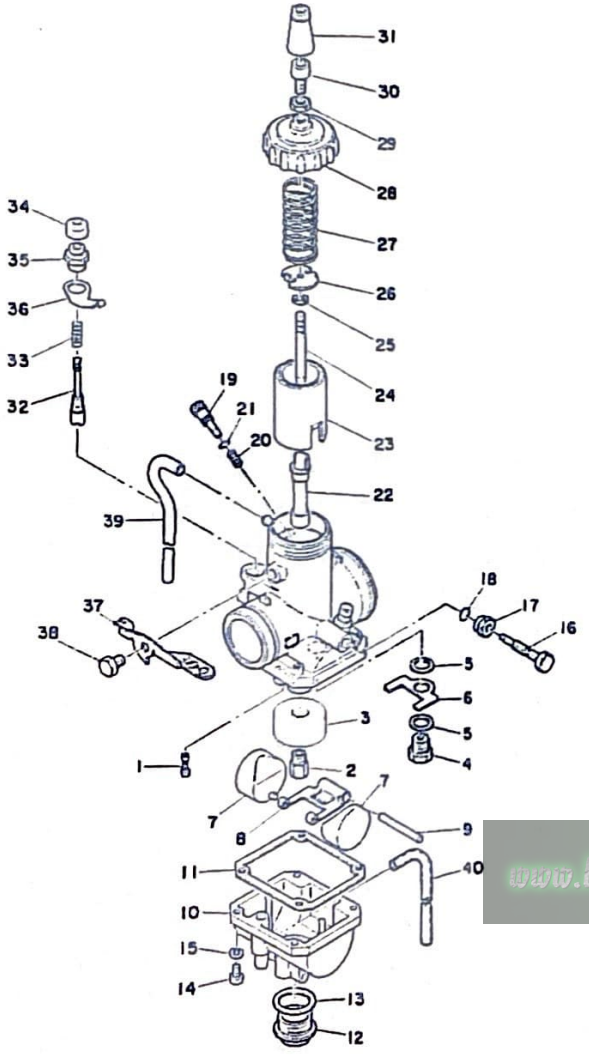
a. With carburetor removed, remove the four (4) bolts holding the intake manifold and reed valve assembly to the cylinder. Remove the reed valve assembly.

b. Inspect reed petals for signs of fatigue cracks. Reed petals should fit flush or nearly flush against neoprene seats. If in doubt as to sealing ability, apply suction to carburetor side of assembly. Leakage should be slight to moderate.

c. If disassembly of the reed valve assembly is required, proceed as follows:
   1) Remove philips screws (3) securing stopper plate and reed to reed block. Handle reed carefully. Avoid scratches and do not bend. Note from which side of the reed block the reed and stopper plate were removed. Reinstall on same side.



CARBURETOR



1. Pilot jet
2. Main jet
3. Main jet washer
4. Valve seat ass'y
5. Valve seat washer
6. Plate
7. Float
8. Float arm
9. Float pin
10. Float chamber body
11. Float chamber gasket
12. Screw plug
13. Screw plug washer
14. Panhead screw
15. Spring washer
16. Throttle screw -
17. Nut
18. O-ring
19. Air adjusting screw
20. Air adjusting spring
21. O-ring
22. Main nozzle
23. Throttle valve
24. Needle
25. Clip
26. Spring seat
27. Throttle valve spring
28. Mixing chamber top
29. Nut
30. Wire adjusting screw
31. Cap
32. Starter plunger
33. Plunger spring
34. Plunger cap cover
35. Plunger cap
36. Starter lever plate
37. Starter lever
38. Bolt
39. Air vent tube
40. Air vent pipe

2) During reassembly, clean reed block, reed, and stopper plate thoroughly. Apply a holding agent, such as "Lock-Tite," to threads of phillips screws. Tighten each screw gradually to avoid warping. Tighten the screws thoroughly.

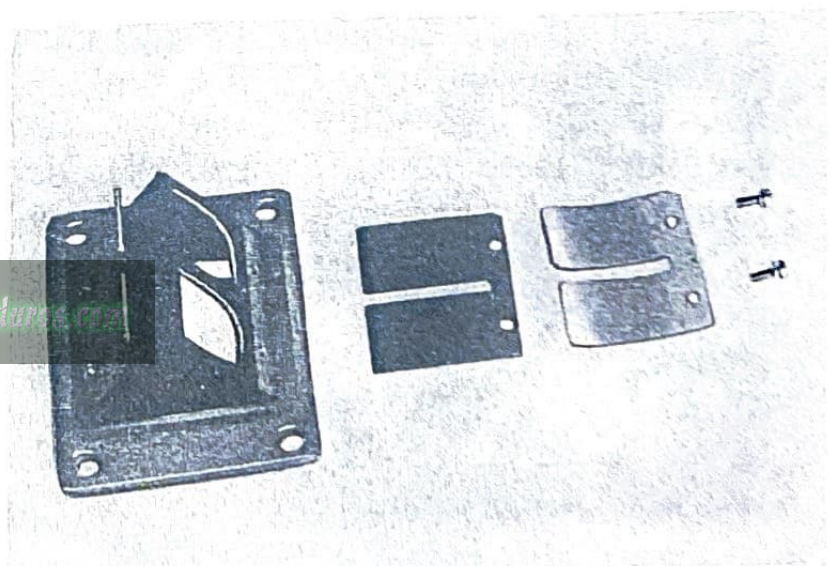
CAUTION:

Do not over-tighten securing screws, stopper plates may warp.

Securing screw torque:	8.0 cm-kg (0.32 in-lb)

NOTE:

During reassembly, observe the cut in the lower corner of the reed and stopper plate. Use as aid to direction of reed installation.

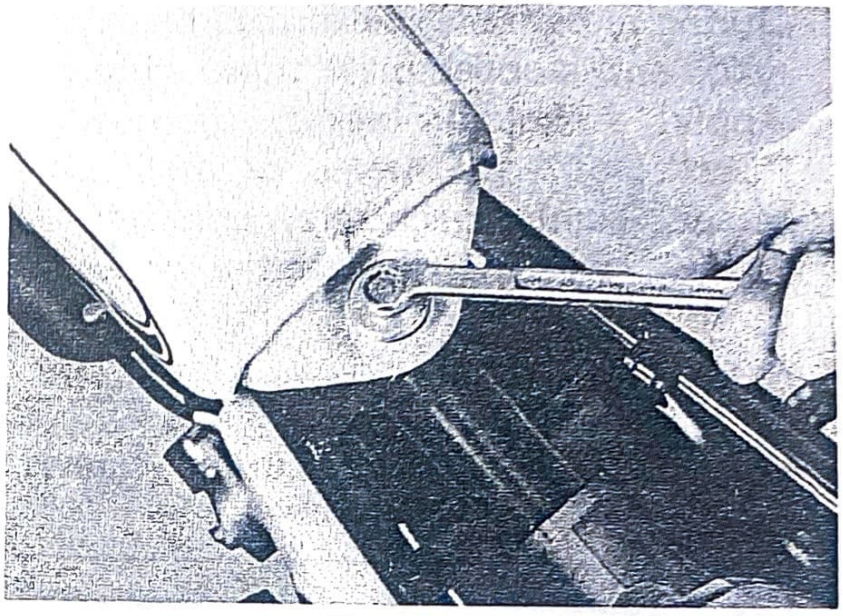


d. During reassembly of the reed valve assembly and manifold, install new gaskets and torque the securing bolts gradually and in pattern.

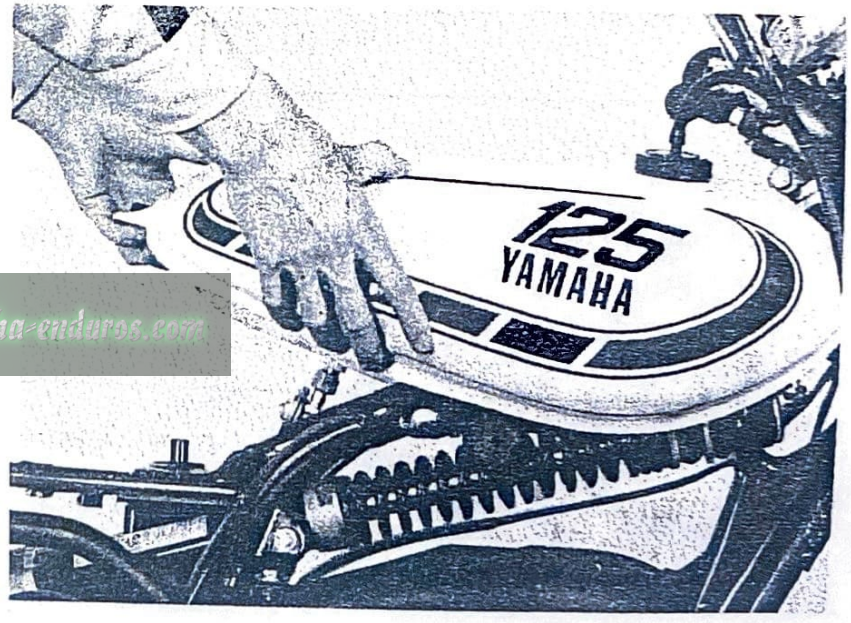
SECTION C. TOP END AND MUFFLER

1. Muffler and Cylinder and Head Removal (Carburetor Removed)

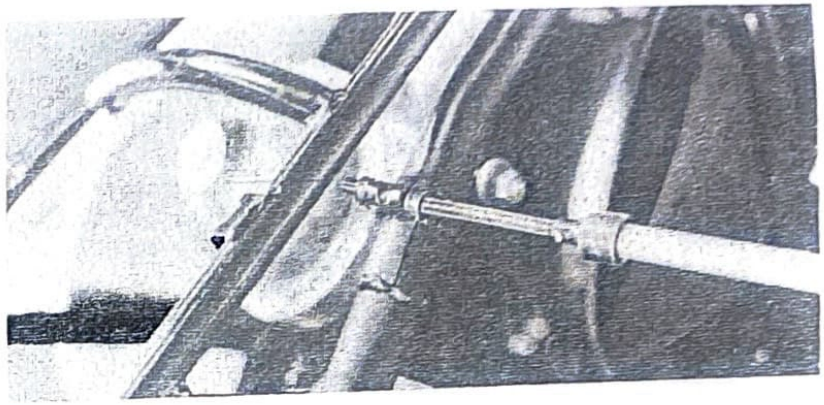
a. Remove the two bolts and remove seat.
b. Remove the securing bolt from fuel tank.

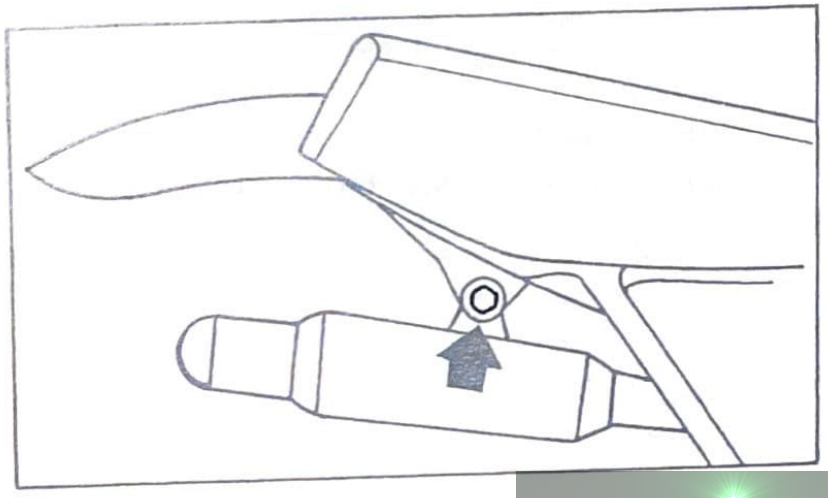


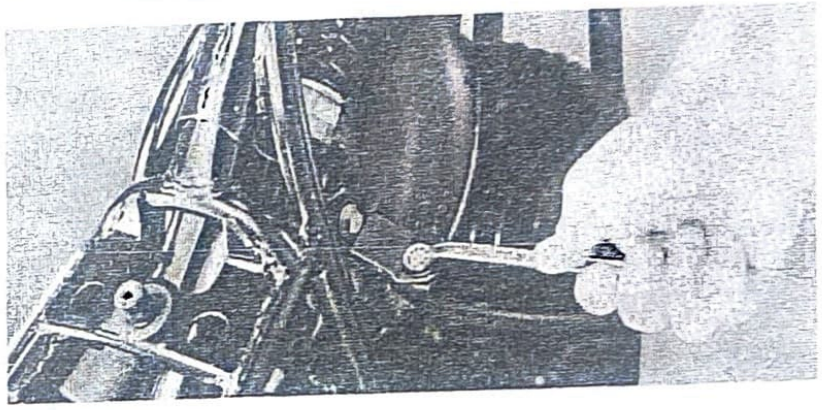
c. Lift rear of fuel tank up and pull back to clear frame mounts. Remove tank. (Before this prosedure, turn the fuel petcock lever to OFF position, then remove fuel pipe and breather pipe.)

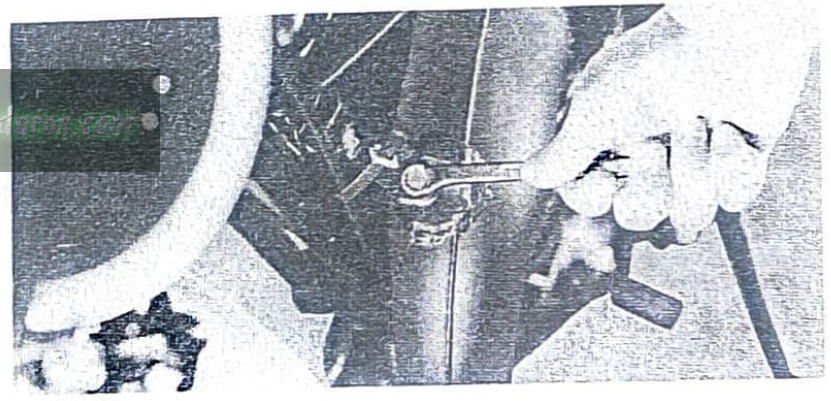


d. Remove the muffler mounting four bolts.

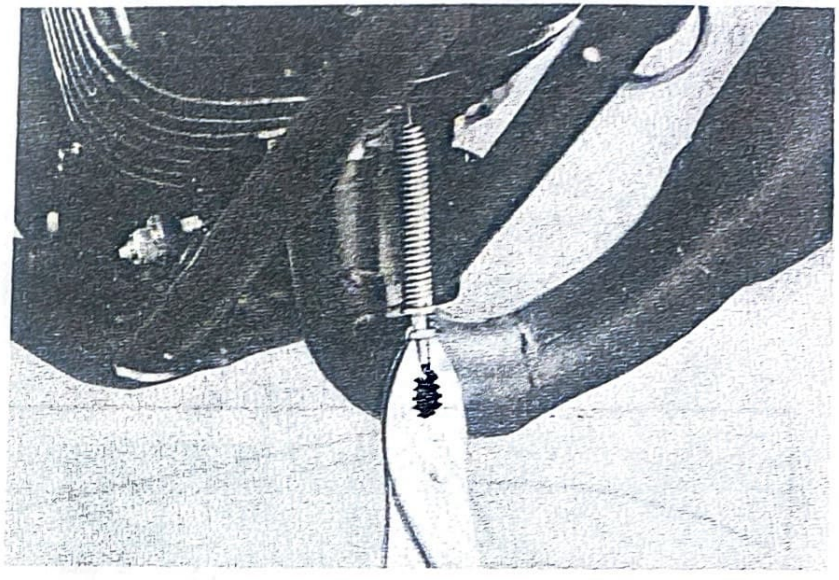




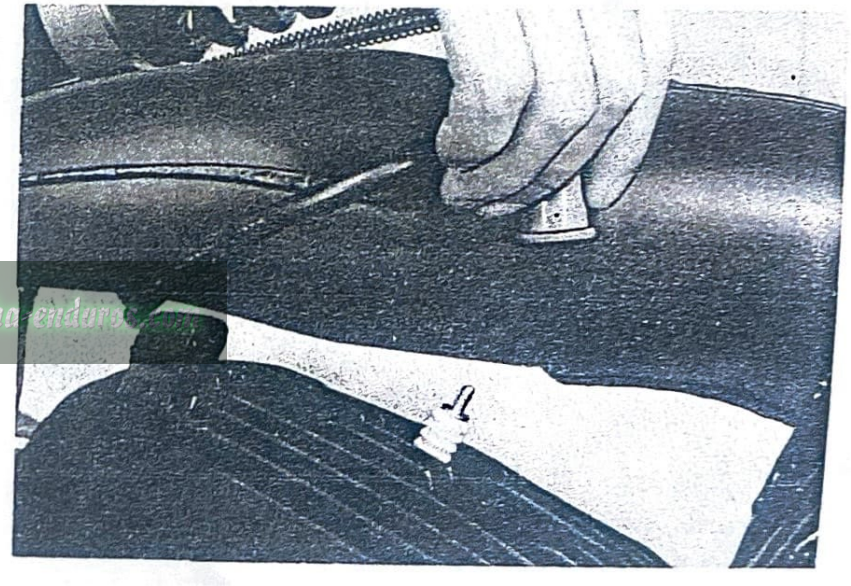




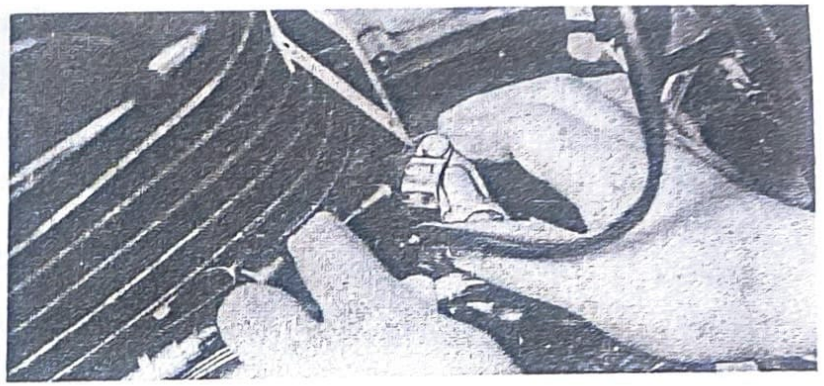
e. Remove coil spring at muffler to cylinder joint.



f. Remove spark plug lead wire and muffler. Loosen, but do not remove spark plug.



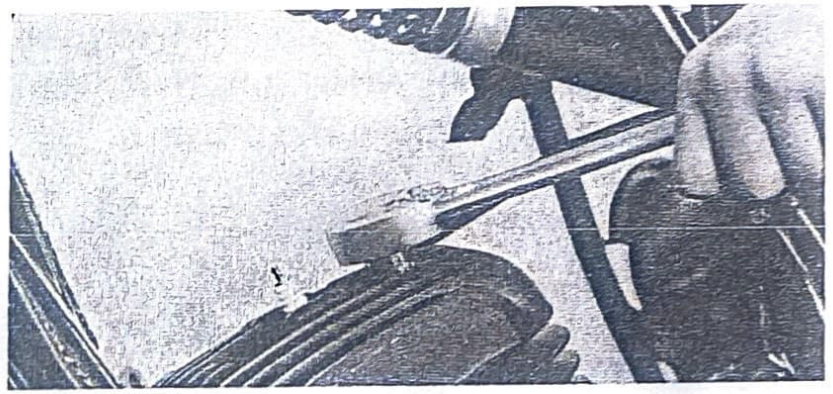
g. Remove the clutch wire.

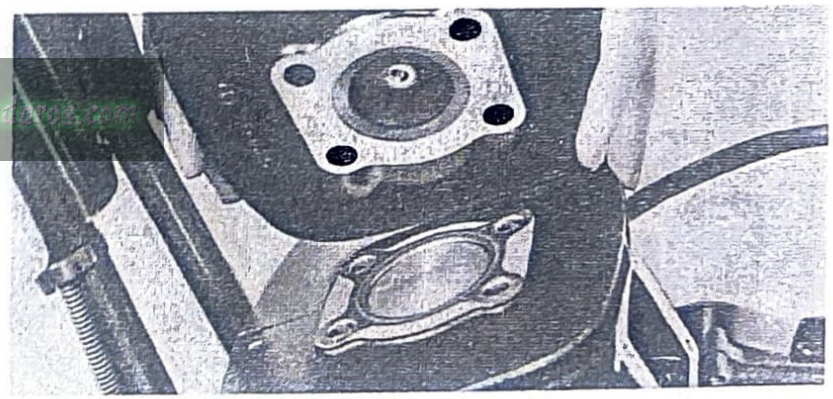


h. Remove nuts securing cylinder and head. Remove cylinder head and gasket.

NOTE:

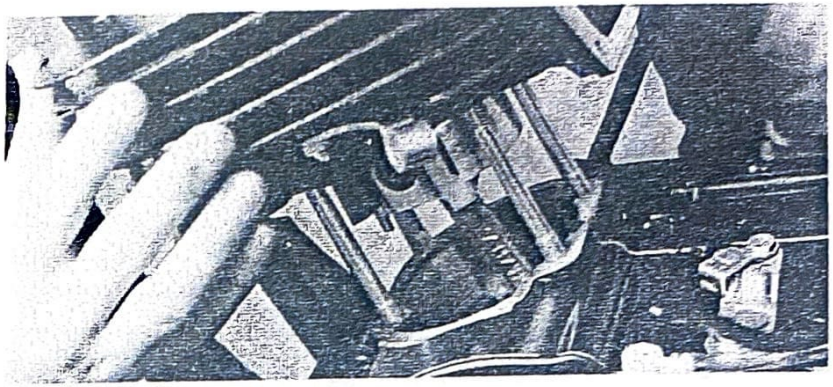
Break each nut loose (1/4 turn) prior to removing.



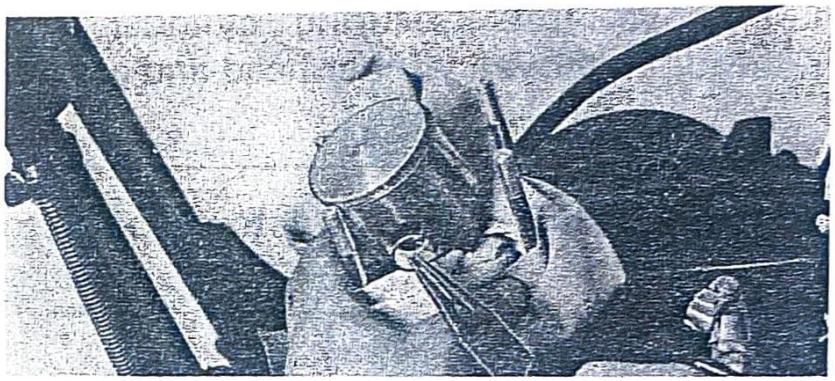


2. Cylinder Removal

a. With the piston at top dead center, raise the cylinder until the cylinder skirts clear crankcase. Stuff a clean shop rag into crankcase cavity, around rod, to prevent dirt and other foreign particles from entering. Remove cylinder.

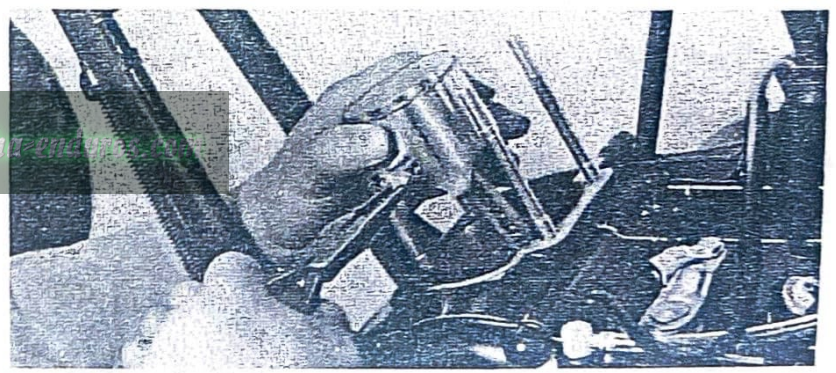


b. Remove the wrist pin clip (1) from the piston. Push the wrist pin out from opposite side. Remove the piston.



NOTE:

If the pin hangs up, use a wrist pin puller. Do not pound on pin as damage to rod, piston and bearing will result.

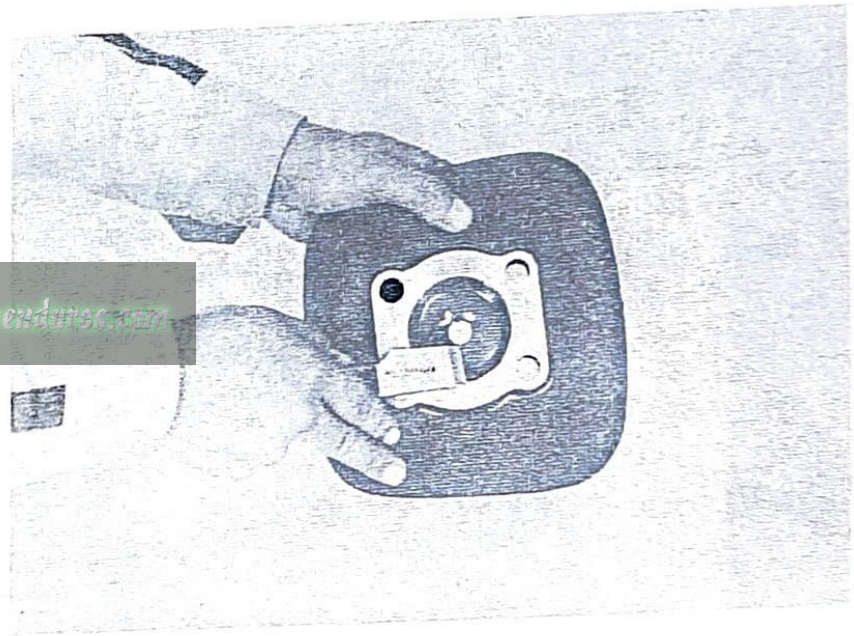


3. Exhaust Pipe Maintenance

a. Using a rounded scraper, remove excess carbon deposits from manifold area of exhaust pipe.
   Check muffler gasket condition. The gasket seat is located around the cylinder exhaust port.
b. Carbon deposits within the silencer may be removed by lightly tapping the outer shell with a hammer and then blowing out with compressed air. Heavy wire, such as a coat hunger, may be inserted to break loose deposits. Use care.
c. Reinstall muffler.

4. Maintenance—Cylinder Head

a. Remove spark plug.
b. Using a rounded scraper, remove carbon deposits from combustion chamber. Take care to avoid damaging the spark plug threads. Do not use a sharp instrument. Avoid scratching the metal surface.

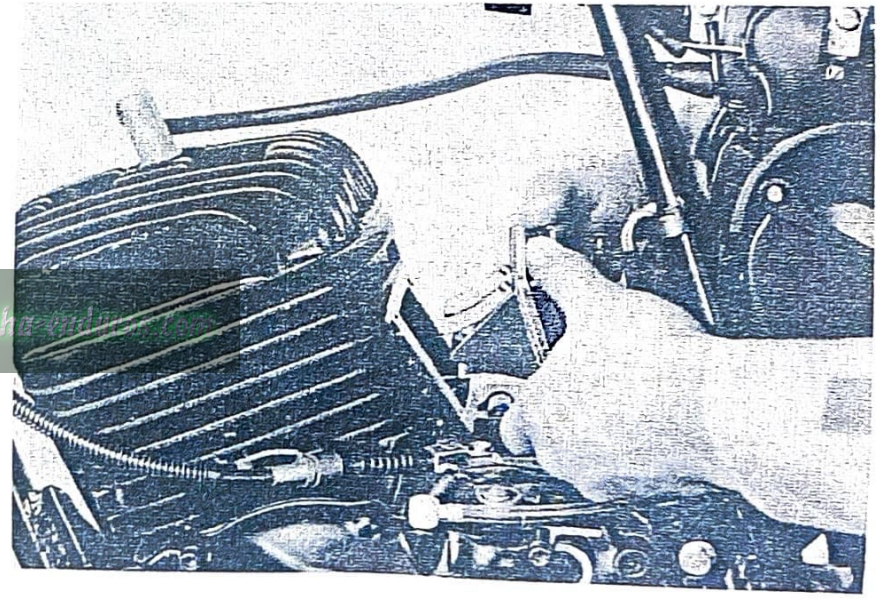


c. Place the head on a surface plate. There should be no warpage. Correct by re-surfacing. Place 400 – 600 grit wet emery sandpaper on surface plate and re-surface head using a figure-eight sanding pattern. Rotate head several times to avoid removing too much material from one side.
d. Clean the spark plug gasket mating surface thoroughly.
e. Wash the head in solvent and wipe dry.
f. Install new cylinder head gasket during reassembly.

Cylinder head bolt torque: 2.0 m-kg (14.5 ft-lb)

5. Maintenance—Cylinder

a. Remove reed valve assembly.



b. Using a rounded scraper, remove carbon deposits from exhaust port.

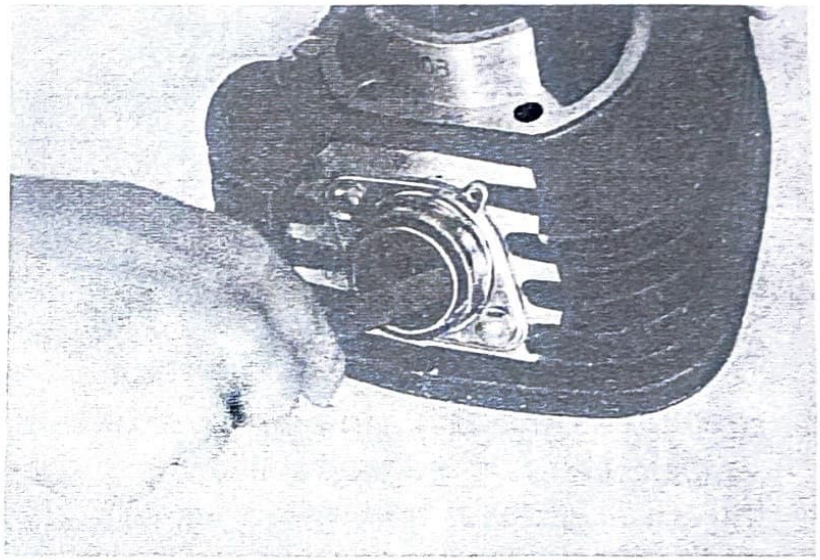
c. Remove cylinder base gasket and clean gasket seat on clyinder and crankcase thoroughly.

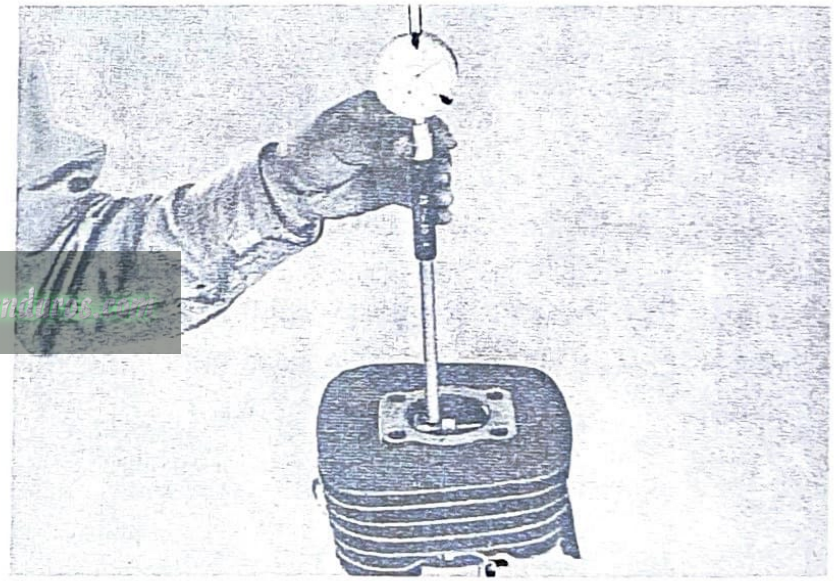
d. Check cylinder bore. Using a cylinder hone, remove any scoring, hone lightly, using smooth stones.
Hone no more than required to avoid excess piston clearance.

e. Using a cylinder gauge set to standard bore size. Measure the cylinder. Measure at six points; at top, center, and from bottom of skirts. Compare minimum and maximum mesurement. If over tolerance. And not correctible by honing, re-bore to next over size.

f. Clean cylinder in solvent, then wash with hot soapy water. Dry. Coat walls with light oil film.

g. During re-assembly always use a new cylinder base gasket.

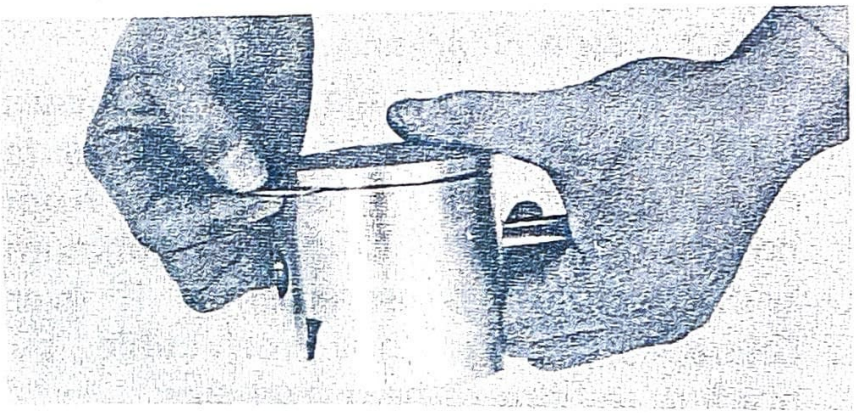




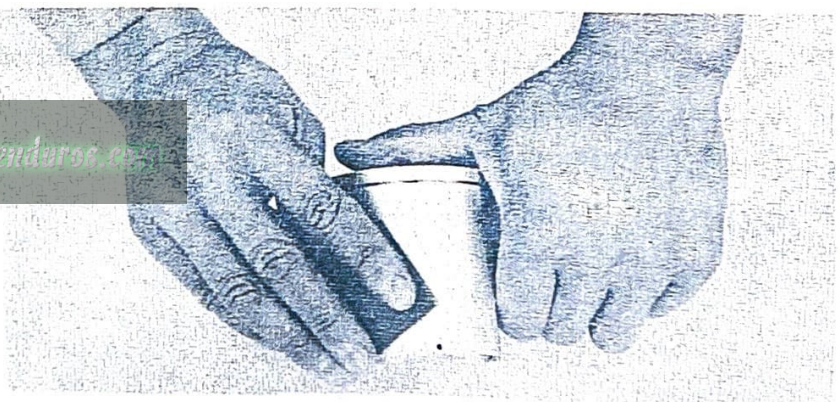
6. Maintenance—Piston

a. Using a rounded scraper, remove carbon deposits from piston crown.

b. Break a used piston ring in two. File end square. De-burr edges to avoid scratching ring groove and clean carbon deposits from ring groove.

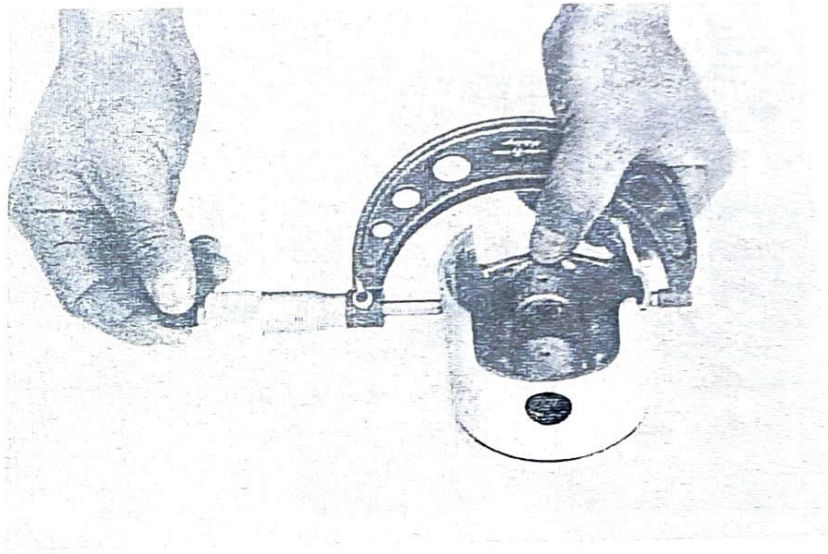


c. Using 400 – 600 grit wet sandpaper, lightly sand score marks and lacquer deposits from sides of piston. Sand in cross-hatch pattern. Do not sand excessively.



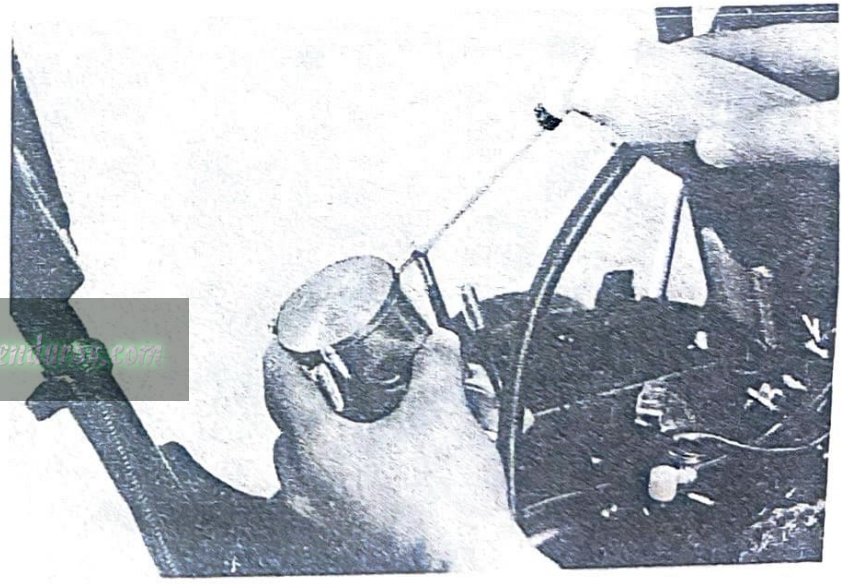
d. Wash piston in solvent and wipe dry.

e. Using an outside micrometer, measure piston diameter. The piston is cam-ground and tapered. The only measuring point is at right-angles to the wrist pin holes about 12.7 mm (0.5 in) bottom of the piston skirts. Compare piston diameter to cylinder bore measurements (bottom two measurements at right angles to wrist pin line).
Piston maximum diameter subtracted from minimum cylinder diameter gives piston clearance. If beyond tolerance, replace piston or cylinder as required.



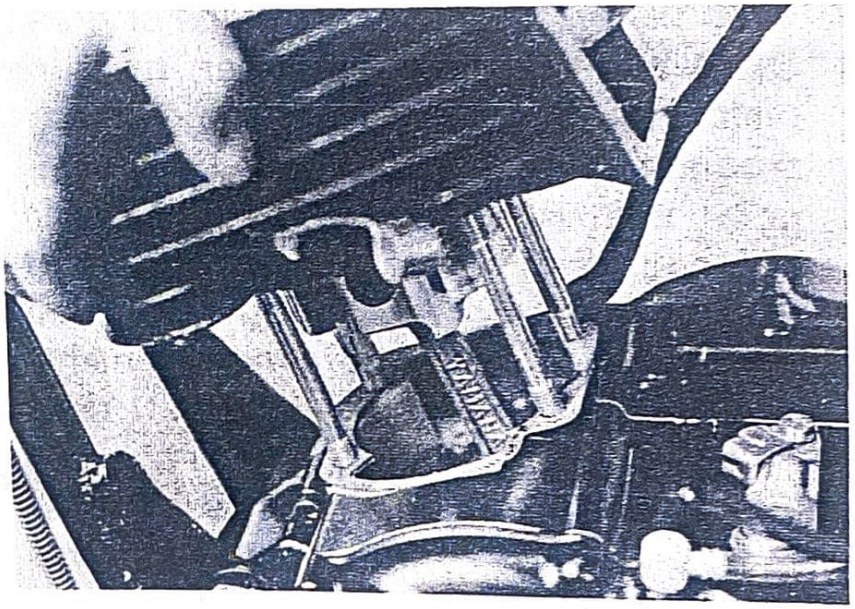
Nominal piston clearance:
0.045 – 0.050 mm
(0.0017 – 0.0020 in)

Maximum wear limit: 0.1 mm
(0.0039 in)



f. During re-assembly, coat the piston skirt areas liberally with two-stroke oil.

g. Install new wrist pin circlips and make sure they are fully seated within their grooves.
h. Take care during installation to avoid damaging the piston skirts against the crankcase as the cylinder is installed. Note the arrow on piston dome must face forward.
i. Make sure the ring is properly seated as the cylinder is installed.

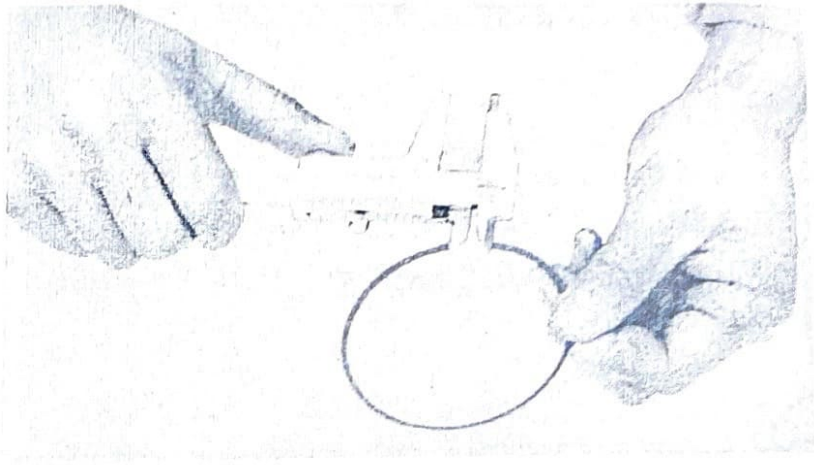


7. Maintenance—Piston Ring

a. Remove ring from piston.

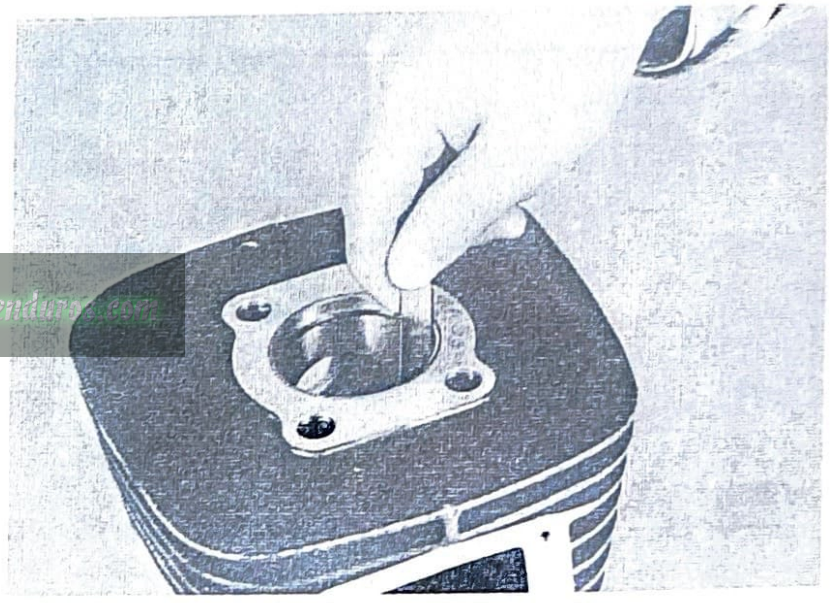
b. Measure ring end gap in free position. If beyond tolerance, replace.

Ring end gap, free: 7 mm (0.276 in)



c. Insert ring into cylinder. Push down approximately 3/4" using piston crown to maintain right-angle to bore. Measure installed end gap. If beyond tolerance, replace.

Ring end gap, installed: 0.4 – 0.5 mm (0.016 – 0.020 in)



d. Holding cylinder towards light, check for full seating of ring around bore. If not fully seated, check cylinder. If cylinder not out-of-round, replace it.
e. During installation, make sure ring ends are properly fitted around ring location pin in piston groove. Apply liberal coating of two-stroke oil to ring.

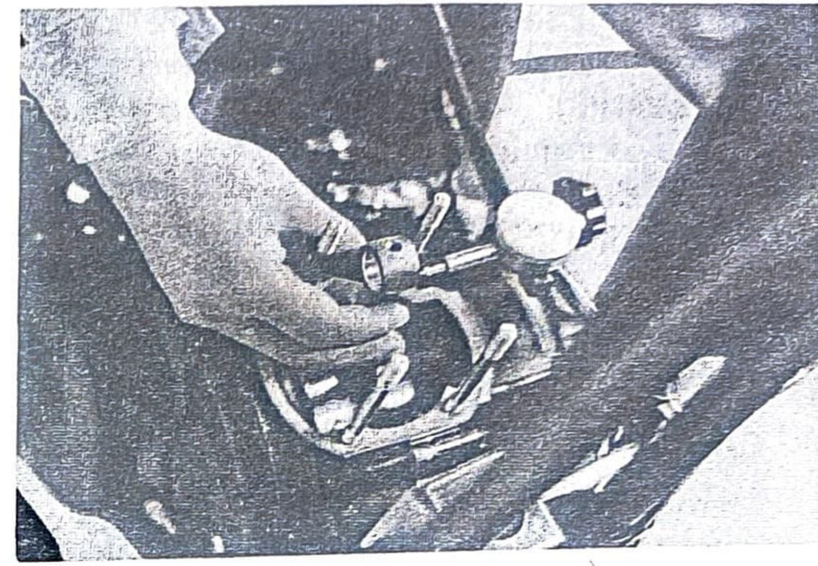
NOTE:

New ring requires break-in. Follow first portion of new machine break-in procedure.

8. Maintenance—Wrist Pin, Bearing and Connecting Rod

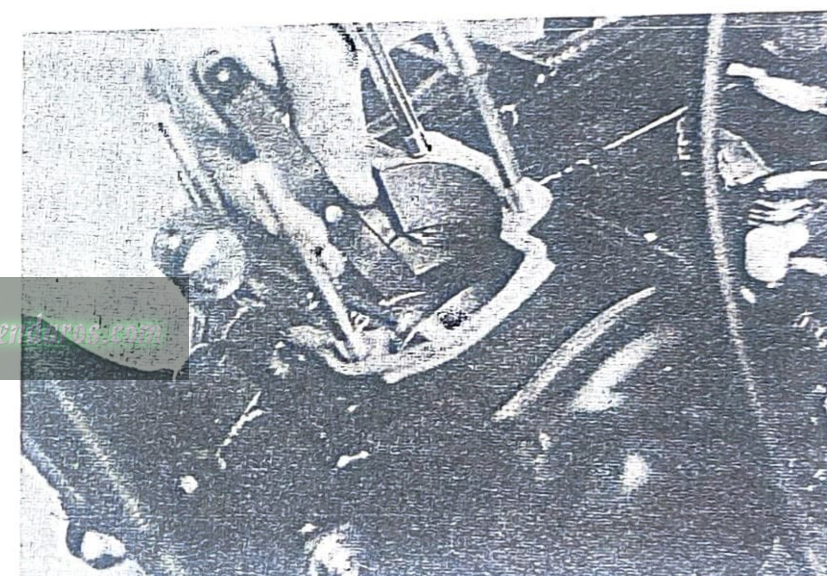
a. Check the pin for signs of wear. If any wear is evident, replace pin and bearing.
b. Check thypin and bearing for signs of heat discoloration. If excessive (heavily blued), replace both.
c. Check the bearing cage for excessive wear. Check the rollers for signs of flat spots. If found, replacypin and bearing.
d. Apply a light film of oil to pin and bearing surfaces. Install in connecting rod small end.
Check for play. There should be no noticeable vertical play. If play exists, check connecting rod small end diameter and wear. Replacy pin and bearing or all as required.

e. Mount the dial gauge at right angles to the connecting rod small end holding the bottom of rod toward the dial indicator, rock top of rod and measure axial play.



Connecting rod axial play:
0.8 – 1.0 mm (0.03 – 0.04 in)

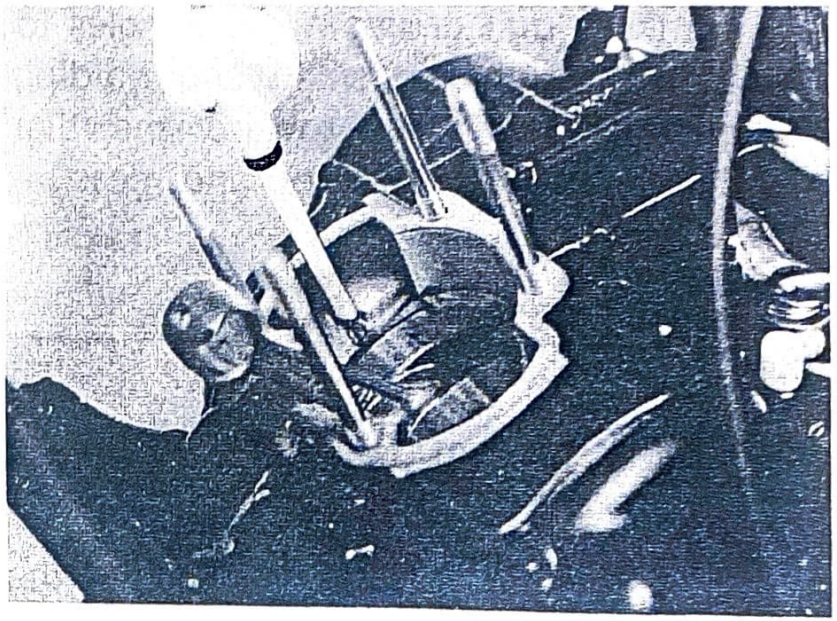
f. Remove the dial gauge and slide the connecting rod to one side. Insert a feeler gauge between the side of the connecting rod big end and the crank wheel. Measure clearance.



Connecting rod/crank clearance:
0.4 –0.5 mm (0.016 – 0.020 in)

g. If any of the above measurements exceed tolerance, crankshaft repair is required. Take the machine to your Authorized Dealer.

h. During reassembly, apply a liberal coating of two-stroke oil to the wrist pin and bearing. Apply several drops of oil to the connecting rod big end. Apply several drops of oil into each crankshaft bearing oil delivery hole.

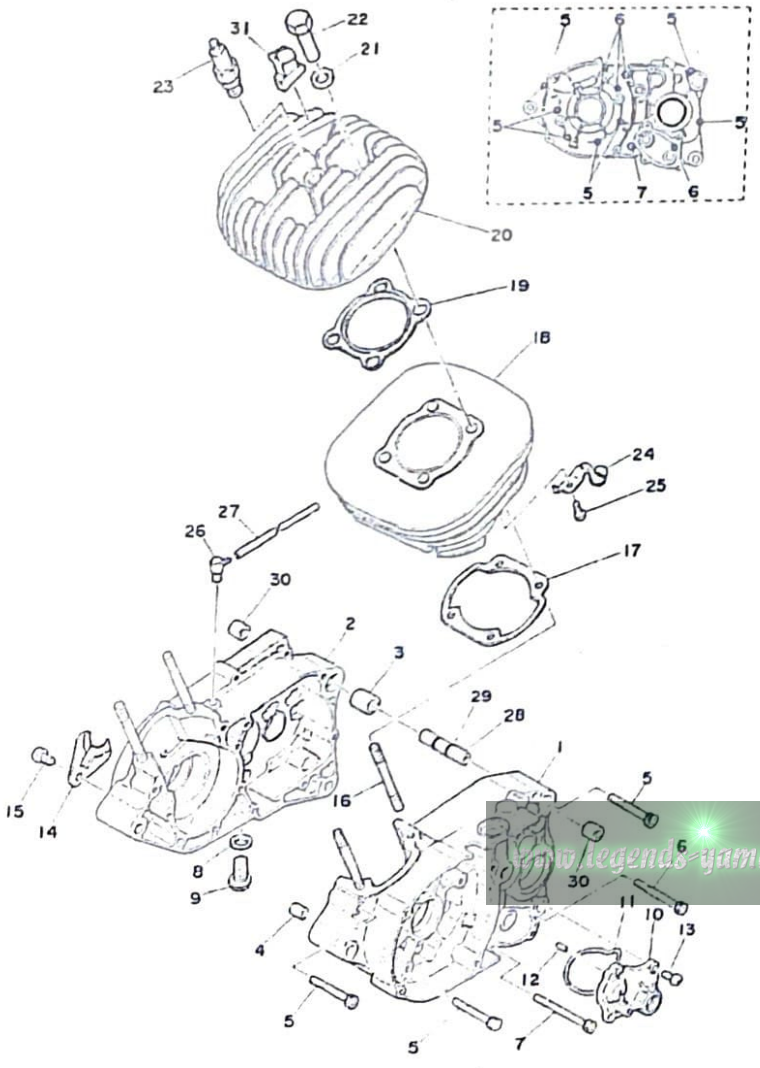


9. Troubleshooting—Top End and Muffler

The following procedure will indicate if top end disassembly is required.

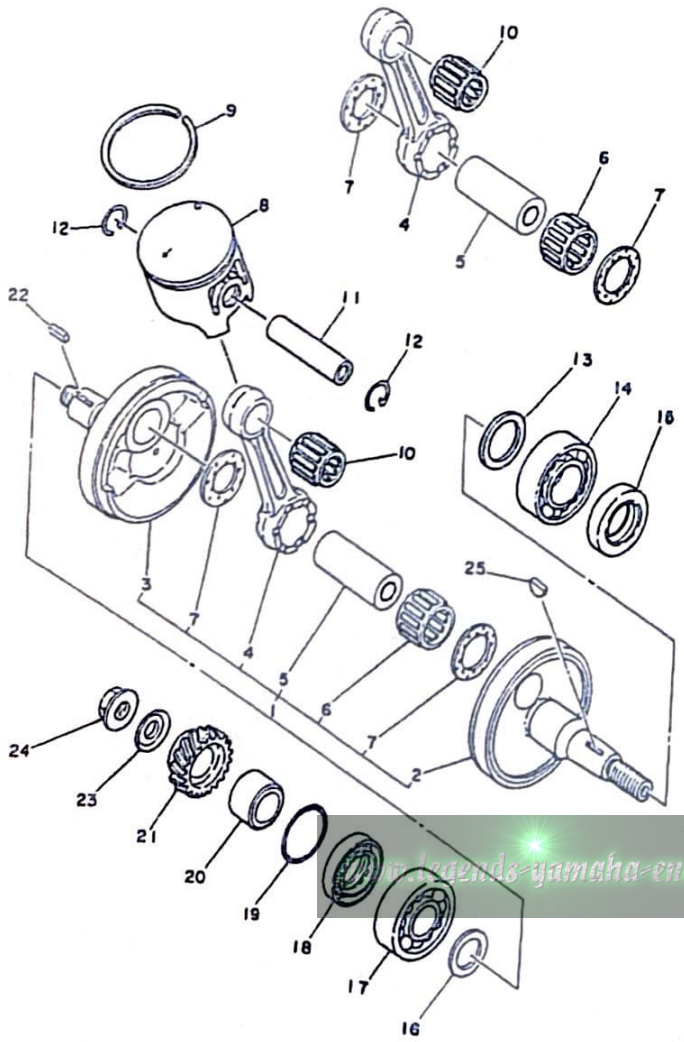
a. Warm up engine. Insert compression gauge into spark plug hole. With ignition off and throttle on, kick engine over briskly several times. If compression measurement exceeds tolerances, disassemble top end complete.
b. Make a spark plug reading. Adjust spark plug and or carburetion as required.
c. Decarbonize muffler/spark arrester assembly. Remove cylinder head and make thorough visual inspection. Decarbonize cylinder head and piston crown. Take care that carbon does not drop into crankcase cavity or foul ring grooves. Reassemble.

CRANKCASE · CYLINDER



1. Crank case left
2. Crank case right
3. Dowel pin
4. Dowel pin
5. Socket head bolt
6. Socket head bolt
7. Socket head bolt
8. Gasket
9. Drain plug
10. Shifter cover
11. Rubber ring
12. Dowel pin
13. Panhead screw
14. Right holder
15. Panhead screw
16. Stud bolt
17. Cylinder gasket
18. Cylinder
19. Cylinder head gasket
20. Cylinder head
21. Plate washer
22. Nut
23. Spark plug
24. Clutch wire holder
25. Bolt
26. Breather
27. Hose
28. Engine mount spacer
29. O-ring (2.4-10.8)
30. Engine mount damper
31. Absorber

CRANK · PISTON

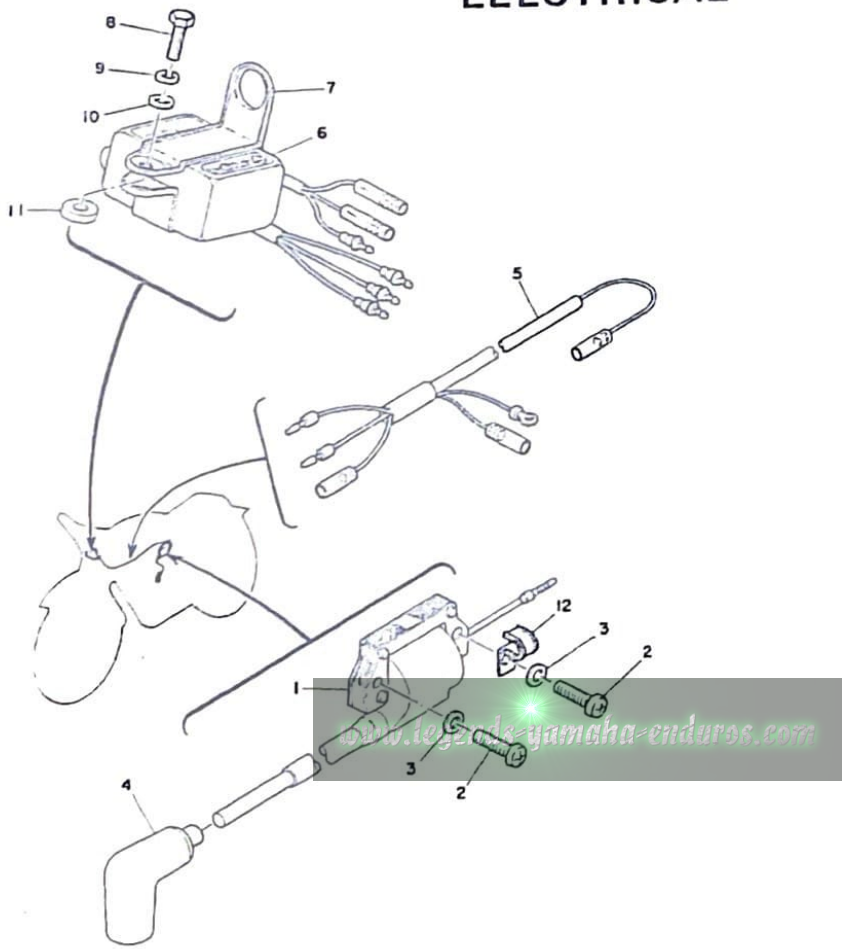


1. Crank ass'y
2. Crank, left
3. Crank, right
4. Connecting rod
5. Crank pin
6. Big end bearing
7. Thrust washer
8. Piston
9. Piston ring
10. Small end bearing
11. Piston pin
12. Circlip
13. Crank shim
14. Crank bearing (6205C4SH)
15. Oil seal (MHSA-25-40-8)
16. Crank shim
17. Crank bearing (6304C3)
18. Oil seal (MHSD-28-40-8)
19. O-ring (1.2-17.6)
20. Distance collar
21. Primary drive gear
22. Straight key
23. Washer
24. Nut
25. Woodruff key

SECTION D. IGNITION

C.D.I. Ignition Requires No Periodic Maintenance

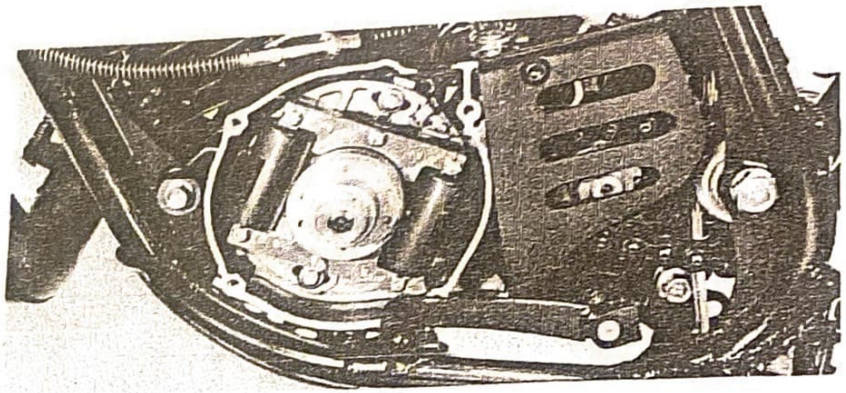
ELECTRICAL

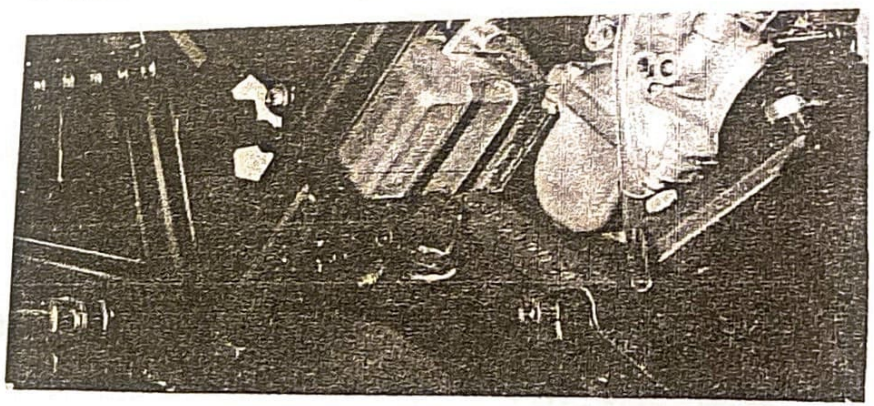


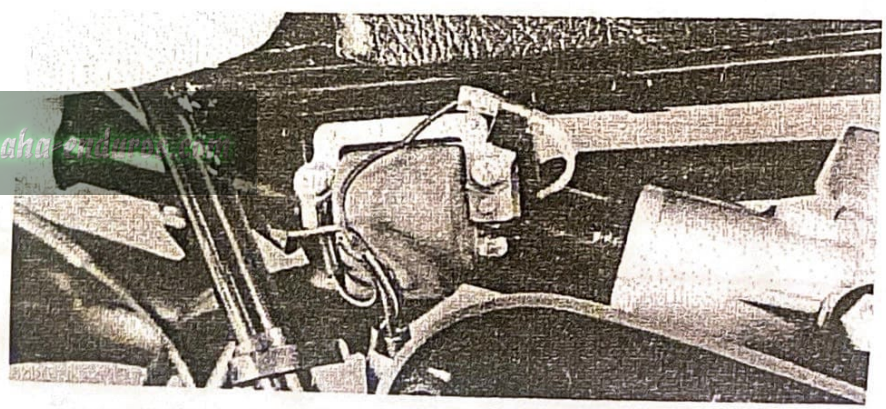
1. Ignition coil ass'y
2. Panhead screw
3. Plain washer
4. Plug cap ass'y
5. Sub lead wire
6. C.D.I. unit ass'y
7. C.D.I. unit bracket
8. Bolt
9. Spring washer
10. Plate washer
11. Plate washer
12. Clamp

1. Location of Components

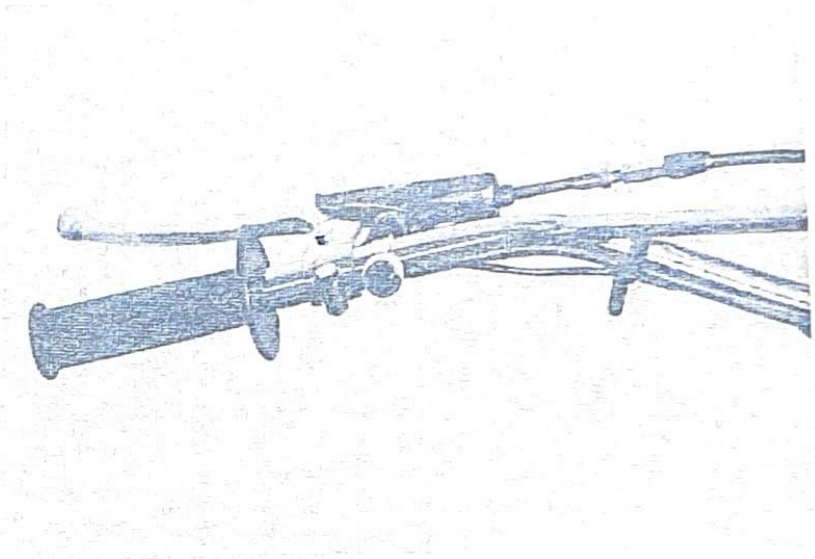
The system consists of a magneto, a coil and a C.D.I. unit. The magneto is located behind the case on the left side of the engine. The C.D.I. unit is located at the rear of the carburetor and secured to the air filter case, and the ignition coil is mounted on the frame left above the air filter.







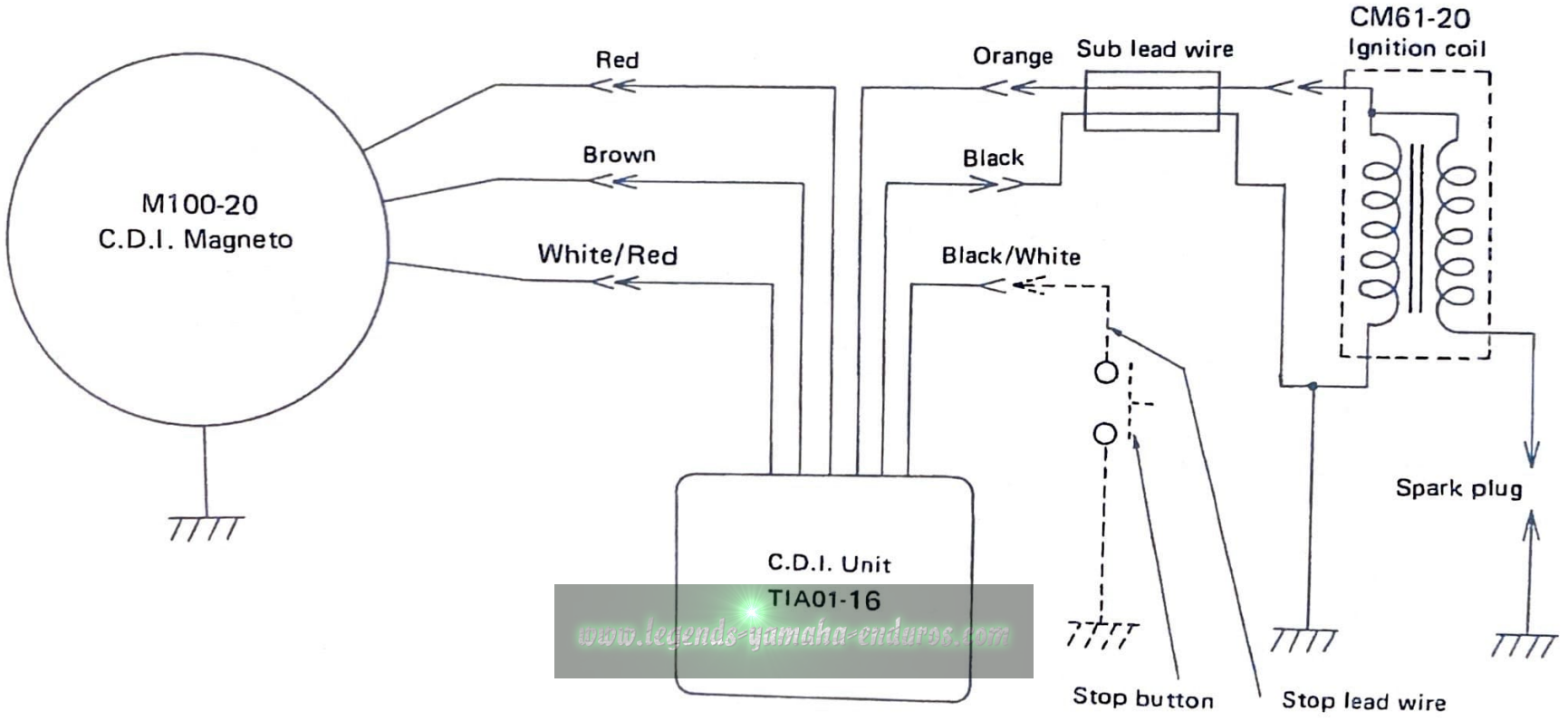
A Engine stop switch is located on the left handle bar to stop the engine.



2. Troubleshooting

a. Check for spark at spark plug—if no spark, check connectors.
b. If connections are clean and tight, refer to CHAPTER IV. SECTION F. Ensure that the timing is correct.
Any further troubleshooting of the C.D.I. system must be performed by your Yamaha Dealer.

3. Wiring Diagram



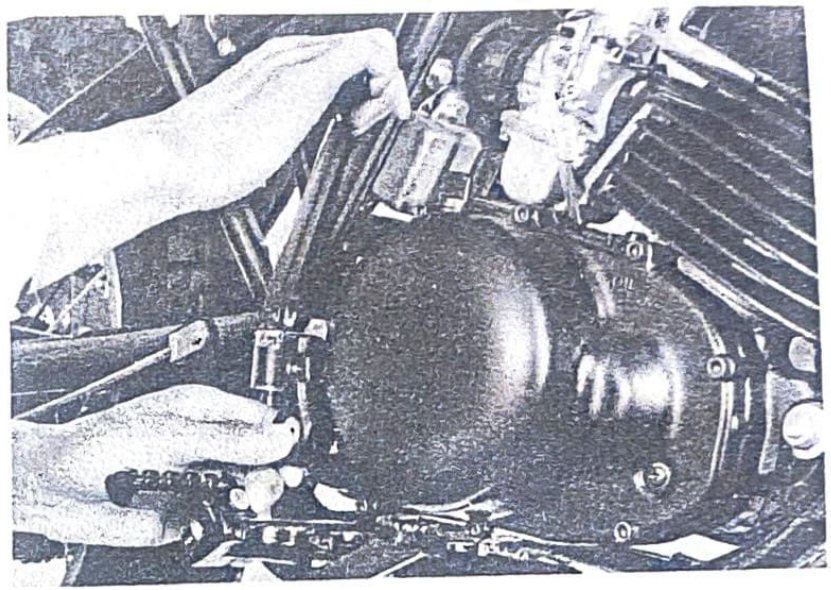
SECTION E. CLUTCH, SHIFTER, AND KICK STARTER

NOTE:

Clutch adjustment is covered in Chapter V, "Mechanical Adjustments".

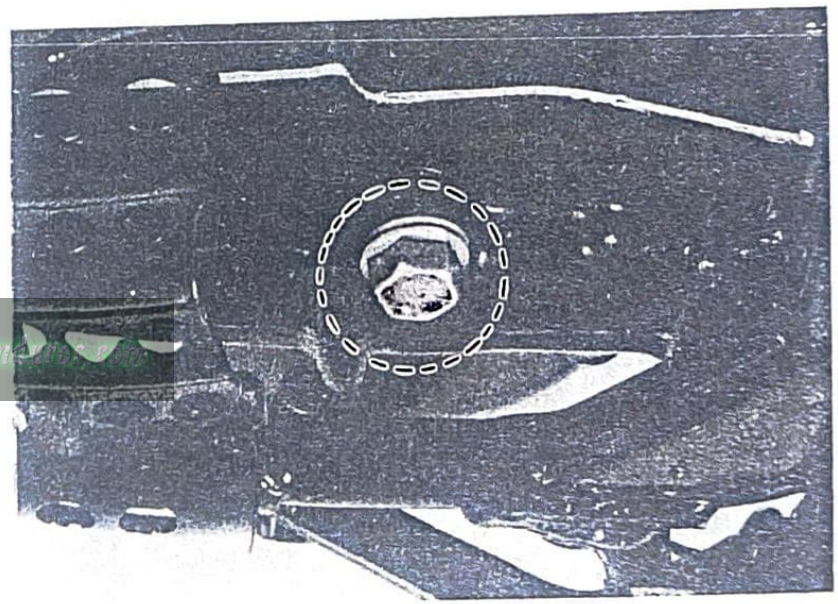
1. Kick Starter and Crankcase Cover (R) Removal

a. Remove the kick starter lever and oil plug.



b. Remove the drain plug (bolt) and drain the transmission oil.

c. Remove the Allen bolts (9) holding the side cover in place and remove the cover.
Note the position of the dowel pins.

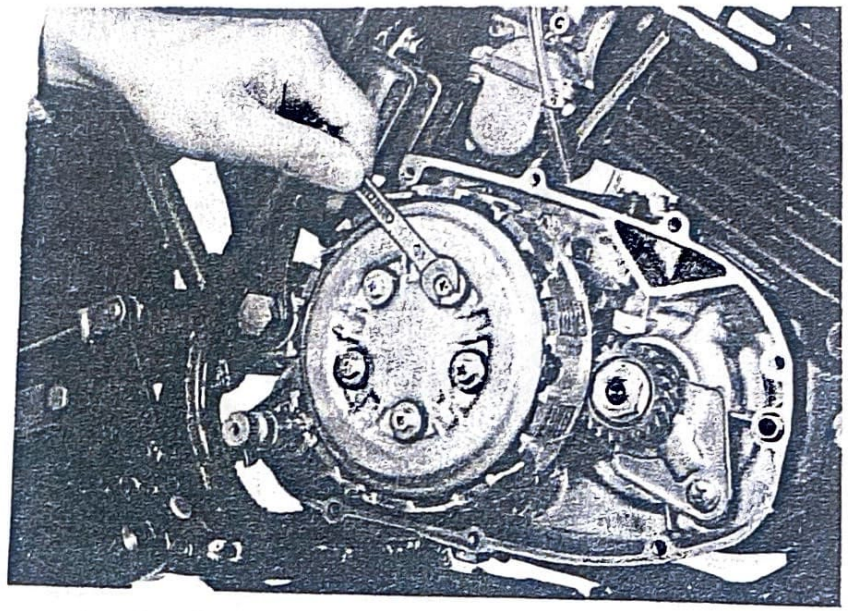


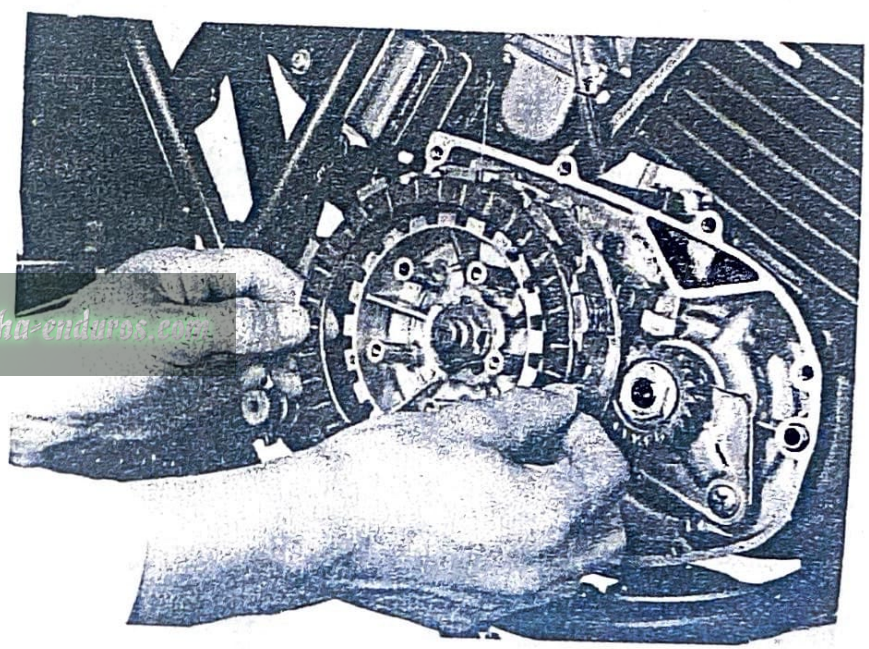
2. Clutch and Kick Axle Assembly Removal

a. Remove the phillips (hexagon) screws (6) holding the pressure plate. Remove the clutch springs (5) pressure plate and push rod. Remove the clutch plates and friction plates.

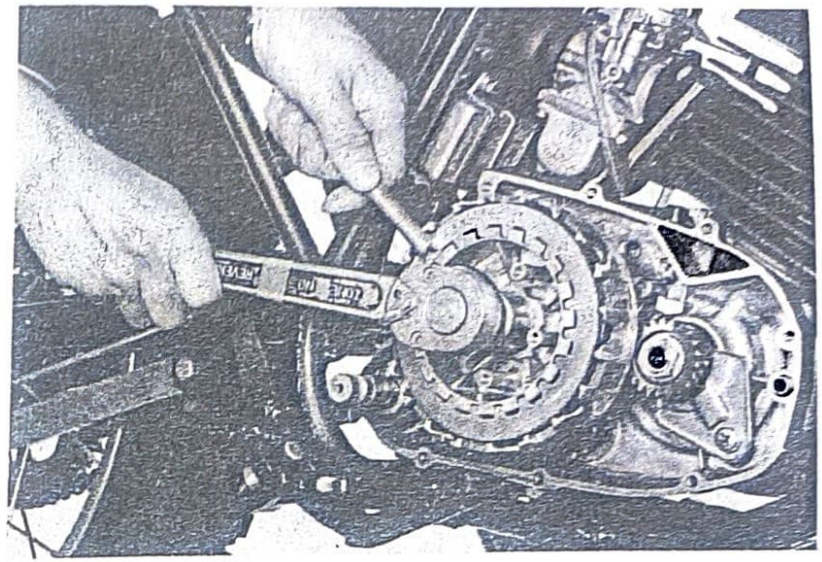
NOTE:

When removing phillips (hexagon) spring screws. loosen each screw in several stages working in a cross-hatch pattern to avoid any unnecessary warpage. Note the condition of each piece as it is removed and its location with the assembly.

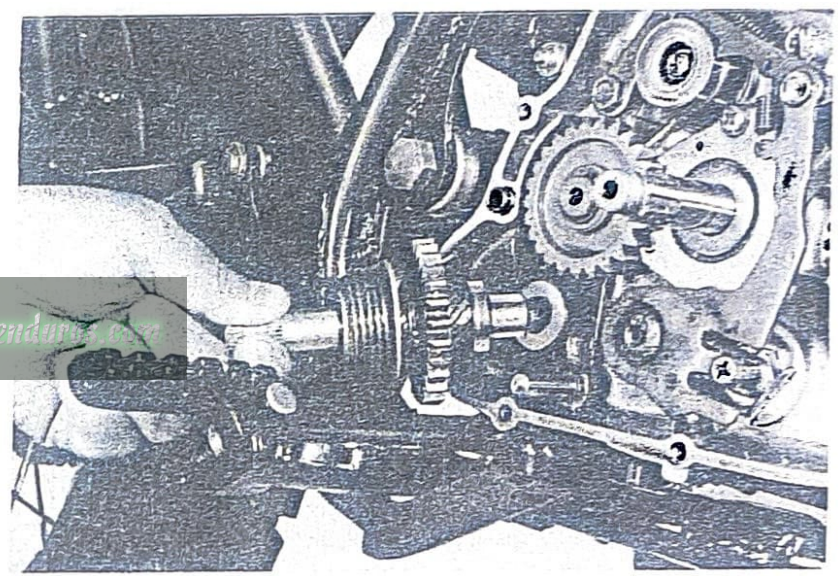




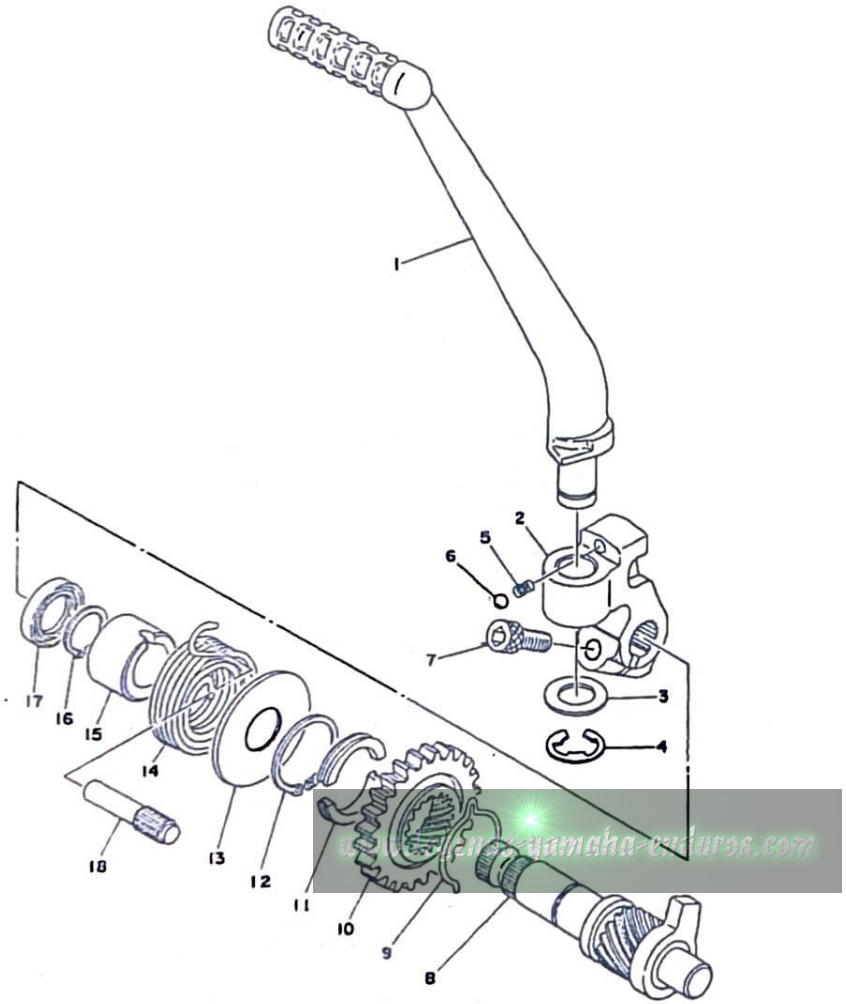
b. Using the clutch holding tool (special tool), remove the clutch securing nut and lockwasher. Remove the clutch boss and driven gear (clutch housing).



c. If the clutch housing spacer remains on the transmission main shaft, remove it. Remove the thrust plate.
d. Unhook the kick spring from its post in the crankcase. Allow it to relay. Then remove the kick axle assembly by rotating the shaft counter clockwise and then pulling out the entire assembly, check to see that the kick gear spirals freely on the worm shaft. Check the gear teeth for wear and breakage.



KICK STARTER

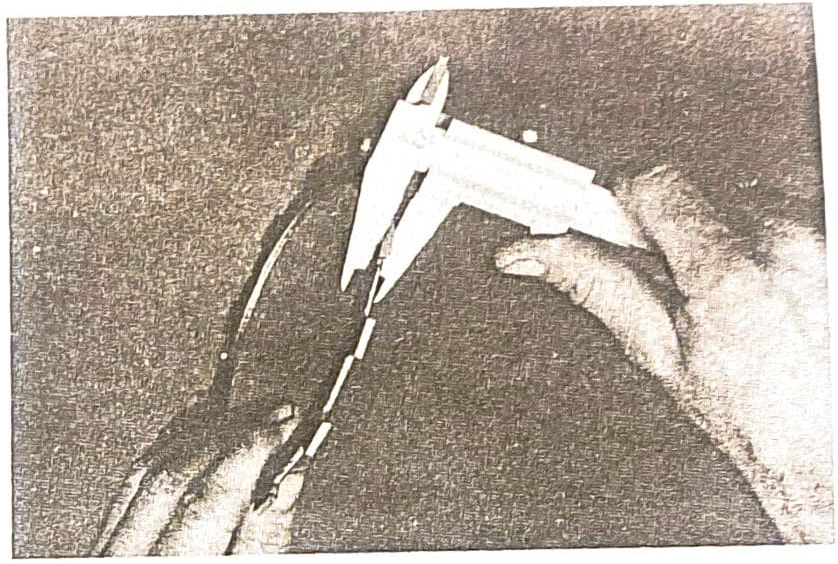


1. Kick crank
2. Kick crank boss
3. Plate washer
4. Circlip (E-10)
5. Stopper spring
6. Stopper ball (7/32 inch)
7. Bolt
8. Kick axle ass'y
9. Clip
10. Kick gear
11. Kick gear holder
12. Circlip (S-30)
13. Spring cover
14. Return spring
15. Spacer
16. Circlip (S-17)
17. Oil seal (S-17-25-4)
18. Kick spring stopper

3. Troubleshooting—Clutch Assembly

a. Measure the friction plates at three or four points. If their minimum thickness exceeds tolerance, replace.

Friction plate thickness:
3 mm (0.118 in)



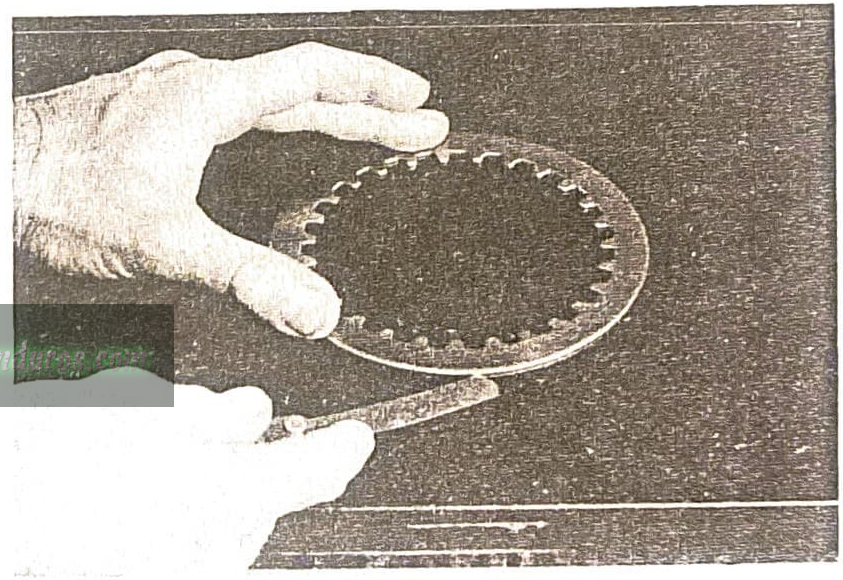
b. Check the plates for signs of warpage and heat damage, replace as required.

NOTE:

For optimum performance, if any plate requires replacement, it is advisable to replace the entire set.

c. Check each clutch plate for signs of heat damage and warpage. Place on surface plate (plate glass is acceptable) and use feeler gauge.

Clutch plate warp allowance: None

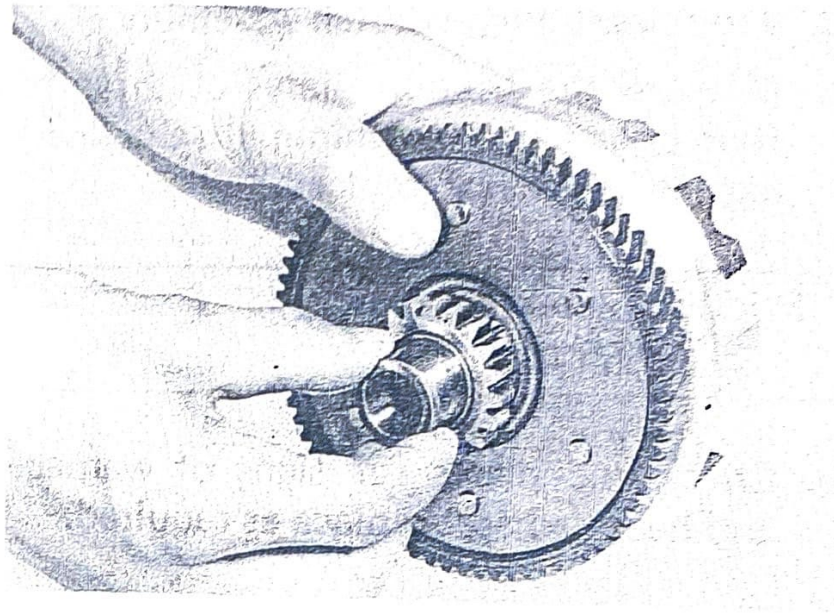


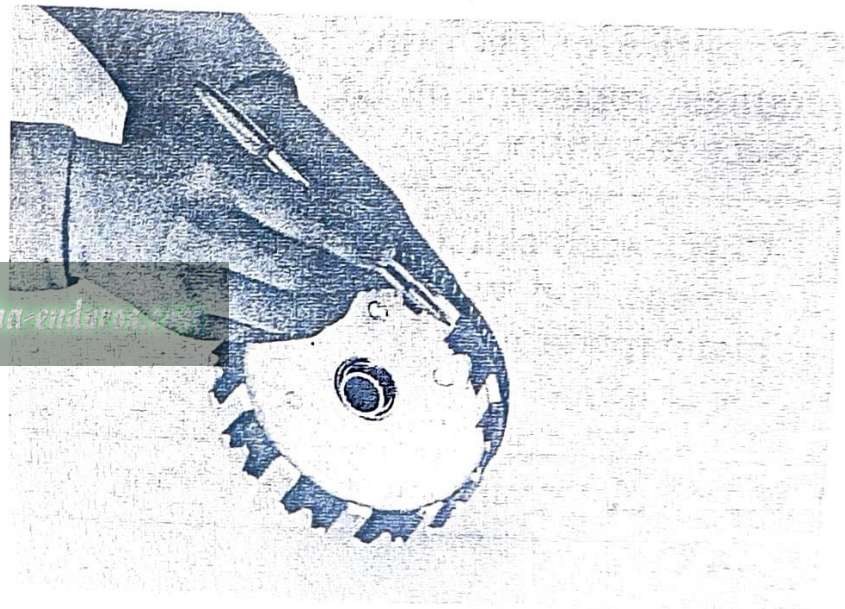
d. Thoroughly clean the clutch housing and spacer. Apply a light film of oil on the bushing surface and spacer. Fit the spacer into the bushing. It should be a smooth, thumb-press fit. The spacer should rotate smoothly within the bushing. If appropriate measuring devices are available, measure the minimum I.D. of the bushing spacer. If beyond tolerance, have dealer replace bushing and refit.

e. Check the bushing and spacer for signs of galling, heat damage, etc. If severe, replace as required.

f. Apply thin coat of oil on transmission on main shaft and bushing spacer I.D. Slip spacer over main shaft. Spacer should fit with approximately same "feel" as in clutch housing. Replace as required.
See measurement tolerances.

g. Check dogs on driven gear (clutch housing). Look for cracks and signs of galling on edges. If moderate, deburr. If severe, replace.





h. Check splines on clutch boss for signs of galling. If moderate, deburr. If severe, replace.

NOTE:

Galling on either the friction plate dogs of the clutch housing or clutch plate splines of the clutch boss will cause erratic clutch operation.

i. Fit the clutch thrust bearing (two pieces) against the thrust plate with a light film of oil on all parts. Check for smooth rotation. Check for signs of excessive wear, all parts. Replace as necessary.

j. If clutch operation has been abnormal, and the above procedures show no major failures, install the clutch housing on the transmission main shaft with thrust plates, bearing spacer, and clutch boss in their proper positions for re-assembly. Do not install clutch or friction plates. Install bevelled lock washer and clutch securing nut. Torque to standard assembly value.

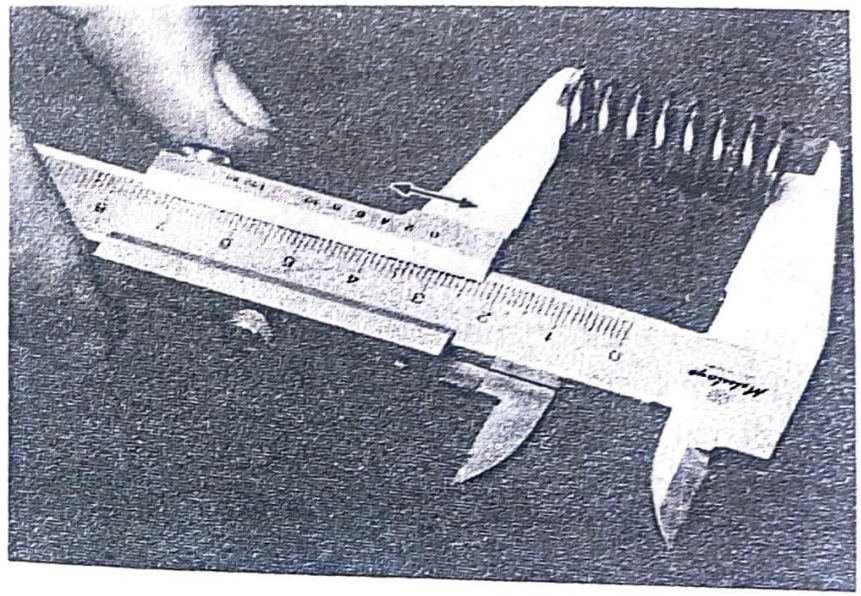
k. With transmission in neutral, primary driven gear stationary, clutch boss should turn without excessive drag within the clutch housing. If housing does not turn easily, indicating insufficient housing end play, check thrust plates and thrust bearing for incorrect thickness. Correct by installing thinner thrust plates. Clutch housing end play is given in table and can be measured with a dial gauge.

l. Measure each clutch spring. If beyond tolerance, replace.

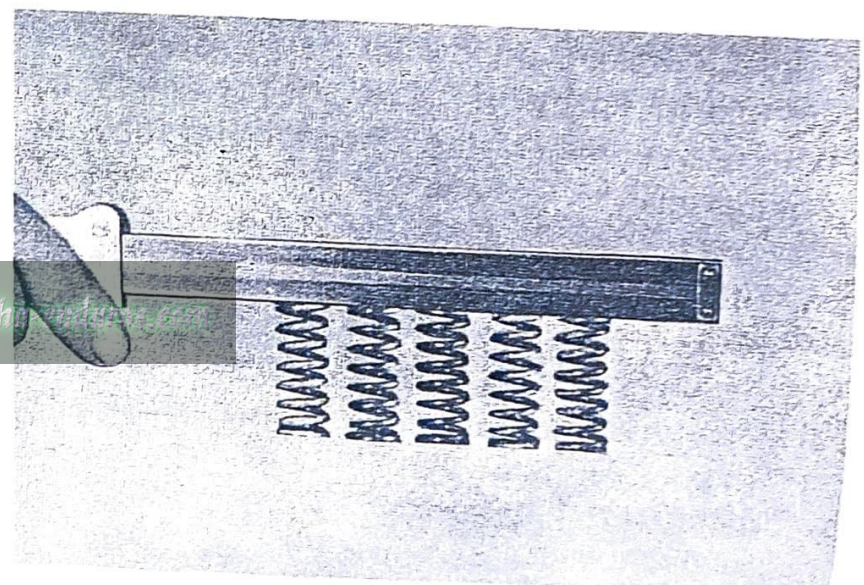
Clutch spring free length: 36 mm (1.42 in)

NOTE:

For optimum clutch operation it is advisable to replace the clutch springs as a set if one or more are faulty.



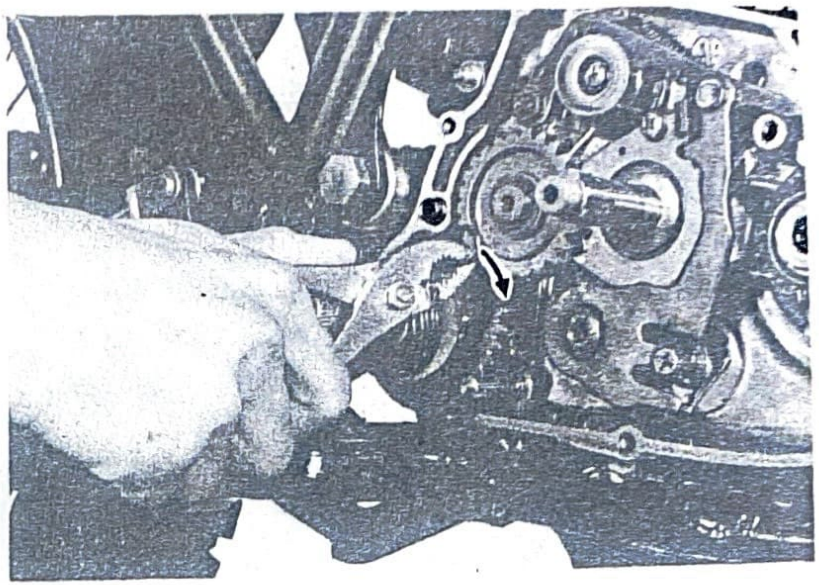
m. Stack the clutch spring set on a level surface. Rotate each spring until all are at approximately the same vertical angle and maximum apparent height. Place straight edge across et. If any spring exceeds tolerance, replace that spring.



4. Reassembly

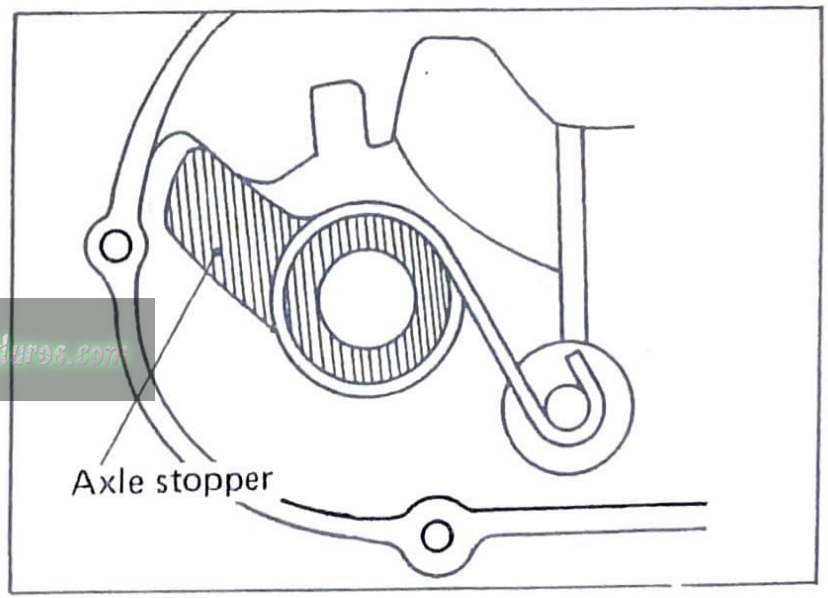
Install all parts with a heavy coat at 10W-30 motor oil on their mating surface.

a. The kick axle is fitted with the stopper, if axle is located in the wrong position to the case, it bits the stopper on the case side and cannot be correctly set. Fit the axle stopper within the limits shown in the illustration.
After that engage the end of the kick spring on the hook.



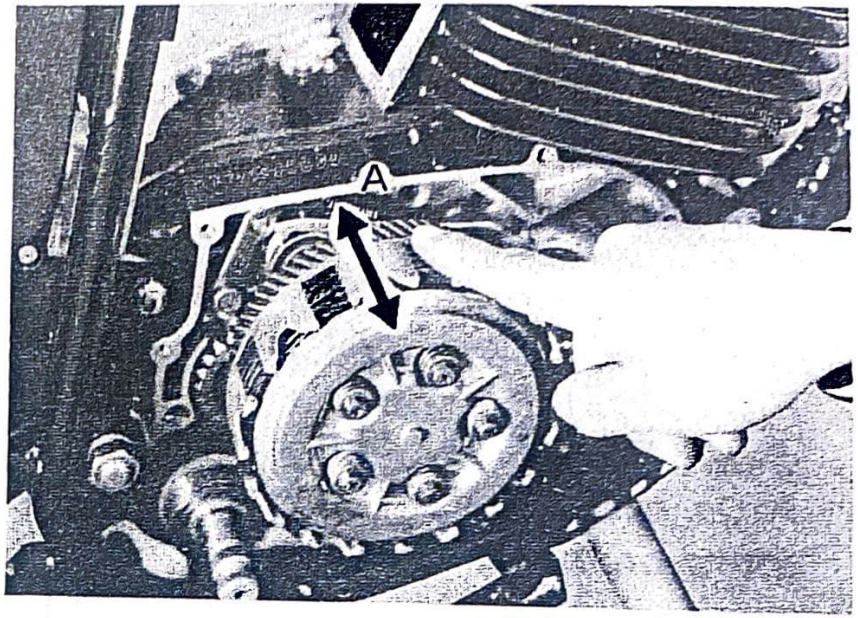
CAUTION:

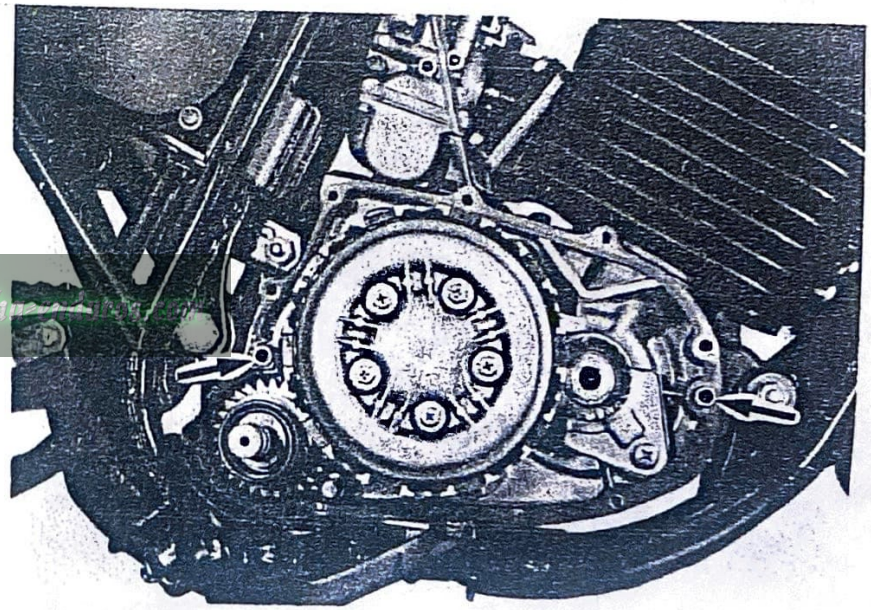
Do not forget to install the push rod (1).



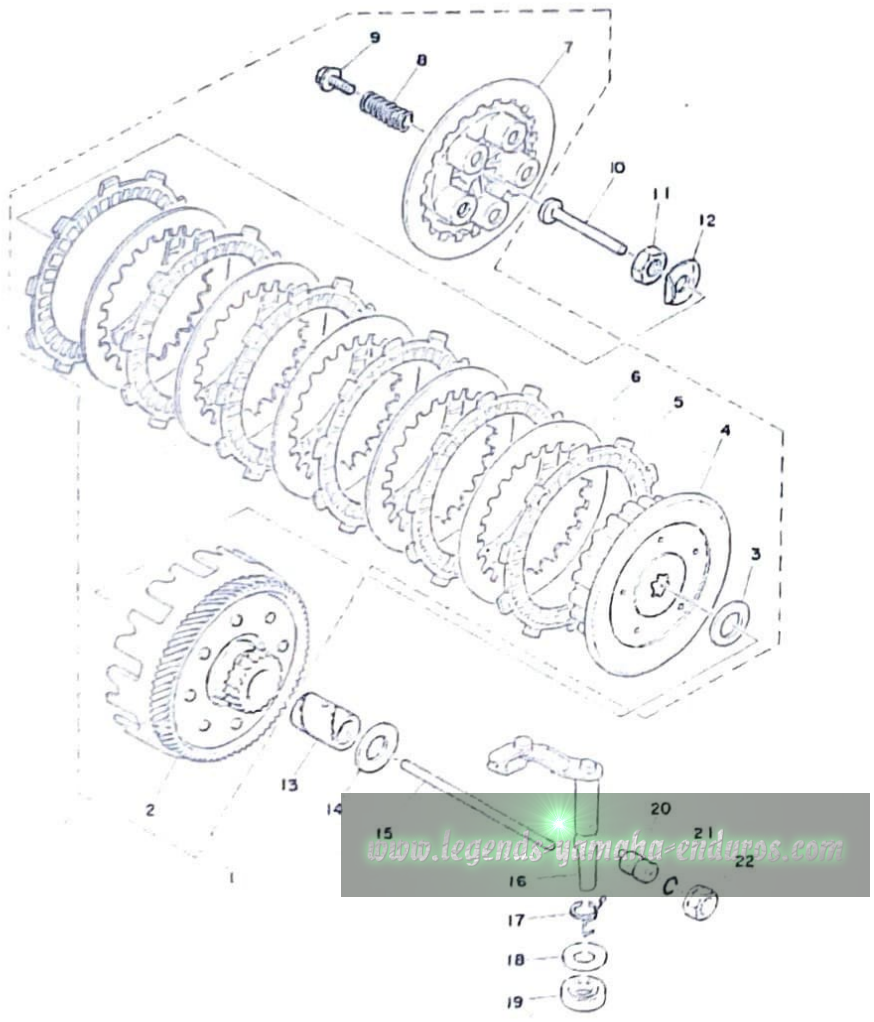
NOTE:

1. After installing the clutch plates, be sure to check the tightness of the A portion. If it is loose, the thrust plate or other parts are considered to be loose.
2. When installing the crankcase cover (R) on the crankcase (R) use a new crankcase cover gasket. Make sure the two dowel pins are in place.





CLUTCH



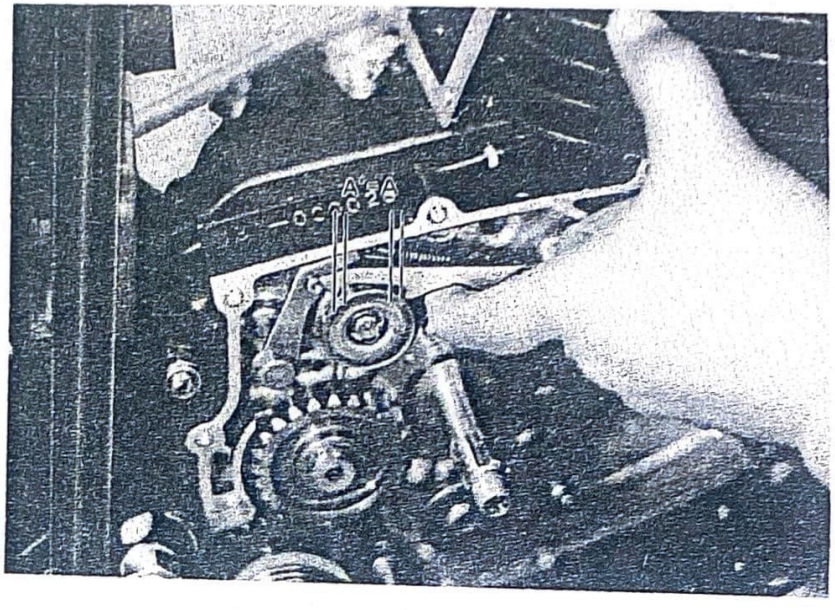
1. Clutch ass'y
2. Primary driven gear comp.
3. Thrust plate
4. Clutch boss
5. Friction plate
6. Clutch plate 2
7. Pressure plate
8. Clutch spring
9. Spring screw
10. Push rod 1
11. Lock nut
12. Lock washer
13. Spacer
14. Plate washer
15. Push rod 2
16. Push lever ass'y
17. Return spring
18. Plate washer
19. Oil seal (SO-14-25-5)
20. Adjusting screw
21. O-ring (2.4-9.8)
22. Nut

5. Shift Mechanism

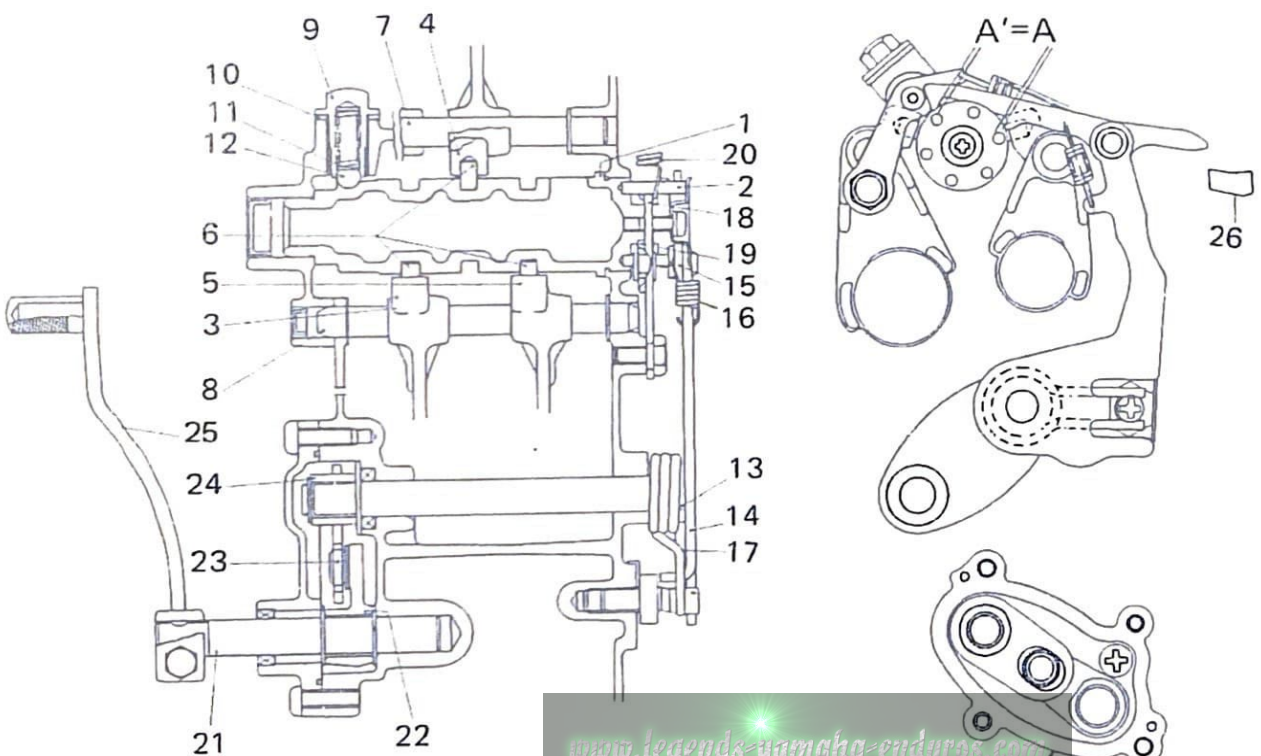
NOTE:

Shifter maintenance and adjustment should be performance with clutch assembly by removed.

a. Adjusting the gear shift arm.
Adjusting or correcting the travel of the gear shift arm to prevent improper shafting progression (excess feed or insufficient feed of the gear shift arm) is accomplished by turning the gear shift return spring stop screw (eccentric bolt) in or out adjust the accentric bolt until distance A and A' are equal, adjust in 2nd, 3rd or 4th gear.

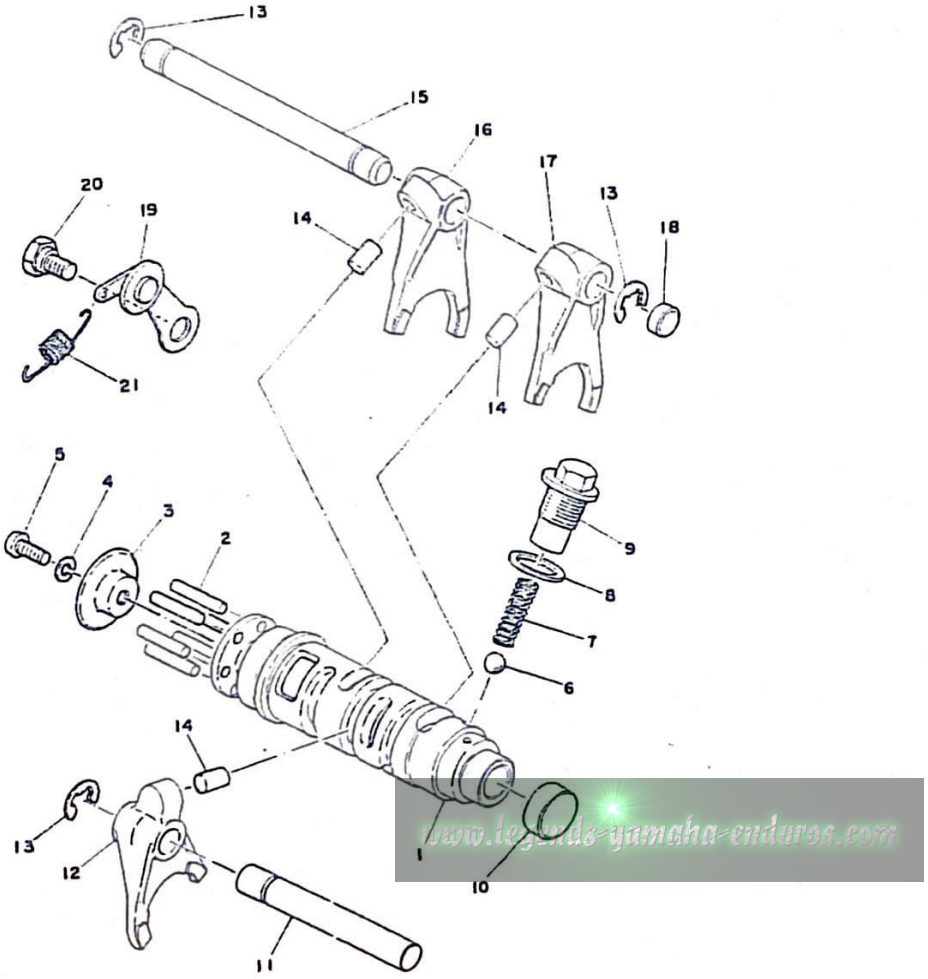


SHIFTER CHANGE ASSEMBLY



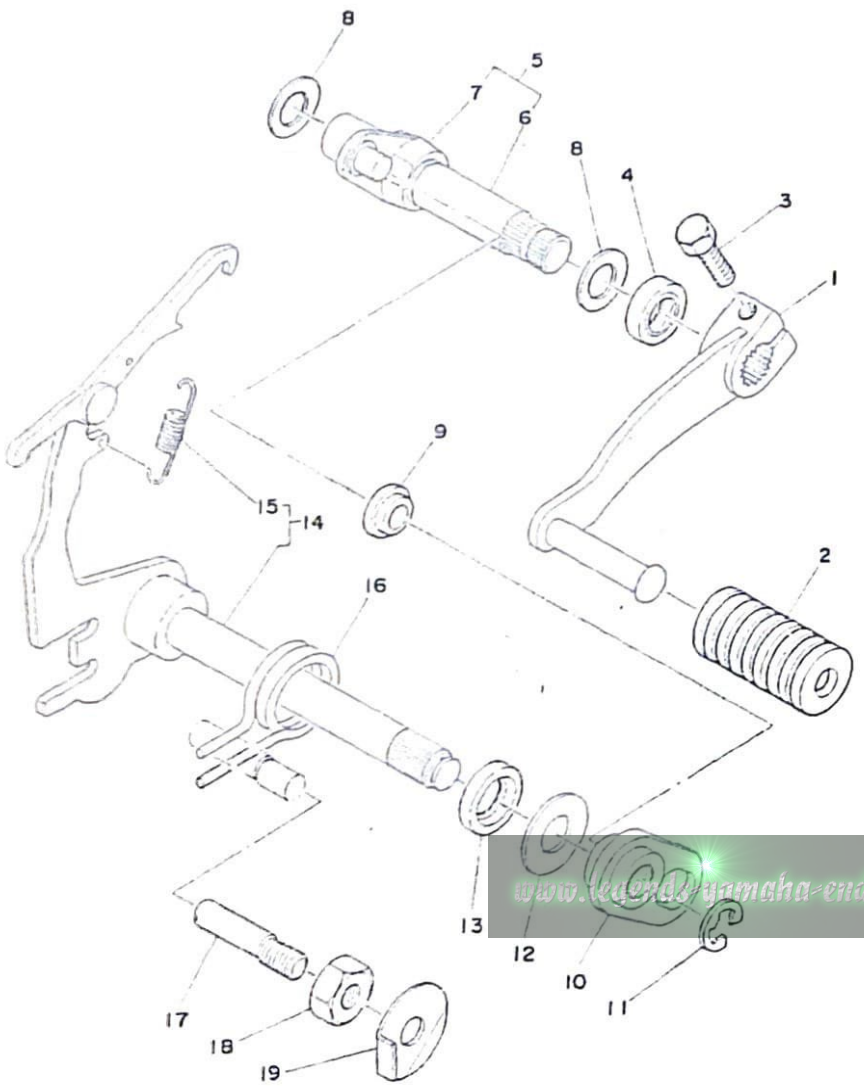
1. Shift cam
2. Dowel pin
3. Shift fork 1
4. Shift fork 2
5. Shift fork 3
6. Straight pin
7. Shift fork guide bar 1
8. Shift fork guide bar 2
9. Spring screw
10. Gasket
11. Compression spring
12. Ball
13. Change shaft 1
14. Change lever 1
15. Change lever 2
16. Tension spring
17. Torsion spring
18. Stopper lever
19. Stopper plate
20. Tension spring
21. Change shaft 2
22. Change lever 3
23. Change lever rooler
24. Change lever 4
25. Change pedal
26. Case stopper

SHIFTER 1



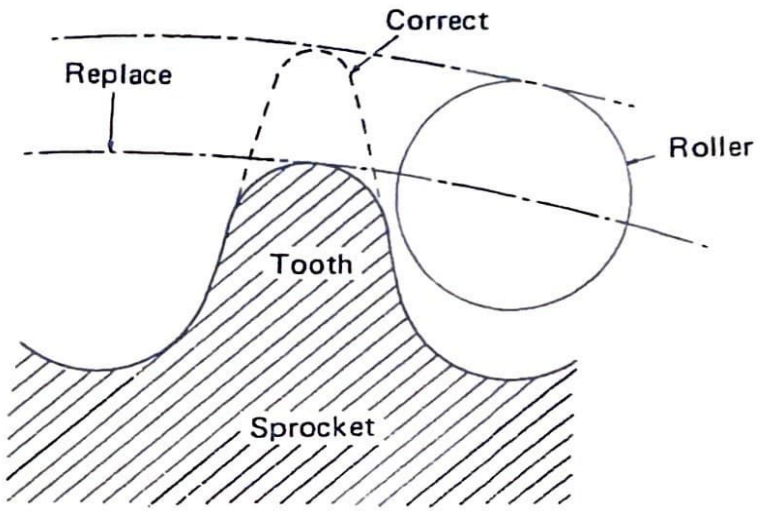
1. Shift cam
2. Dowel pin
3. Side plate
4. Spring washer
5. Panhead screw
6. Ball (5/16 inch)
7. Stopper spring
8. Drain plug gasket
9. Spring screw
10. Plug
11. Shift fork guide bar 1
12. Shift fork 2
13. Circlip (E-8)
14. Cam follower pin
15. Shift fork guide bar 2
16. Shift fork 3
17. Shift fork 1
18. Plug
19. Stopper lever ass'y
20. Bolt
21. Stopper spring

SHIFTER 2



1. Change pedal
2. Change pedal cover
3. Bolt
4. Oil seal (SDO-12-19-5)
5. Change shaft ass'y 2
6. Change shaft 2
7. Change lever 3
8. Shim (12-20-0.8)
9. Change lever roller
10. Change lever 4
11. Circlip. (E-8)
12. Plate washer
13. Oil seal (S-12-21-4)
14. Change shaft ass'y
15. Return spring
16. Return spring
17. Adjusting screw
18. Lock nut
19. Lock washer

SECTION F. DRIVE SPROCKETS AND CHAIN



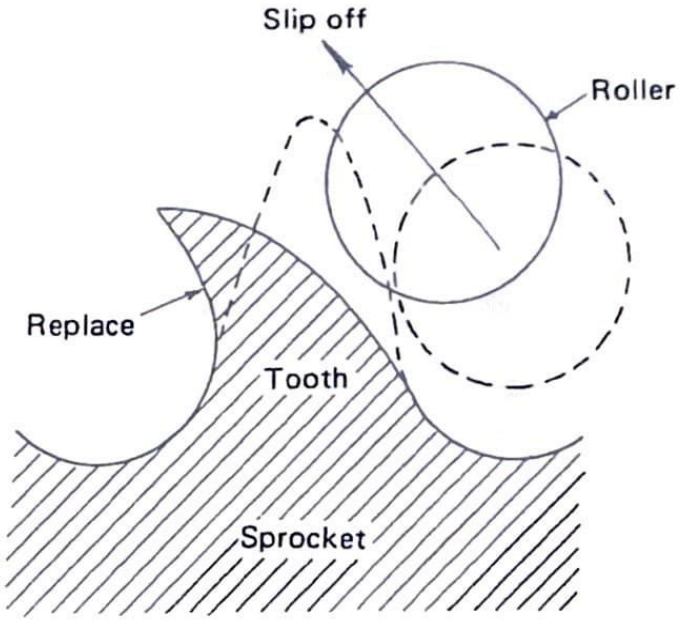
NOTE:

Please refer to Maintenance Intervals and Lubrication Intervals charts located in Chapter I for additional information.

1. Drive Sprocket

a. Using a blunt chisel, flatten the drive sprocket lock washer tab.
b. With the drive chain in place, transmission in gear, firmly apply the rear brake. Remove the sprocket securing nut. Remove the sprocket.
c. Check sprocket wear. Replace if wear discreases tooth height to a point approaching the roller center line.

d. Replace if tooth wear shows a pattern such as that in the illustration, or as precaution and common sense dictate.



e. During drive sprocket reassembly, make sure the lock washer splines are properly stated on the drive shaft splines. Tighten securing nut thoroughly to specified torque value. Bend lock washer tab fully against securing nut flats.

Drive sprocket securing nut torque:
6.5 – 10 m-kg (47–72 ft-lb)

2. Driven Sprocket and Drive Chain

With the rar wheel removed, proceed as follows:

a. Using a blunt chisel, flatten the securing bolt lockwasher tabs. Remove the securing bolts (6). Remove the lock washers and sprocket.
b. Check sprocket wear per procedures for the drive sprocket.
c. Check the sprocket to see that it runs true. Do not heat and hammer to straighten. Use a press. If severely bent, replace.
d. During reassembly, make sure the sprocket and sprocket seat are clean. Tighten the securing bolts in a cross-hatch pattern. Bend the tabs of the lock washers fully against the securing bolt flats.

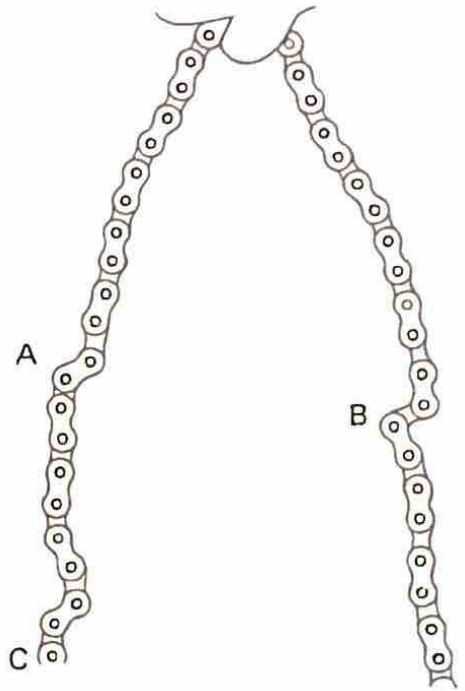
Driven sprocket securing nut torque:
3.0 – 4.8 m-kg (21.69 – 34.71 ft-lb)

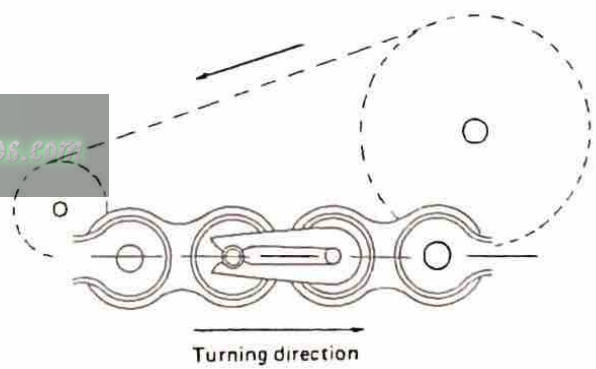
3. Chain

NOTE:

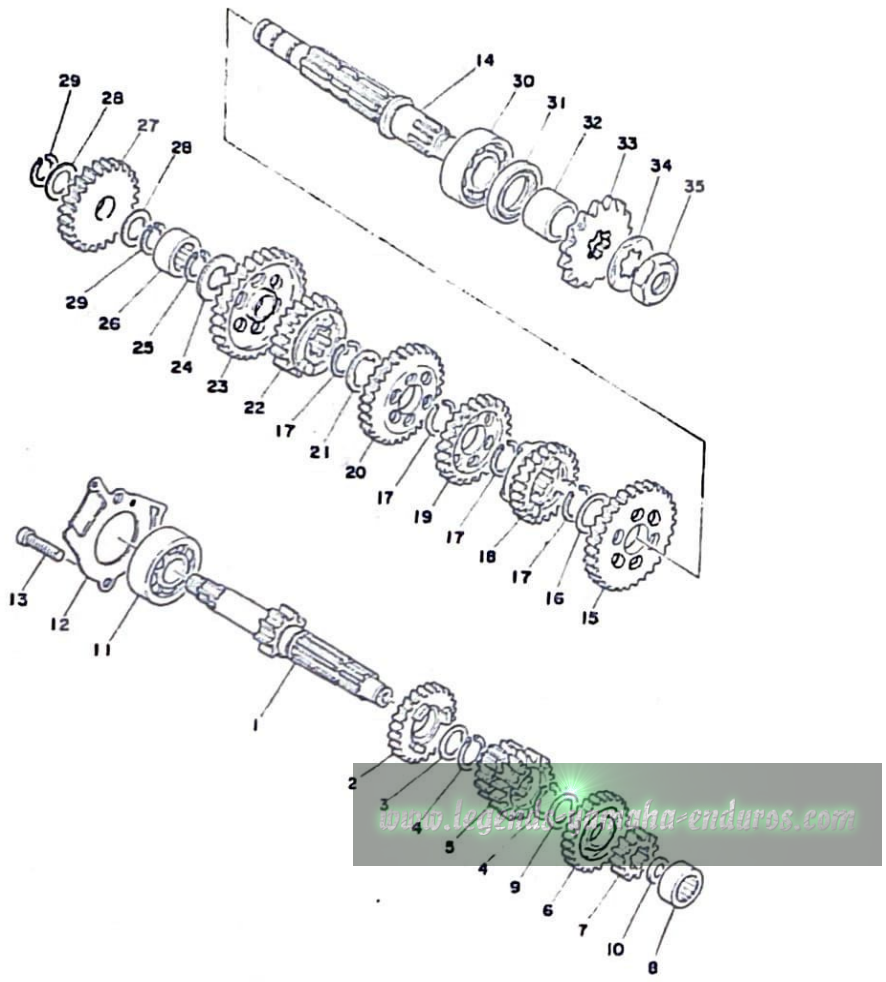
Refer to Maintenance and Lubrication Charts located in Chapter I for additional information.

a. Using a blunt-nosed pliers, remove the master link clip and side plate. Remove the chain.
b. Check the chain for stiffness. Hold as illustrated. If stiff, soak in solvent solution, clean with medium bristle brush, dry with high pressure air. Oil chain thoroughly and attempt to wrok out kinks. If still stiff, replace.
c. Check the side plates for visible wear. Check to see if excessive play exists in pins and rollers. Check for damaged rollers. Replace as required.
d. During reassembly, the master link clip must be installed with the rounded end facing the directionof travel.





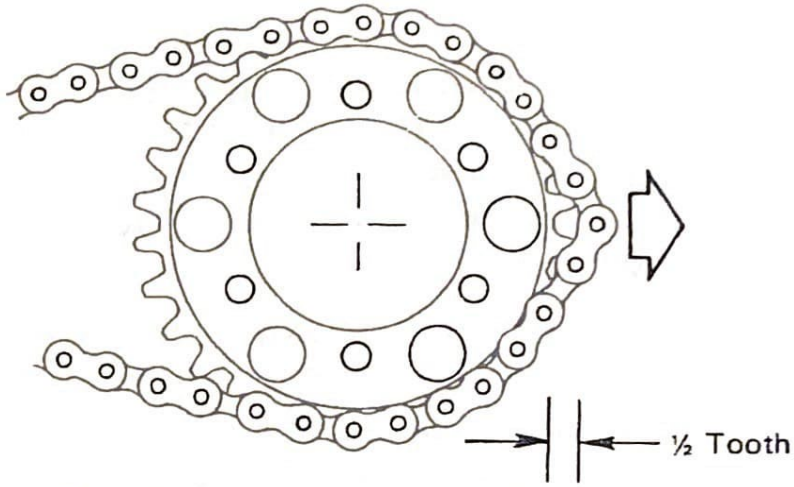
TRANSMISSION



1. Main axle (13T)
2. 5th pinion gear (21T)
3. Plate washer
4. Circlip
5. 3rd/4th pinion gear (18T, 20T)
6. 6th pinion gear (22T)
7. 2nd pinion gear (15T)
8. Bearing
9. Plate washer
10. Plate washer
11. Bearing (B6303Z)
12. Bearing cover plate
13. Panhead screw
14. Drive axle
15. 2nd wheel gear (29T)
16. Plate washer
17. Circlip (S-22)
18. 6th wheel gear (23T)
19. 4th wheel gear (26T)
20. 3rd wheel gear (28T)
21. Plate washer
22. 5th wheel gear (24T)
23. 1st wheel gear (33T)
24. Drive axle shim (15.6-30-0.6)
25. Circlip (15ϕ special)
26. Bearing
27. Kick idle gear (25T)
28. Main axle shim (15.5-22-0.5)
29. Circlip (15ϕ special)
30. Bearing (6204C3)
31. Oil seal (SD-26-38-5)
32. Collar
33. Drive sprocket
34. Lock washer
35. Nut

4. Troubleshooting

With the chain installed on the machine, excessive wear may be roughly determined by attempting to pull the chain away from the rear sprocket. If the chain will lift away more than one-half the length of the sprocket teeth, remove and inspect.
If any portion of the chain shows signs of damage, or if either sprocket shows signs of excessive wear, remove and inspect.



Checking for excessively worn chain

5. Maintenance

The chain should be lubricated per the recommendations given in the Maintenance and Lubrication Schedule Chart located in Chapter I. More often if possible. Preferably after every use.

a. Wipe off dirt with shop rag. If accumulation is severe, use soft bristle brush, then rag.

b. Apply lubricant between roller and side plates on both inside and outside of chain. Don't skip a portion as this will cause uneven wear. Apply thoroughly. Wipe off excess.

NOTE:

Chain and lubricant should be at room temperature to assure penetration of lubricant into rollers.

Choice of lubricant is determined by use and terrain. SAE 20 wt or 30 wt may be used, but several specialty types by accessory manufacturers offer more penetration, corrosion resistance and shear strength for roller protection.

In certain areas, semi-drying lubricants are preferable. These will resist picking up and particles, dust, etc. Consult your Authorized Yamaha Dealer.

c. Periodically, remove the chain, wipe and/or brush excess dirt off. Blow off with high pressure air.

d. Soak chain in solvent, brushing off remaining dirt. Dry with high pressure air. Lubricate thoroughly while off machine. Work each roller thoroughly to make sure lubricant penetrates. Wipe off excess. Re-install.

NOTE:

See Maintenance and Lubrication Schedule Charts located in Chapter I. for additional information.

6. Cables

Cable maintenance is primarily concerned with preventing deterioration through rust and weathering; and providing for proper lubrication to allow the cable to move freely within its housing.

Cable removal is straightforward and uncomplicated. Removal will not be discussed within this section. For details, see the individual maintenance section for which the cable is an integral part.

7. **Maintenance**

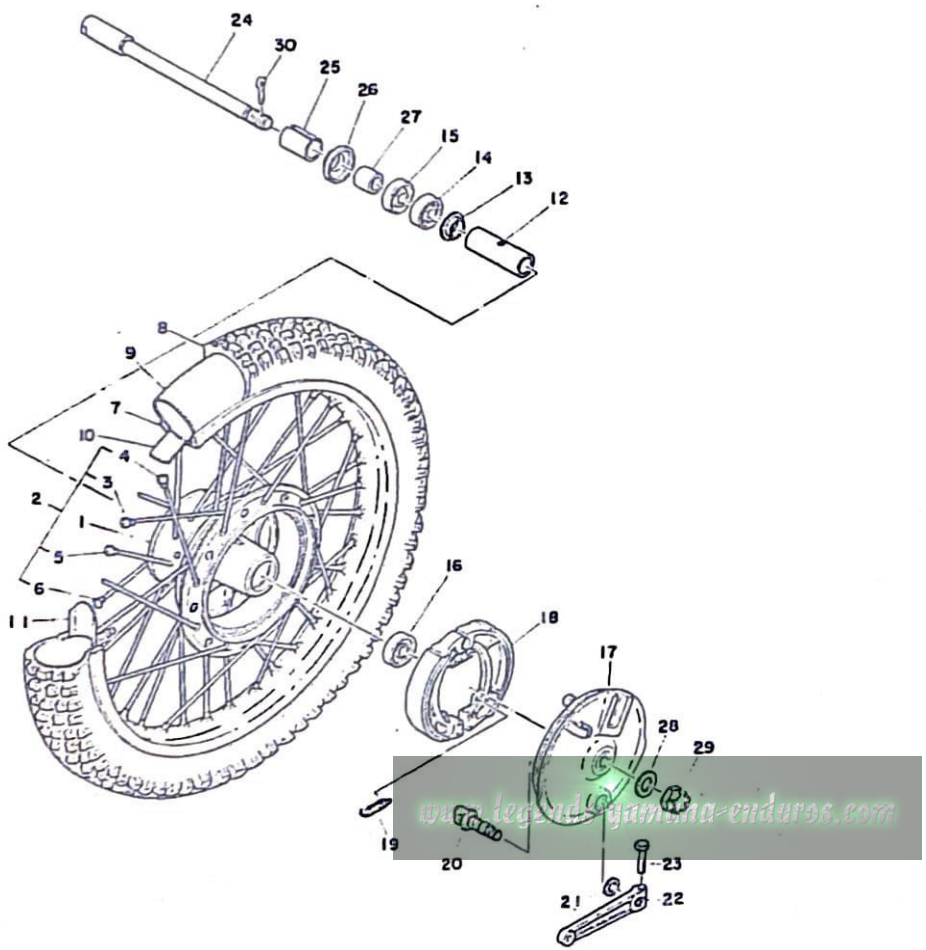
a. Remove the cable.
b. Check for free movement of the cable with its housing. If movement is obstructed, check for fraying of the cable strands. If fraying is evident, replace the cable assembly.
c. To lubricate cable, hold in vertical position. Apply lubricant to uppermost end of cable. Leave in vertical position until lubricant appears at bottom end. Allow excess to drain and reinstall.

NOTE:

Choice of lubricant depends upon conditions and preference. However, a semi-drying, graphite-base lubricant will probably perform most adequately under most conditions.

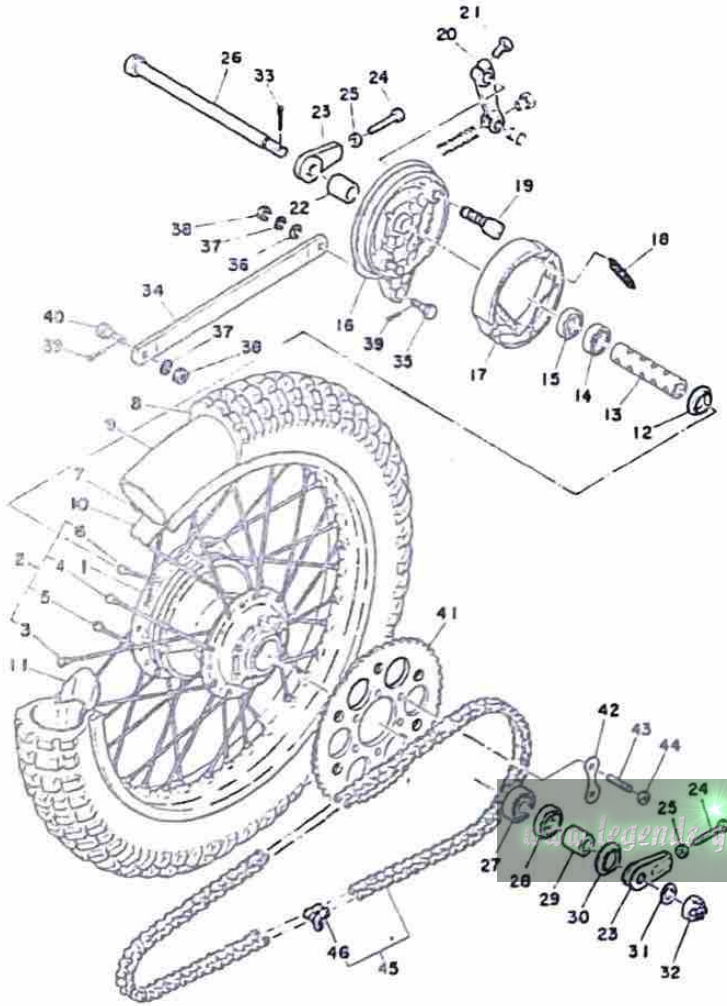
Under certain conditions, a water displacing lubricant is more suitable. Check with the Authorized Yamaha Dealer in your area.

FRONT WHEEL



1. Front hub
2. Spoke set
3. Spoke set, inner left (10PCS)
4. Spoke set, outer left (10PCS)
5. Spoke set, inner right (10PCS)
6. Spoke set, outer right (10PCS)
7. Front Rim (1.60-21Aℓ)
8. Front tire (2.75-21-4PR)
9. Front tube (2.75-21)
10. Rim band (2.75-21)
11. Bead spacer
12. Spacer (322-25117-00)
13. Spacer flange
14. Bearing (6202)
15. Oil seal (SD-20-35-7)
16. Bearing (6202RS)
17. Brake shoe plate
18. Brake shoe comp.
19. Return spring
20. Camshaft
21. Camshaft seal
22. Camshaft lever
23. Bolt
24. Wheel shaft
25. Collar
26. Hub dust cover
27. Collar
28. Plain washer
29. Castle nut
30. Cotter pin

REAR WHEEL



1. Rear hub
2. Spoke set
3. Spoke set, inner left (10PCS)
4. Spoke set, outer right (10PCS)
5. Spoke set, inner left (10PCS)
6. Spoke set, outer right (10PCS)
7. Rear rim (1.85-18)
8. Rear tire (3.50-18-4PR)
9. Rear tube (3.50-18)
10. Rim band (3.50-18)
11. Bead spacer
12. Spacer flange
13. Bearing spacer
14. Bearing (6202Z)
15. Oil seal (SO-22-35-5)
16. Brake shoe plate
17. Brake shoe comp
18. Return spring
19. Camshaft
20. Camshaft lever
21. Bolt
22. Collar
23. Chain puller
24. Adjusting bolt
25. Lock nut
26. Wheel shaft
27. Bearing (6302Z)
28. Oil seal (DD-26-42-8)
29. Collar
30. Dust cover
31. Plate washer
32. Castle nut
33. Cotter pin
34. Tension bar
35. Bolt
36. Plate washer
37. Spring washer
38. Nut
39. Cotter pin
40. Bolt
41. Sprocket wheel gear
42. Lock washer
43. Stud bolt
44. Nut
45. Chain
46. Chain joint

CHAPTER VI.
CHASSIS MAINTENANCE AND MINOR REPAIRS

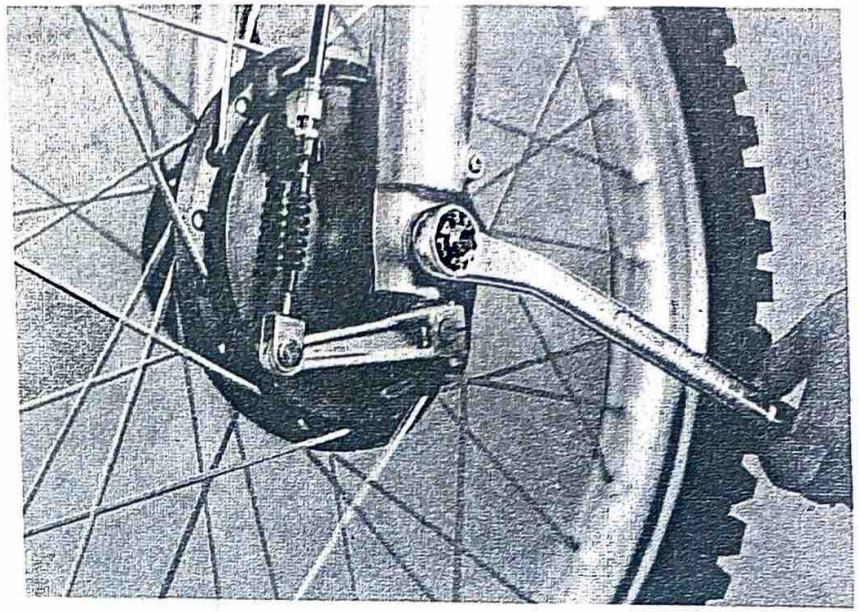
SECTION A. WHEELS, TIRES AND BRAKES

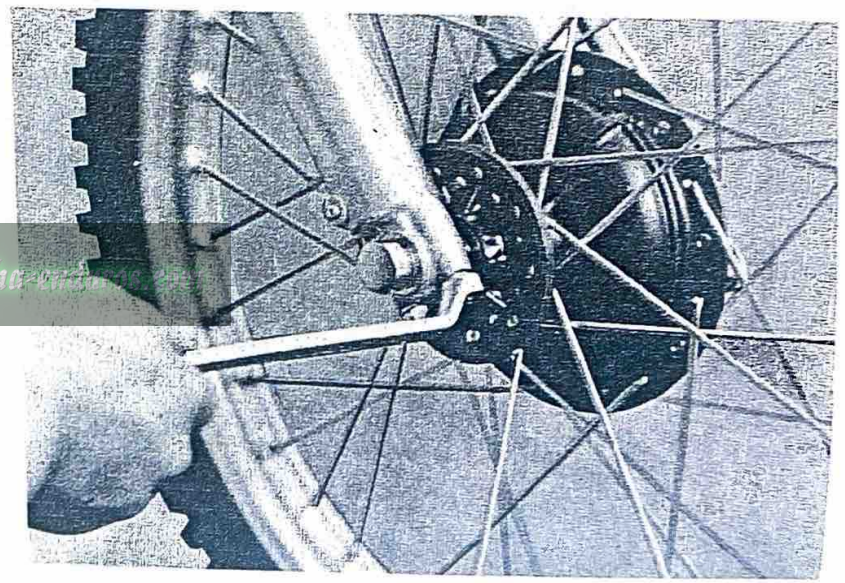
1. Front Wheel

a. To remove the front wheel, disconnect the brake cable at the front brake lever, and remove the cotter pin and front wheel nut.
Then, loosen the front wheel axleholder nuts.

b. Raise the front of the machine and set it on a box. Then remove the wheel assembly.

c. Remove the front wheel axle by simultaneously twisting and pulling out on the axle.



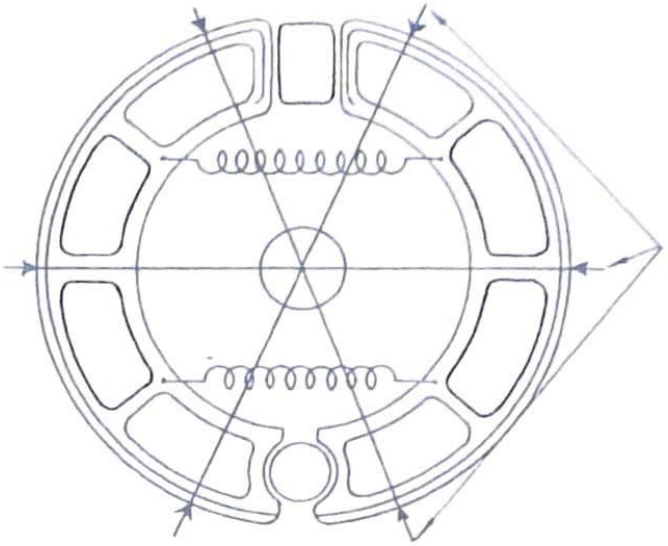


2. Checking Brake Shoe Wear

Measure the outside diameter at the brake shoe with slide calipers. If it measures less than 128 mm (5.039 in) replace.

Front brake shoe diameter: 130 mm (5.12 in)

Replacement limit: 2 mm (0.08 in)



3. Brake Drum

Oil or scratches on thyinner surface of the brake drum will impair braking performance or result in abnormal noises. Remove oil by wiping with a rag soaked in lacquer thinner or solvent. Remove scratches by lightly and evenly rubbing with emery cloth.

4. Replacing Wheel Bearings

If the bearings allow excessive play in the wheel or if it does not turn smoothly, replace the bearings as follows:

a. First clean the outside of the wheel hub.
b. Insert the bent end of the special tool into the hole located in the center of the bearing spacer, and drive the spacer out from the hub by tapping the other end of the special tool with a hammer. (Both bearing spacer and space flange can easily be removed.)
c. Push out the bearing on the other side.
d. To install the wheel bearing, reverse the above sequence. Be sure to grease the bearing before installation and use the bearing fitting tool (furnished by Yamaha).
e. Check the lips of the seals for damage or warpage. Replace if necessary.

5. Spokes

Check the spokes. If they are loose or bent, tighten or replace them. If the machine is ridden in rough country often, or raced, the spokes should be checked regularly.

6. Rear Wheel

Removal

1) Remove the tension bar and brake rod from rear shoe plate.
2) Remove cotter pin from rear wheel shaft nut.
3) Remove the rear wheel shaft nut.
4) Pull out the rear wheel shaft by simultaneously twisting and pulling out.
5) Remove the rear brake shoe plate.
6) Lean the machine to the left and remove the rear wheel assembly.

7. Checking Brake Shoe Wear

Measure the outside diameter at the brake shoe with slide calipers. If it measures less than 128 mm (5.039 in) replace.

Rear brake shoe diameter:	130 mm (5.12 in)
Replacement limit:	2 mm (0.08 in)

8. Brake Drum

Oil or scratches on the inner surface or the brake drum will impair braking performance or result in abnormal noises. Remove oil by wiping with a rag soaked in lacquer thinner or solvent. Remove scratches by lightly and evenly rubbing with emery cloth.

9. Replacing Wheel Bearings

Refer to front wheel section.

10. Checking Rims and Spokes (Front & Rear Wheels)

a. Checking for loose spokes
Loose spokes can be checked by bracing the machine off the ground so that the front wheel can slip free. Slowly revolve the front wheel and at the same time let the metal shaft of fairly heavy screwdriver bounce off each spoke. If all the spokes are tightened approximately the same then the sound given off by the screwdriver hitting the spokes should sound the same. If one spoke makes a dull flat sound, then check it for looseness.

b. Smooth out a rough shoe surface with sandpaper or with a file.

c. Checking rim "run-out"
While you have the machine up in the air, you should check that the front wheel does not have too much run-out. "Run-out" is the amount the front wheel deviates from a straight line as it spins. Secure the front forks to keep them from turning. Set up a dial indicator or solidly anchor a pointer about 3 mm (0.12 in) away from the side of the rim.
As the wheel spins, the distance between the pointer and the rim should not change more than 2 mm (0.08 in) total. Any greater fluctuation means that you should remove this rim warpage by properly adjusting the spokes.

Run-out limits: 2 mm (0.08 in)

11. Tire Removal

a. Remove valve cap, valve core, valve stem lock nut, and rim lock nuts.
b. When all air is out of tube, separate tire bead from rim (both sides) by stepping on tire with your foot.
c. Use two tire remove irons (with rounded edges) and begin to work the tire bead over the edge of the rim, starting 180° opposite the tube stem. Take care to avoid pinching the tube as you do this.
d. After you have worked one side of the tire completely off the rim, then you can slip the tube out. Be very careful not to damage the stem while pushing it back out to the rim hole.

NOTE:
If you are changing the tire itself, then finish the removal by working the tire off the same rim edge.

12. Installing Tire

Re-installing the tire assembly can be accomplished by reversing the disassembly procedure. The only different in procedure would be right after the tube has been installed, but before the tire has been completely slipped onto the rim, inflate the tube. This removes any creases that might exist. Release the air and continue with reassembly. Also, right after the tire has been completely slipped onto the rim, check to make sure that the stem is squarely in the center of the hole in the rim.

Tire pressure for normal riding:
Front 0.9 kg/cm² (13 lb/in²)
Rear 1.1 kg/cm² (15 lb/in²)

SECTION B. FRONT FORKS AND STEERING HEAD

1. General

Unlike the conventional coil spring type fork, the one on this machine is furnished with the newly developed suspension employing compressed air.

This suspension features: —

1. Adjustment of air pressure makes possible a free choice of spring characteristics.
2. No such stirring of fork oil as is caused by the coil spring brings about acarcely any ingress of air into the oil. Also the oil amount increased approximately two times keeps the oil temperature from going up. All this has resulted in a great deal of prevention of damping decrease.
3. Spring characteristics peculiar to the air suspension helps to a great extent absorb impacts caused by running on rough roads. In this way it may be seen that greater safety in riding can be ensured by the above new suspension.

CAUTION:

High pressure air is sealed in. To prevent an accidental explosion of air, the following instructions sould be observed:

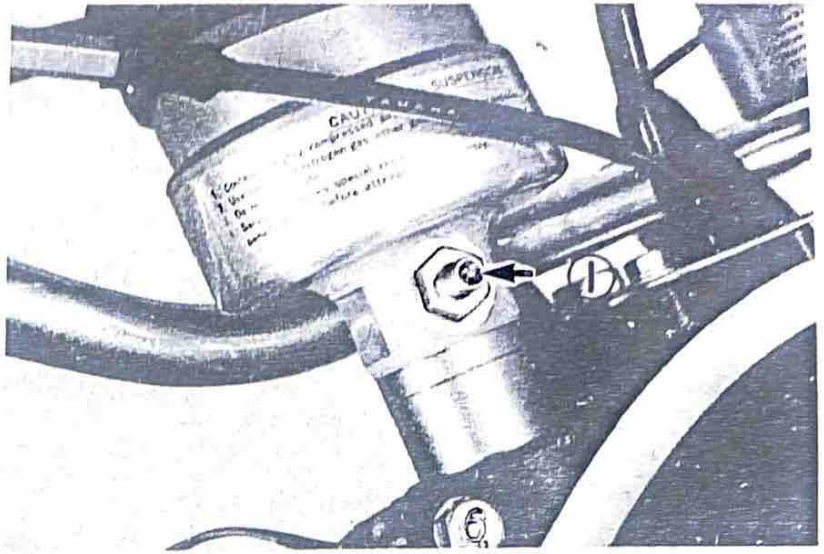
1) **The air to be filled with should be air or nitrogen gas. Never use oxygen or any other explosive gas.**
2) **Never throw the air shock absorber into fire.**
3) **Before removing the air shock absorbers out from the front forks, be sure to extract the air from the air chamber completely.**
4) **If the air chamber is required to be disassembled or in poor working condition, be sure to consult your Yamaha Dealer.**

2. Handling

a. FRONT FORK OIL REPLACEMENT AND LEVEL ADJUSTMENT:

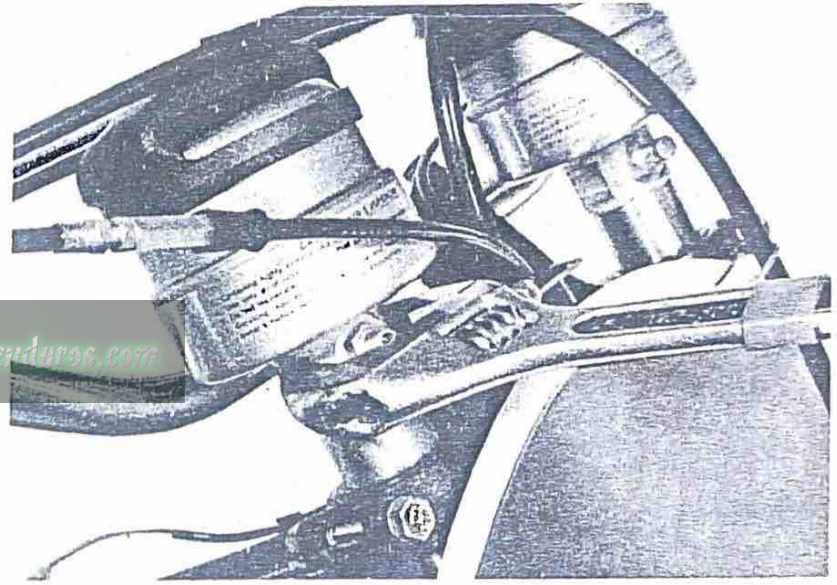
1) Remove the valve cap on the low pressure chamber side.

2) Using a slotted-head screwdriver, press the valve and keep it open for more than 10 seconds so that the air can be let out from the low pressure chamber.

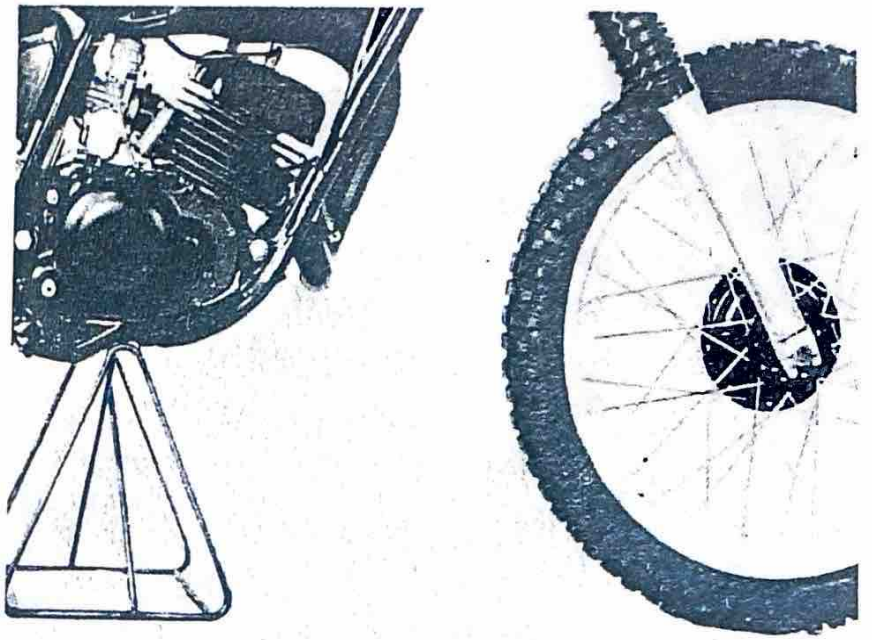


1. Valve

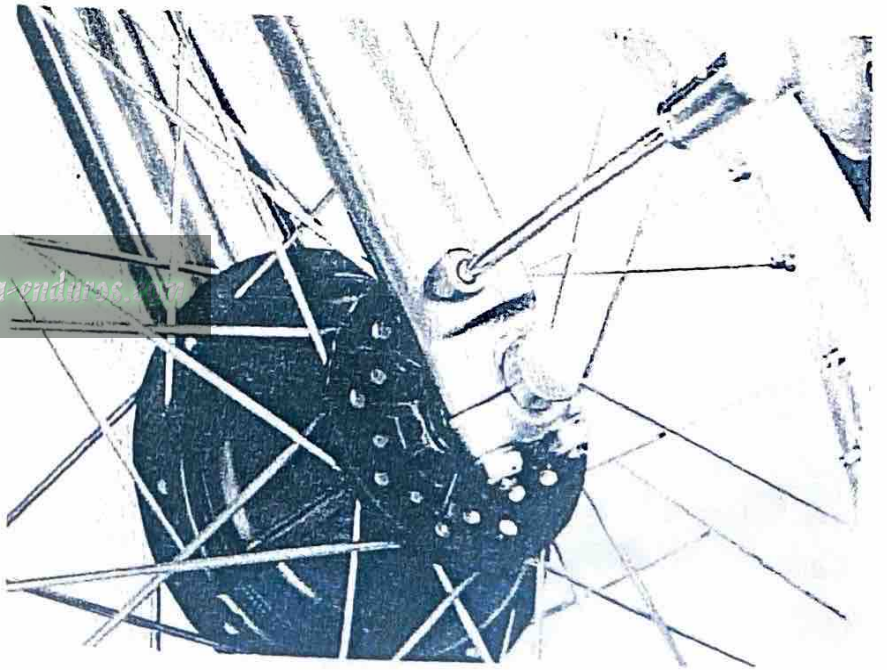
3) Remove the air chamber assembly.



4) With the front wheel removed or raised off the floor with a suitable frame stand, remove air chambers on inner fork tubes.



5) Remove drain screw from each outer tube with open container under each drain hole.



6) After most of oil has drained, slowly raise and lower outer tubes to pump out remaining oil.
7) Replace drain screws.

NOTE:

Check gaskets, replace if damaged.

8) Measure correct amount of oil and pour into each leg.

RECOMMENDED OIL:	SAE 20W/30

STANDARD QUANTITY OF WORKING OIL: 394 cc (13.32 oz)

OIL LEVEL (FROM TOP END OF INNER TUBE): 151 mm (5.94 in)

NOTE:

Taking into account the performance and strength of the shock absorber, the oil quantity and level should be maintained as specified below:

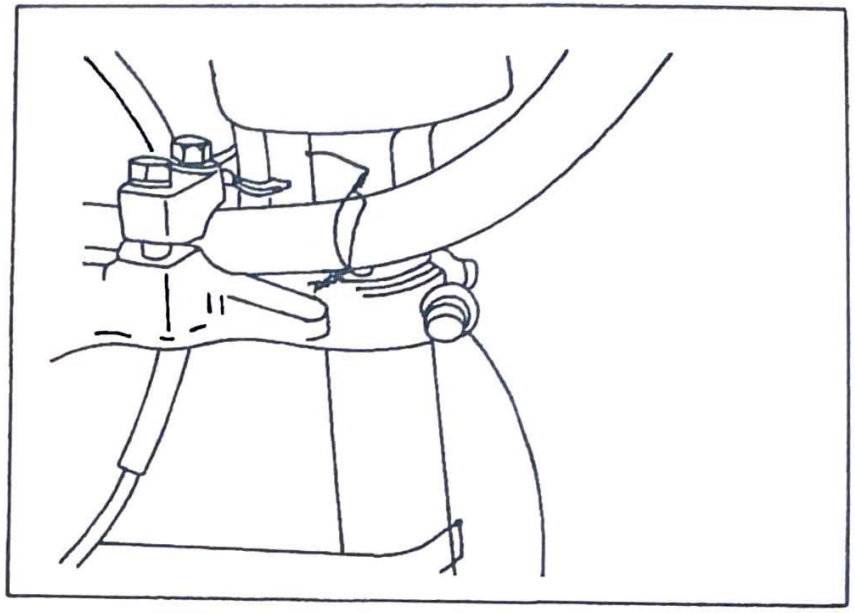
OIL QUANTITY: 374 cc (12.64 oz)—404 cc (13.66 oz)

OIL LEVEL: 183 mm (7.20 in) or less 135 mm (5.31 in) or more

NOTE:

Select the weight oil that suits local conditions and your perference (lighter for less damping, heavier for more damping).

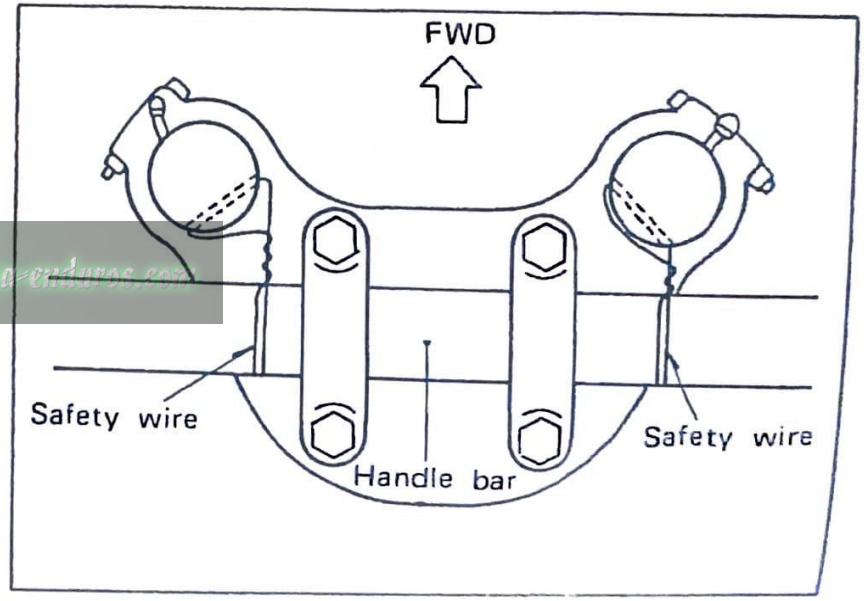
9) After filling, slowly pump the outer tubes up and down to distribute the oil.
10) Inspect O-ring on air chambers and replace if damaged.
11) Install air chambers and torque to specification.



AIR CHAMBER TORQUE:
2.5 – 3.5 m-kg (18 – 25 ft-lb)

NOTE:

The air chamber, once removed for oil replacement, etc., should be reinstalled to the specified torque and then be tied with a safety wire as illustrated.



b. FILLING THE AIR CHAMBER WITH AIR:

For proper damping effects, the sealed air pressure must be maintained at the following levels.

1) Using a manual air pump fill with air.
2) Using the air check gauge, adjust the air pressure to specification.

STANDARD AIR PRESSURE:
LOW PRESSURE CHAMBER:
1.6±0.1kg/cm² (22.75 psi)
Max 2.5 kg/cm² (35.56 psi)
HIGH PRESSURE CHAMBER:
3.2±0.1kg/cm² (45.51 psi)
Max 5.0 kg/cm² (71.11 psi)

CAUTION:
Should any abnormalty be found after the above operation, consult your Yamaha dealer.

3) The difference between both right and left air chambers dhould be 0.1 kg/cm² or less.

NOTE:

1. After replacing front fork oil, push and replace the front forks about twenty times so that air can be extelled from the oil. Next, adjust the air pressure. Or you can adjust the air pressure to specification after adding oil, and drive the machine over the racing course once, then adjust the air pressure again.
2. Be sure to make this adjustment with the front wheel off the ground.
3. When the air has to be extracted from the air chamber extract little by little. If not, oil stout out together with the air, causing danger to you.

c. HANDLING NOTE

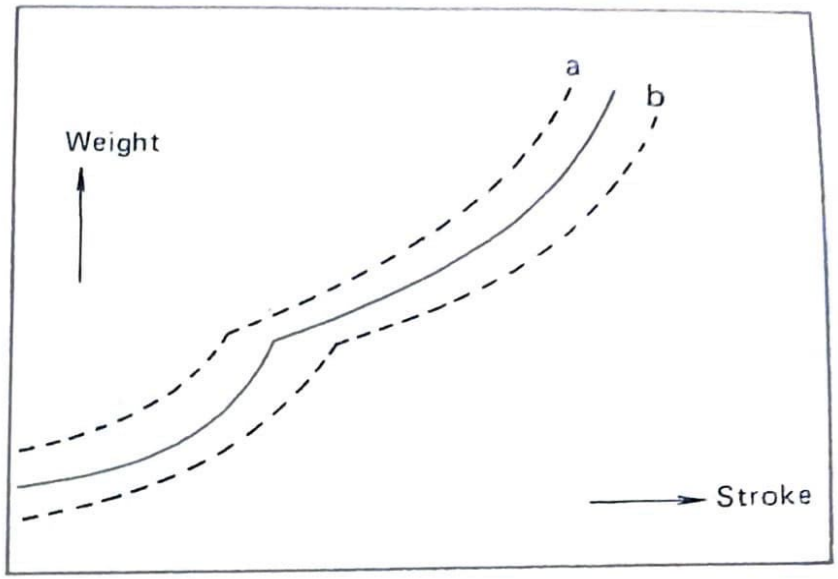
1) If any abnormalty should be found, consult your Yamaha dealer.
2) When removing the air chambers from the inner tubes, be sure to extract the air completely. To let out the air, keep the valve depressed for more than 10 seconds.
3) Fill the high pressure chamber first, and then fill the low pressure chamber.
4) The difference in pressure in both right and left air chambers should be within 0.1 kg/cm^2.
5) Take care so that any sort of liquid does not enter the air chambers.

3. FRONT FORK SETTING

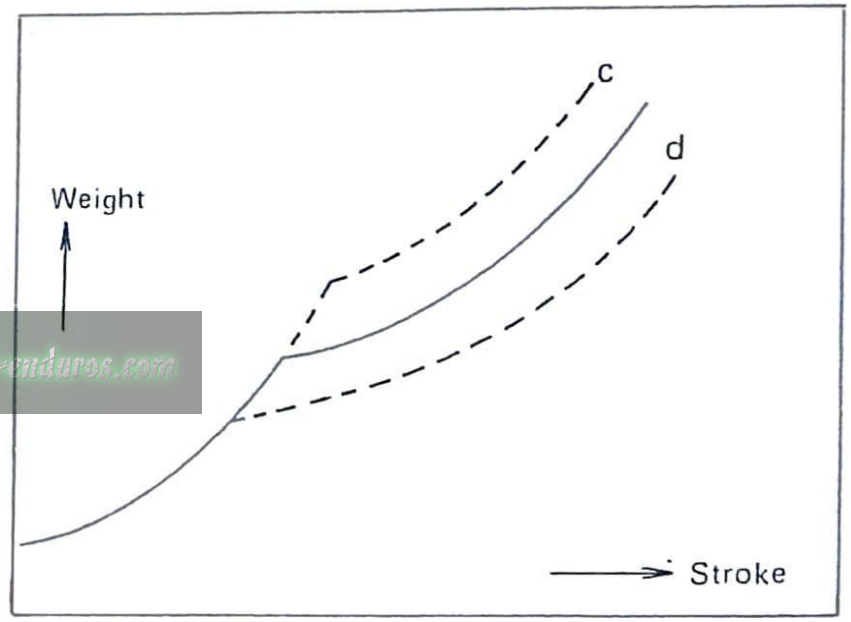
On like the spring loaded type the front fork setting of this machine can be freely varied according to the rider's preference. That is, by tending the air pressure and oil quantity in the front forks, the performance characteristics of the front forks can be properly adjusted as illustrated below.

1. Air pressure adjustment

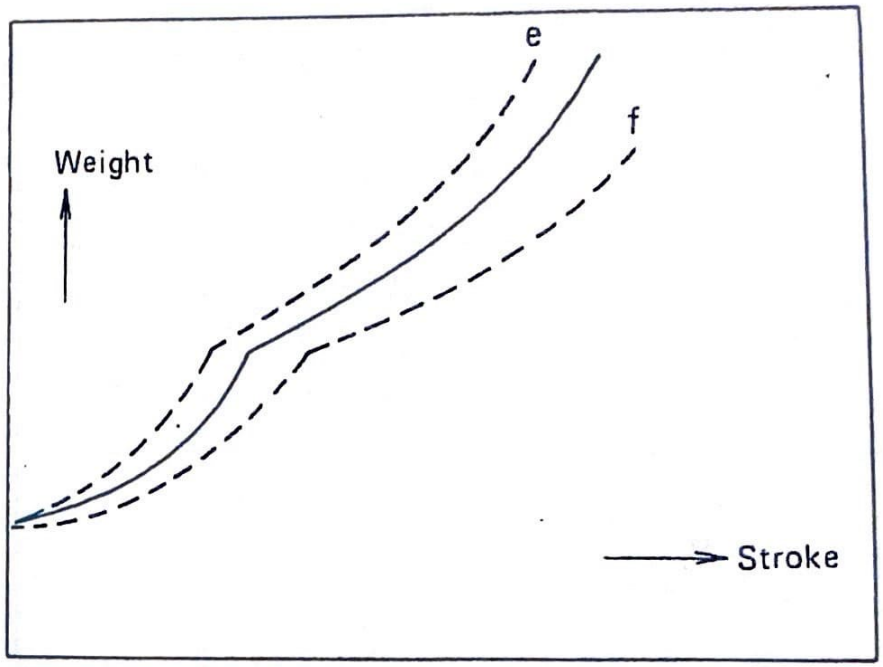
a.	High pressure chamber	Locking
	Low pressure chamber	High
b.	High pressure chamber	Locking
	Low pressure chamber	Low



c.	Low pressure chamber	Locking
	High pressure chamber	High
d.	Low pressure chamber	Locking
	High pressure chamber	Low

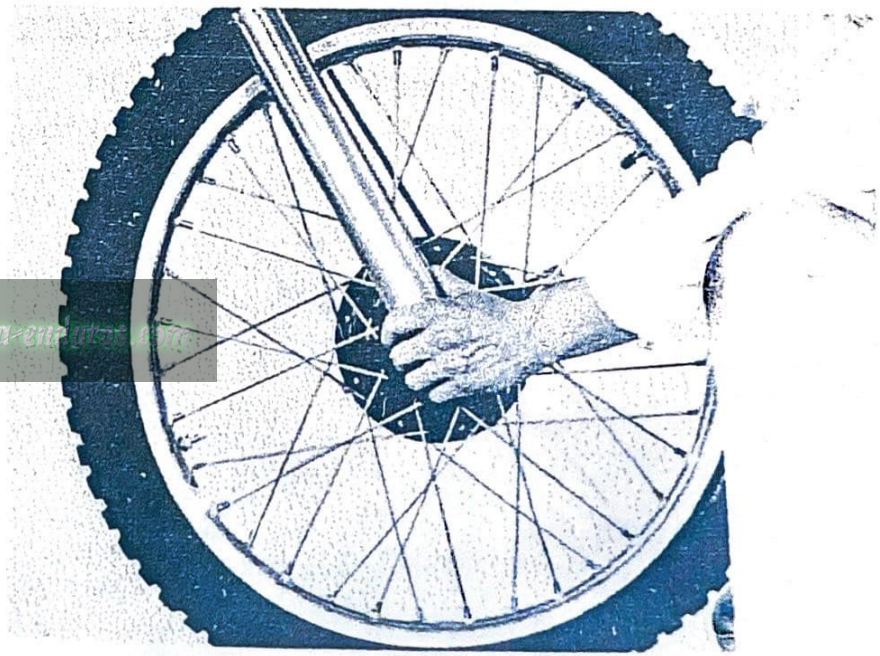


2. Air chamber volume adjustment
(Oil quantity adjustment)
e. Low pressure volume
Decrease (Add oil.)
f. Low pressure volume
Increase (Lessen oil.)

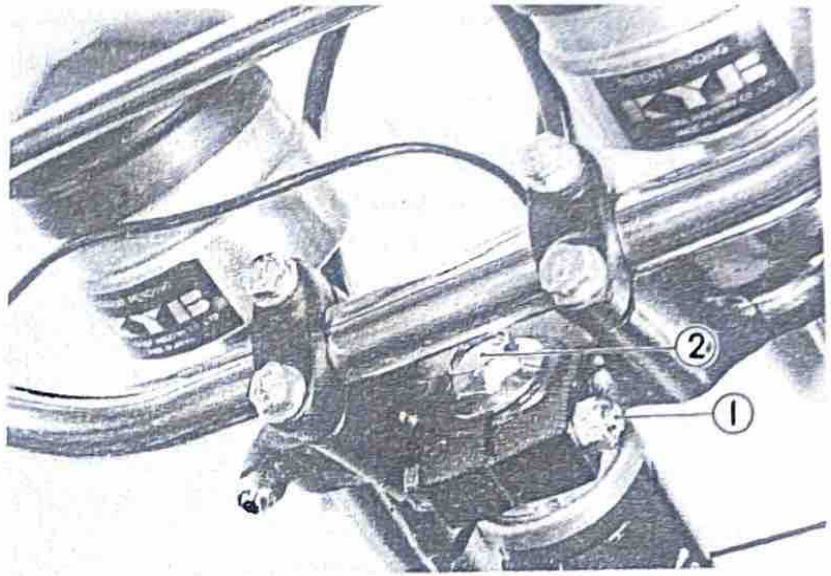


4. STEERING HEAD ADJUSTMENT

a. With front wheel elevated, grasp bottoms of fork legs and gently push and pull to check steering head freeplay. There should be no noticeable freeplay.

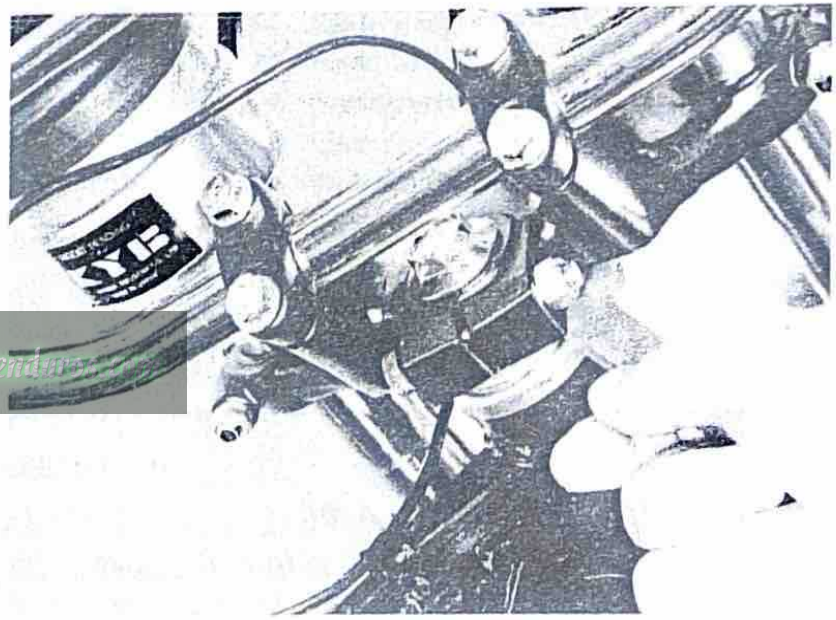


b. To adjust, first loosen upper stem pinch bolt ①.
c. Loosen steering fitting bolt ②.



1. Upper stem pinch bolt 2. Steering fitting bolt

d. Use ring nut wrench to tighten adjust nut. Tighten until freeplay is eliminated.



CAUTION:

Forks must swing from lock to lock without binding or catching.

e. Tighten stem bolt and torque to specification.

STEM BOLT TORQUE:
4.2 – 6.5 m-kg (30.4 – 47.0 ft-lb)

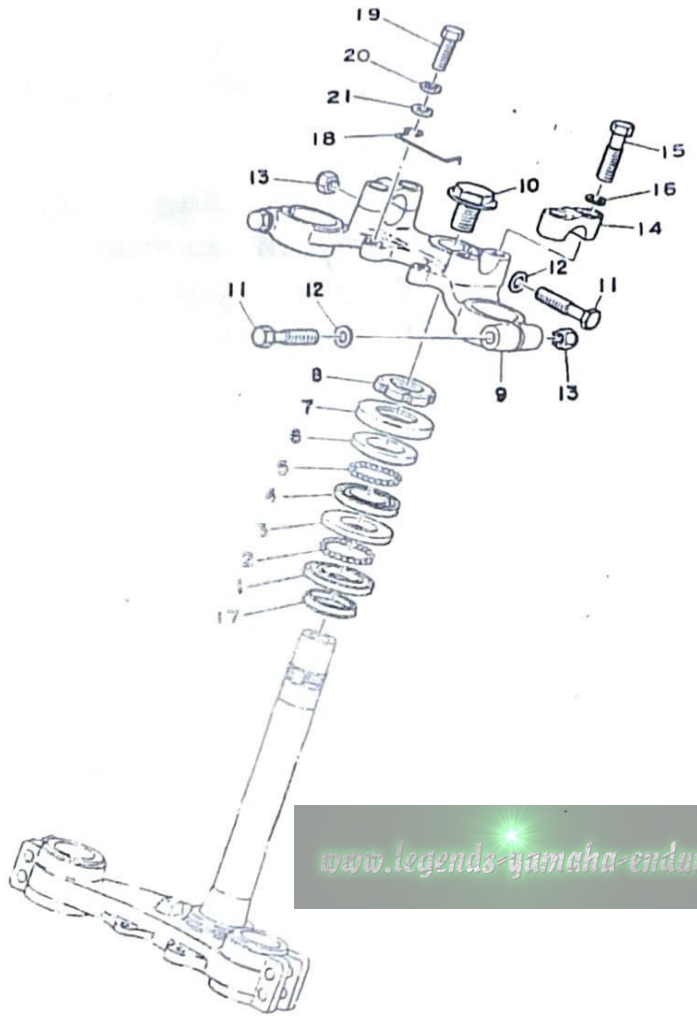
f. Tighten pinch bolts at fork crown and torque to specification.

STEM PINCH BOLT TORQUE:
1.1 – 1.8 m-kg (8.0 – 13.0 ft-lb)

NOTE:

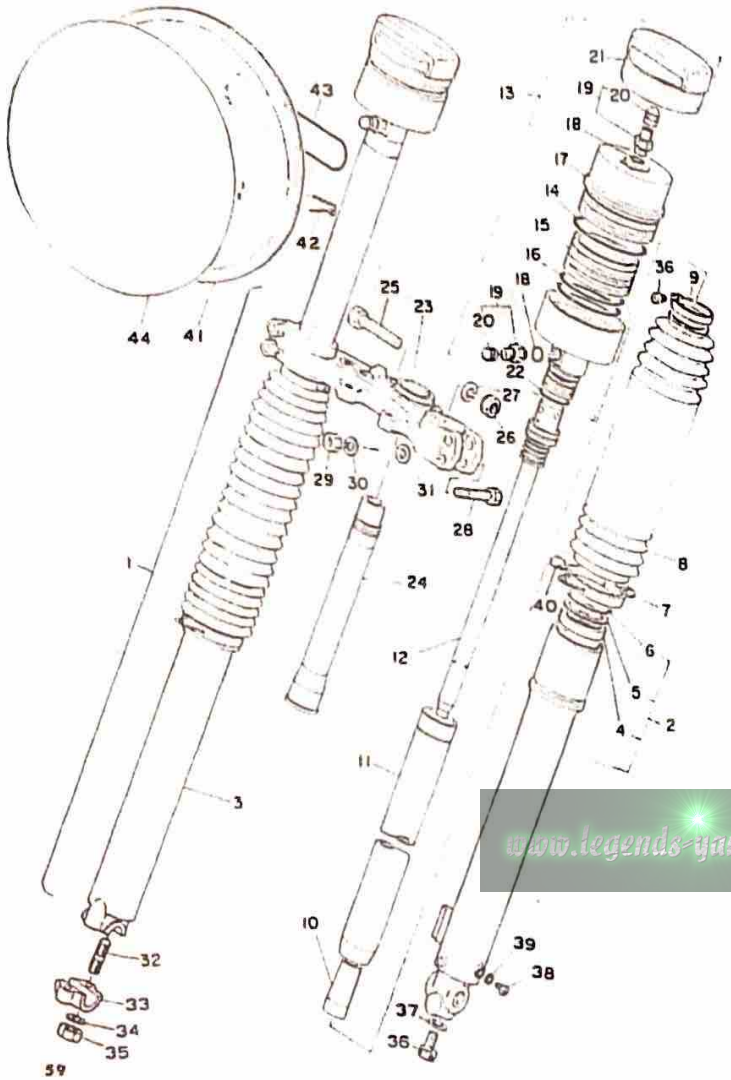
For steering head disassembly – refer to DT100C–175C Service Manual for correct procedure.

STEERING



1. Ball race 1
2. Ball (1/4 inch)
3. Ball race 2
4. Ball race 2
5. Ball (3/16 inch)
6. Ball race
7. Ball race cover
8. Nut
9. Handle crown
10. Fitting bolt
11. Bolt
12. Plate washer
13. U nut
14. Handle upper holder
15. Bolt
16. Spring washer
17. Dust seal
18. Wire holder
19. Bolt
20. Spring washer
21. Plate washer

FRONT FORK



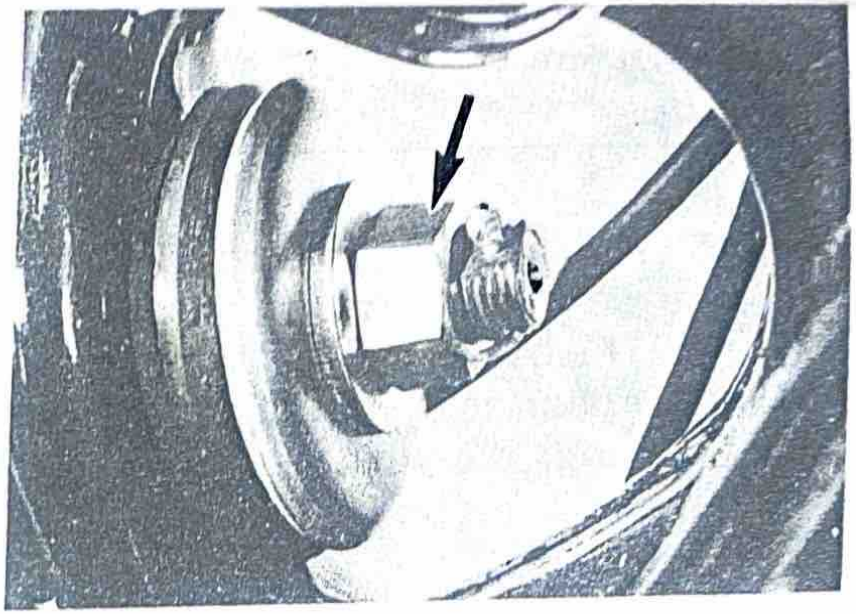
1. Front fork ass'y
2. Outer tube left
3. Outer tube right
4. Oil seal
5. Oil seal washer
6. Circlip
7. Wire holder
8. Boot
9. Boot band
10. Spindle taper
11. Inner tube comp.
12. Cylinder comp.
13. L chamber comp.
14. O-ring
15. Free piston
16. O-ring
17. L chamber cap
18. O-ring
19. Air valve ass'y
20. Valve cap
21. L chamber cap cover
22. O-ring
23. Under bracket
24. Steering shaft comp.
25. Bolt
26. Nut
27. Spring washer
28. Bolt
29. Nut
30. Spring washer
31. Plate washer
32. Bolt
33. Axle holder
34. Plate washer
35. Nut
36. Bolt
37. Packing
38. Drain plug
39. Drain plug gasket
40. Holder
41. Number plate
42. Number plate stay
43. O-ring (3.1-99.4)
44. Number emblem

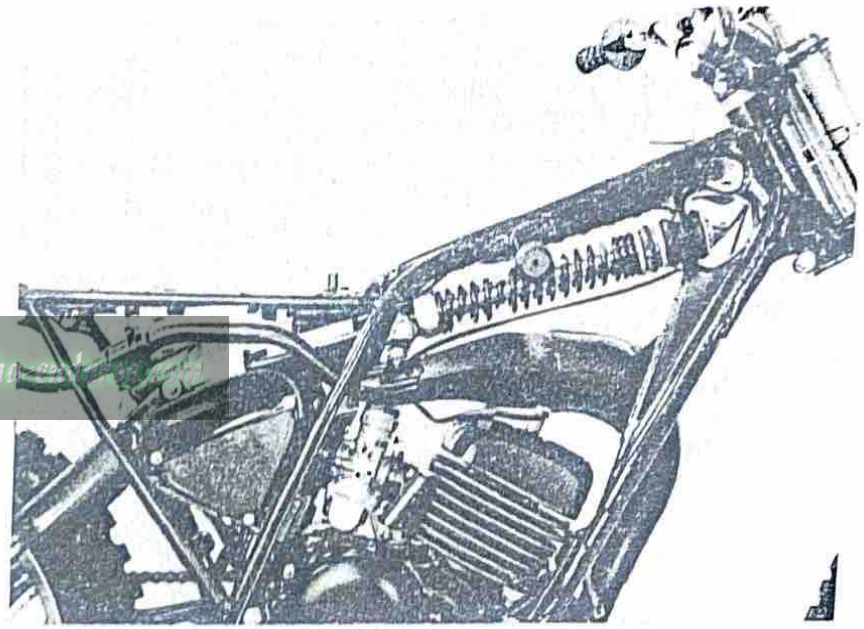
SECTION C. REAR SHOCK (MONOCROSS SUSPENSION) AND SWING ARM

1. Rear Shock (Monocross Suspension) Removal

a. Remove the two bolts securing the rider's seat, the remove the seat. Remove the bolt holding the fuel tank, and remove the fuel tank (before this operation, the fuel petcock lever must be placed in OFF, and the fuel pipe must be removed at the carburetor side. The air vent pipe must also be removed).
Lift up the rear of the fuel tank slightly, and pull it backward. The two rubber dampers (on both sides of front bottom of the fuel tank) will come off the frame. (See page 64)

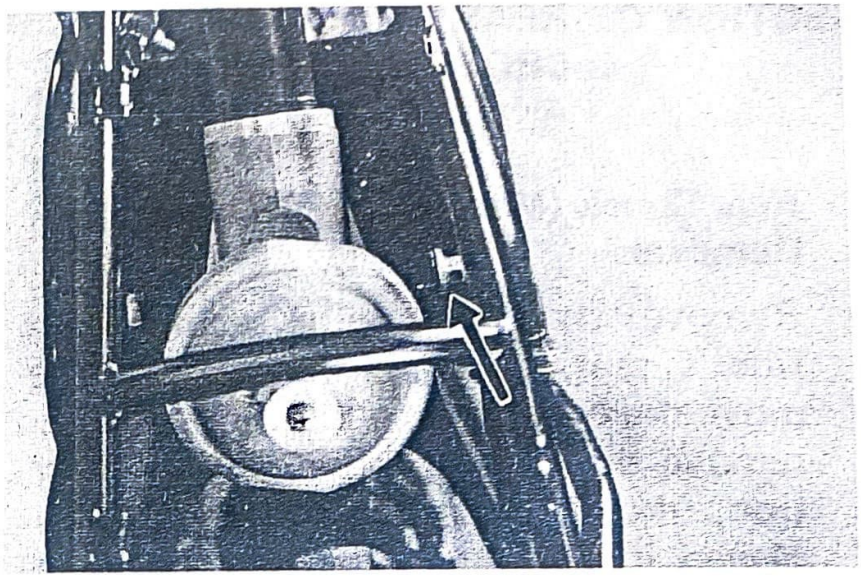
b. Next, remove the two pivot shaft nuts on the front part of the rear shock (Monocross suspension), and remove the washer, and rubber.





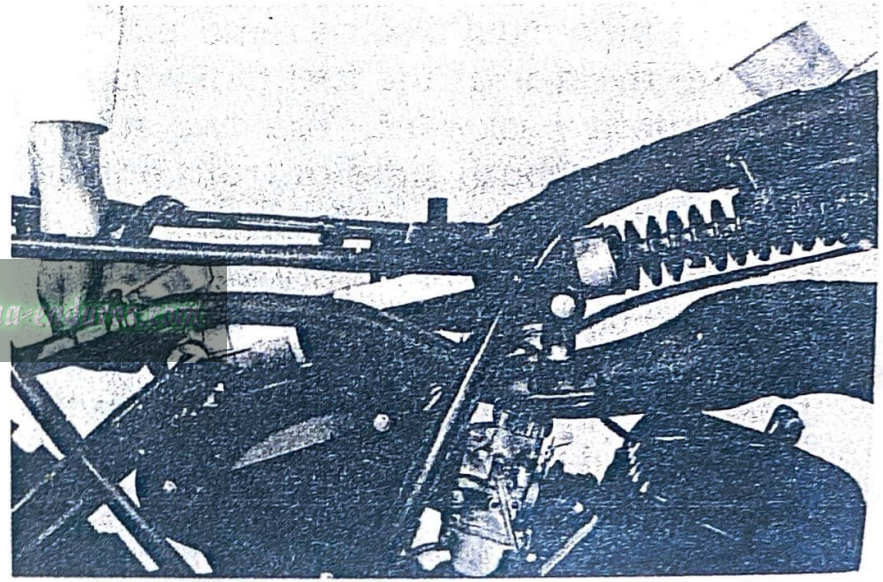
Pivot shaft nuts torque:	7 m-kg (50.5 ft-lb)

c. Next, remove the bolt securing the membrane housing to the rear of the frame. The bolt is held by a stopper so it does not turn when the nut is screwed out. Loosen the nut first, and remove the bolt. Take care so the two washer are not lost.



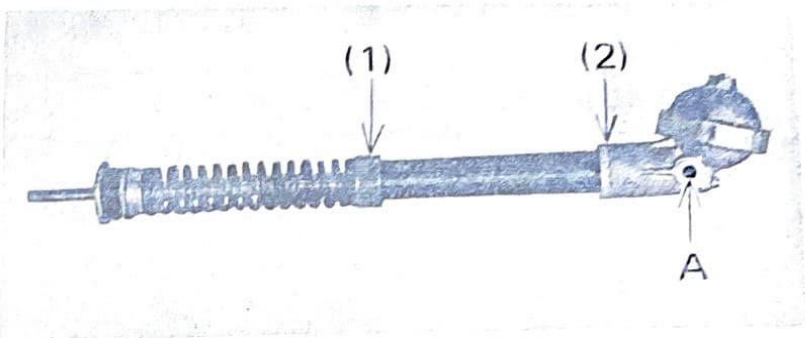
Membrane housing install nut torque: 2 m-kg (14.5 ft-lb)

d. Remove the rear shock from the frame. (To remove, pull the rear shock backward while lifting up the swing arm.)



2. Retightening the Monocross Suspension Unit

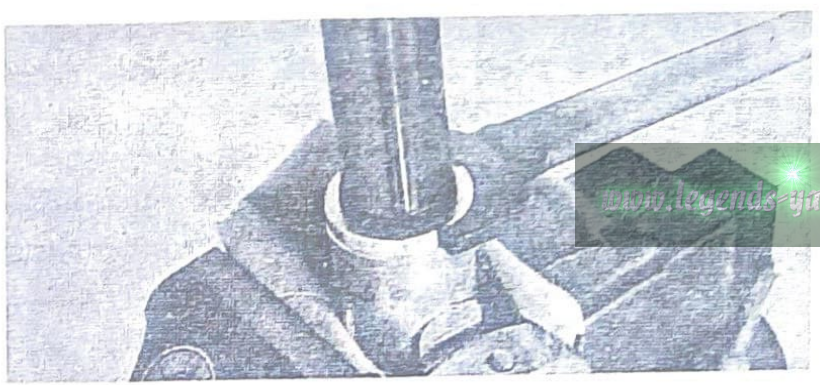
a. Checking points for tightness

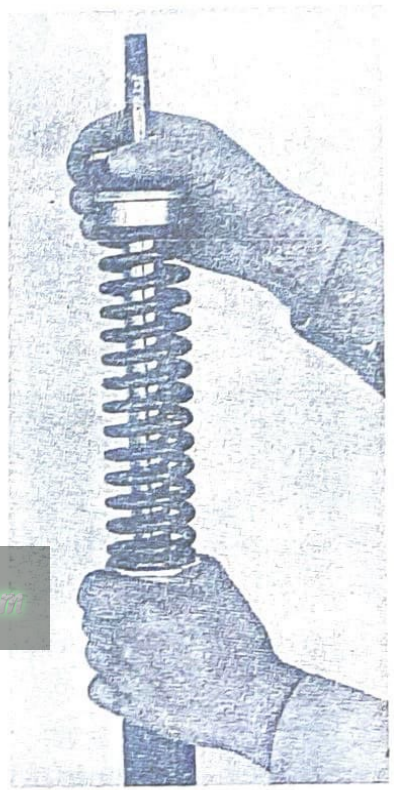


b. Retightening

Since the cylinder case may come loose, it should be tightened in the following order, whether (1) or (2) in the above photo is loose.

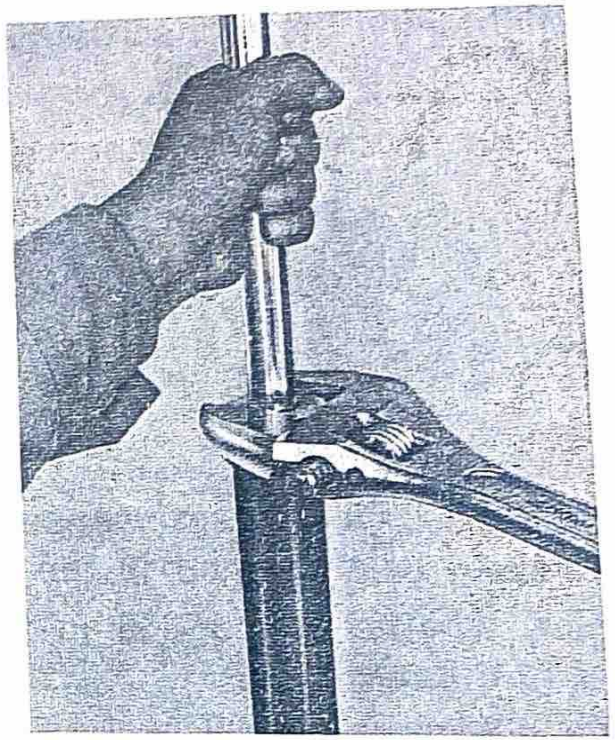
1) Remove the spring 1.
2) Loosen the ring nut (2).





3) Retighten the cap case (1).

Torque : 15 m-kg (108 ft-lb)



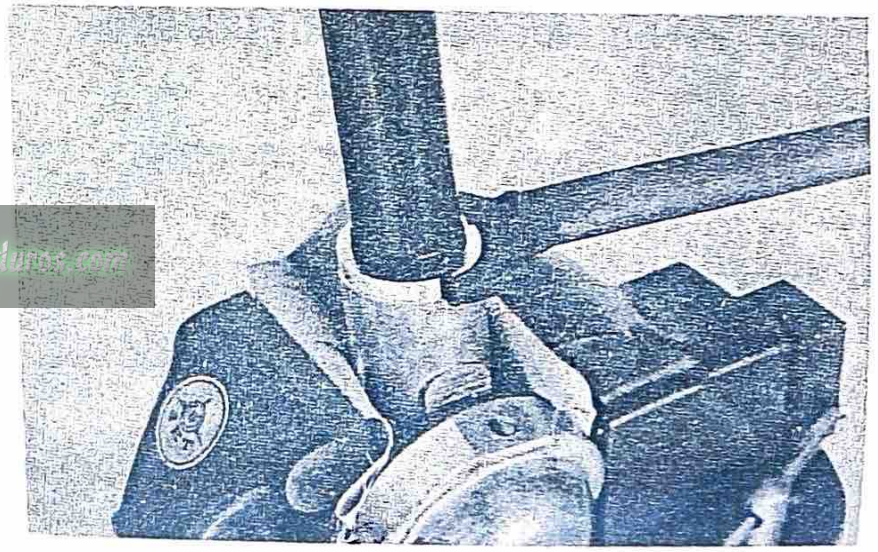
4) Retighten the ring nut (2).

Torque: 20 m-kg (146 ft-lb)

5) Install the spring 1.

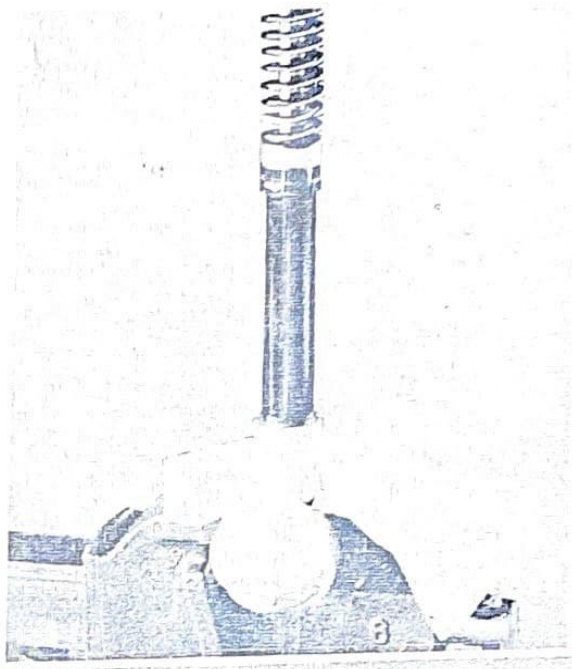
NOTE:

Never tap the cylinder case with a pipe wrench. For retightening, the suspension unit must be removed from the machine. For easy operation, the membrane housing (A) of the suspension unit should be held by a vise.



c. Inspection intervals

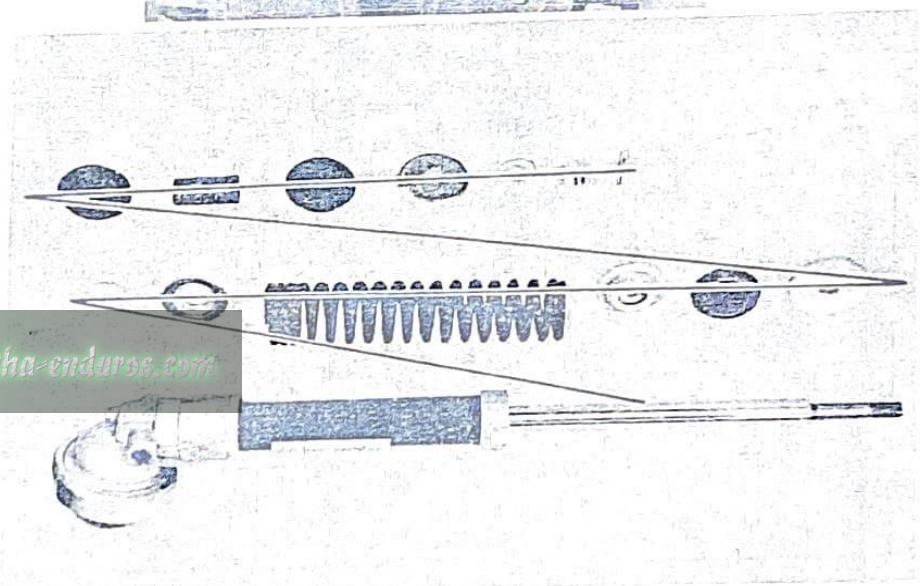
After-break-in inspection	After first 100 km (60 mile) of operation, check and retighten.
Periodical inspection	Check and retighten every 500 km (300 mile).



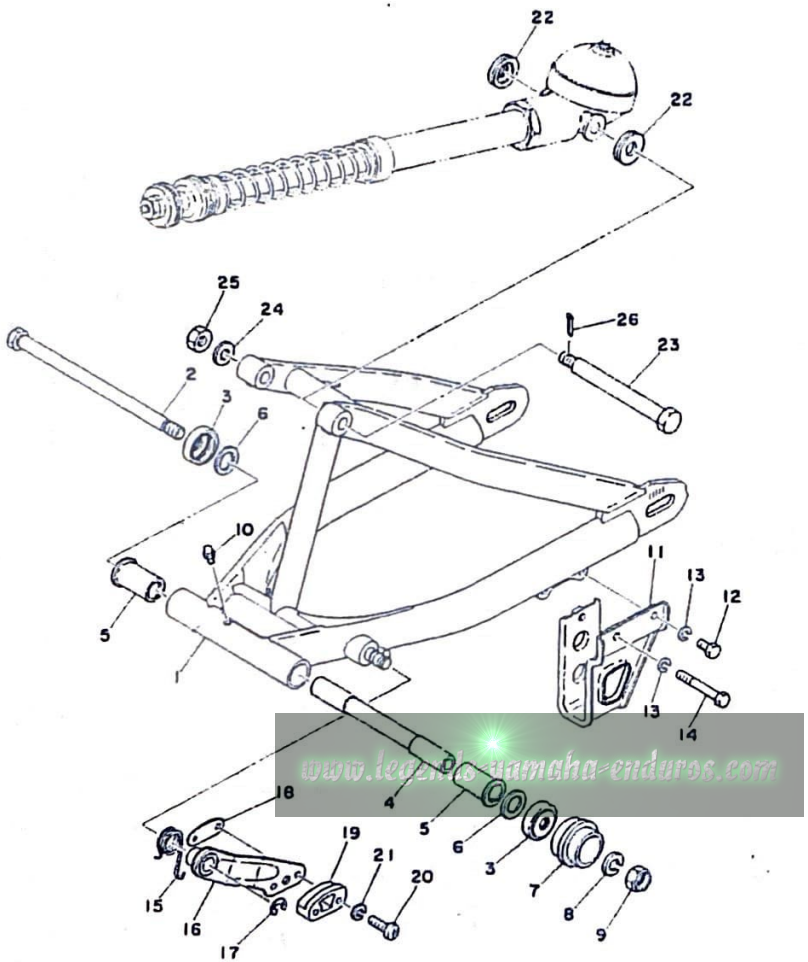
3. Rear Shock Spring Replacement

a. Cover the bolt hole areas of the membrane housing with a rag or rubber tube, and grip it in a vise. Using a pipe wrench or a monkey wrench, remove the T-nut. If any nut is damaged, replace.

T-nut Torque: 1.5 m-kg (11.0 ft-lb)



REAR ARM



1. Rear arm comp.
2. Pivot shaft
3. Guard seal
4. Bushing 2
5. Bushing
6. Shim(19-28-0.3)
7. Guard seal
8. Spring washer
9. U-nut
10. Grease nipple
11. Chain guard
12. Hexagon bolt
13. Spring washer
14. Bolt
15. Torsion spring
16. Tensioner arm
17. Circlip
18. Chain guide
19. Tensioner
20. Panhead screw
21. Spring washer
22. Thrust cover
23. Bolt
24. Plate washer
25. Hexagon nut
26. Cotter pin

In addition to the standard type, two different type rear shock springs are sold. A proper type should be selected according to the conditions of a racing course or the weight of the rider.

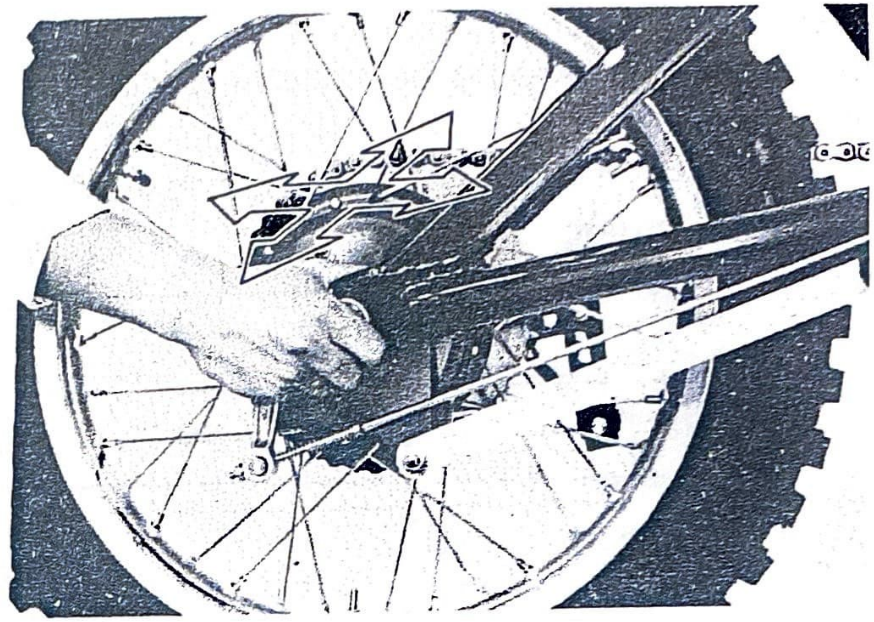
Type	Part No.	Spring constant kg/mm	Color cords
Soft	90501-80367	3.6	Painted white & yellow
Standard	90501-80362	3.8	Yellow
Hard	90501-80368	4.0	Painted blue & yellow

* The spring for the YZ250B/360B or MX250B/400B can be installed as option according to the rider's choice. According to the rider's choice, the spring for the YZ250B/360B or MX250/400B can be installed as option in addition to the above spring.

NOTE:
For assembly, the above-mentioned procedure should be reversed.

b. For adjustment or replacement of the nitrogen gas, or change of the shock absorber oil in the accumulator, or for assembly of the accumulator, or for disassembly of the accumulator, consult your authorized Yamaha dealer.

4. Swing Arm Inspection

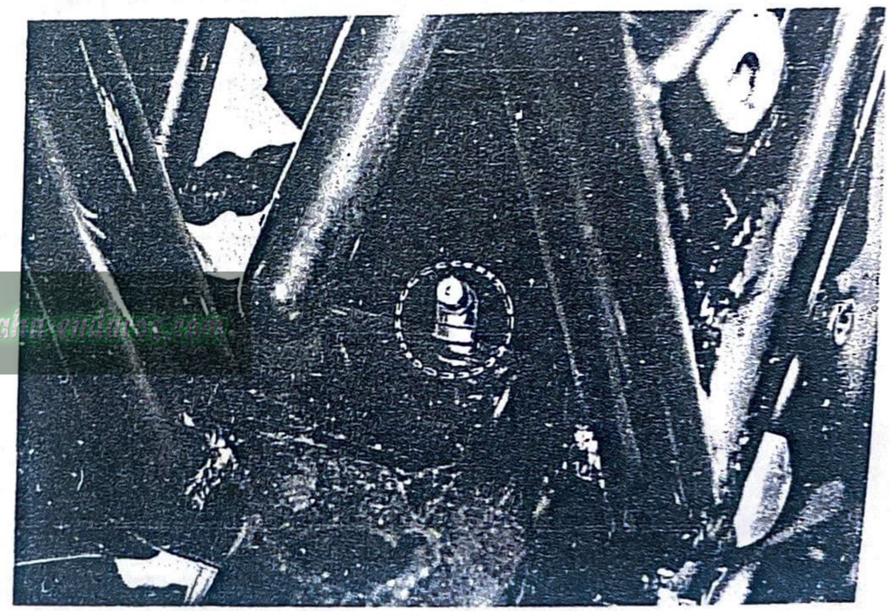


a. With the rear wheel and membrane housing bolt removed, hold the end of the swing arm, and check, free play by shaking it horizontally.

Swing arm freeplay: None

b. If freeplay is excessive, remove swing arm and replace swing arm housing.

5. Swing Arm Pivot Lubrication



The swing arm of the YZ125X is lubricated by feeding grease into the grease nipple using a grease gun.

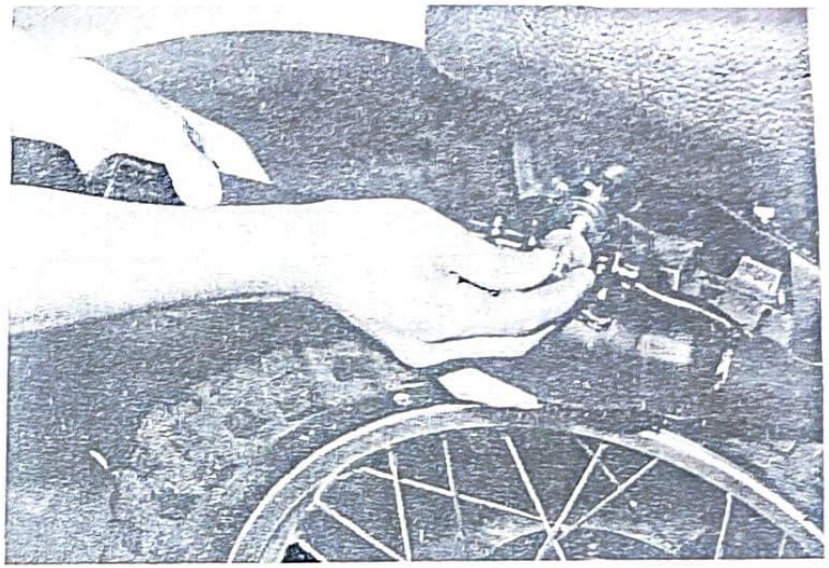
Recommended Lubricant: 90 wt, smooth lube grease

CHAPTER VII.
INSTALLATION OF THE OFF-ROAD RIDING KIT (U.S. only)

An off-road riding kit is provided with each vehicle to comply with noise level and spark arrester laws and regulations. Performance will be substantially decreased. Retuning is not required.

SECTION A. DESCRIPTION OF THE KIT

1. Spark arrester—silencer
2. Air cleaner case cap (L) and (R)



NOTE:

California, New Hampshire and Oregon residents

For off-road riding install the entire kit to insure compliance with state laws and regulations. (Change J.N. clip position 2nd to 1st.)

All other states

For off-road riding install the spark arrester - silencer only. To improve performance, the diameter of the silencer aperture may be enlarged from 9 mm to 25 mm. This procedure must not be performed by California, New Hampshire or Oregon riders.

CHAPTER VIII. MISCELLANEOUS

SECTION A. CONVERSION TABLES

Metric to Inch System

KNOWN	MULTIPLIER (Rounded off)	RESULT
TORQUE		
m-kg.	7.233	ft-lb
m-kg	86.796	in-lb
cm-kg	0.0723	ft-lb
cm-kg	0.8679	in-lb
WEIGHT		
kg	2.205	lb
g	0.0353	oz
FLOW/DISTANCE		
km/lit	2.352	mpg
km/h	0.6214	mph
km	0.6214	mi
m	3.2809	ft
m	1.0936	yd
cm	0.3937	in
mm	0.03937	in
VOLUME/CAPACITY		
cc	0.03381	oz (U.S. liq)
cc	0.06103	cu.in
lit	2.1134	pt (U.S. liq)
lit	1.057	qt (U.S. liq)
lit	0.2642	gal (U.S. liq)
MISC		
kg/mm	55.9970	lb/in
kg/cm²	14.2233	psi (lb/in²)
$\frac{9}{5}$. Centigrade (°C) + 32		Fahrenheit (°F)

Inch to Metric System

KNOWN	MULTIPLIER (Rounded off)	RESULT
TORQUE		
ft-lb	0.1383	m-kg
ft-lb	13.8313	cm-kg
in-lb	0.01152	m-kg
in-lb	1.1522	cm-kg
WEIGHT		
lb	0.4536	kg
0z	28.3286	g
FLOW/DISTANCE		
mi/gal	0.4252	km/lit
mi/h	1.6093	km/h
mi	1.6093	km
ft	0.3048	m
yd	0.9144	m
in	2.540	cm
in	25.40	mm
VOLUME/CAPACITY		
oz (U.S. liq)	29:577	cc
cu. in	16.385	cc
pt (U.S. liq)	0.4732	lit
qt (U.S. liq)	0:9461	lit
gal (U.S. liq.)	3.7850	lit
MISC.		
lb/in	0.01786	kg/mm
psi (lb/in²)	0.07031	kg/cm²
$\frac{5}{9}$. [Fehrenheit (°F)−32]		Centigrade (°C)

DEFINITION OF TERMS:

m-kg — Meter-kilogram: Usually torque.
g — Gram.
kg — Kilogram: 1,000 grams.
km — Kilometer.
lit — Liter.
km/lit — Kilometer per liter: Mileage.
km/lit — Cubic centimeter (cm³): Volume or capacity.
kg/mm — Kilogram per millimeter: Usually spring compression rate.
kg/cm² — Kilogram per square centimeter: Pressure.

SECTION B. CLEANING AND STORAGE

Cleaning

Frequent thorough cleaning of your motorcycle will not only enhance its appearance, but will improve general performance and extend the useful life of many components.

1. Before Cleaning the Machine:

a. Block off end of exhaust pipe to prevent water entry; a plastic bag and strong rubber band may be used.
b. Remove air cleaner or protect it from water with plastic covering.

NOTE:

With air cleaner removed make sure no water enters intake.

Make sure spark plug, gas cap, transmission oil filler plug and drain plug are properly installed.

2. If engine case is excessively greasy, apply degrasser with a paint brush. Do not apply degreser to chain, sprockets, or wheel axles.

3. Rinse dirt and degreaser off with garden hose, using only enough hose pressure to do the job. Excessive hose pressure may cause water seepage and contamination of wheel bearings, front forks, brake drums, and transmission seals. Many expensive repari bills have resulted from improper high-pressure detergent applications such as those available in coin-operated car washes.

4. Once the majority of dirt has been hosed off, wash all surfaces with warm water and mild detergent-type soap. An old tooth brush or bottle brush is handy to reach those hard to get to places.

5. Rinse machine off immediately with clean water and dry oil surfaces with a chamois skin, clean towel, or soft absorbent cloth.

6. Immediately after washing, remove excess moisture from chain and lubricate to prevent rust.

7. Chrome-plated parts such as handlebars, spokes, forks, etc. may be further cleaned with automotive chrome cleaner.

8. Clean the seat with a vinyl upholstery cleaner to keep the cover pliable and glossy.

9. Automotive-type was may be applied to all painted and chrome-plated surfaces. Avoid combination cleaner-waxes. Many contain abrasives which may paint or protective finish on fuel.

10. After finishing, start the engine immediately and allow to idle for several minutes.

Storage

Long term storage (30 days or more) of your motorcycle will require some preventive procedures to insure against deterioration. After cleaning machine thoroughly, prepare for storage as follows:

1. Drain fuel tank, fuel lines, and carburetor float bowl(s).

2. Remove empty fuel tank, pour a cup of 10W to 30W oil in tank, shake tank to coat inner surfaces thoroughly and drain off excess oil. Re-install tank.

3. Remove spark plug, pour about one table-spoon of 10W to 30W oil in spark plug hole and reinstall spark plug. Kick engine over several times (with ignition off) to coat cylinder wall with oil.

4. Remove drive chain. Clean thoroughly with solvent and lubricate with graphite-base chain lubricant. Re-install chain or store in a plastaic bag (tie to frame for safe-keeping).

5. Lubricate all control cables.

6. Block up frame to raise both wheels off ground. (Main stands can be used on machines so equipped).

7. Deflate tires to 12 lbs/in^2 (0.8 kgs/cm^2)

8. Tie a plastic bag over exhaust pipe poutlet to prevent moisture entering.

9. If storing in humid or salt-air atmosphere, coat all exposed metal surfaces with a light film of oil. Do not apply oil to rubber parts or seat cover.

SINCE 1887

YAMAHA MOTOR CO.,LTD.

IWATA, JAPAN

LIT-11626-00-11

PRINTED IN JAPAN
76・1－3.8×2