

YAMAHA

YTM200 AND YTM225

NOTE: Metric fasteners are used throughout vehicle.

CONDENSED SERVICE DATA

MODELS	YTM200EK, YTM200K, YTM200EL, YTM200L, YTM200ERN, YTM200N	YTM225DXK, YTM225DXL, YTM225DXN
General		
Engine Make	Own	Own
Engine Type	Air-Cooled, Four-Stroke	
Number of Cylinders	1	1
Bore	67 mm (2.64 in.)	70 mm (2.76 in.)
Stroke	55.7 mm (2.19 in.)	58 mm (2.28 in.)
Displacement	196 cc (12.0 cu. in.)	223 cc (13.6 cu. in.)
Compression Ratio	8.5:1	8.8:1
Engine Lubrication	Wet Sump; Pump	Wet Sump; Pump
Engine Oil Recommendation ..	SAE 20W-40	SAE 20W-40
Transmission Oil		
Recommendation	Same as Engine	Same as Engine
Forward Speeds	5	5
Reverse Speeds	*	0
Drive Chain:		
Type	520**
Number of Links	60
Tire Size	***25 x 12	***25 x 12
Tire Pressure (cold)	14.7 kPa (2.2 psi)	14.7 kPa (2.2 psi)
Vehicle Weight W/Full		
Fuel Tank (Approx.)	Chain Drive—132 kg (290 lbs.) Shaft Drive—161 kg (354 lbs.)	153 kg (337 lbs.)
<p>* Model YTM200ERN is equipped with a single reverse speed. ** Models YTM200K, YTM200L and YTM200N are equipped with chain drive. *** Some early models are equipped with 8 inch wheels and 22 x 11 tires.</p>		
Tune-Up		
Engine Idle Speed	1350-1450 rpm	1350-1450 rpm
Spark Plug:		
NGK	D7EA	D7EA
Nippon Denso	X22ES-U	X22ES-U
Electrode Gap	0.6-0.7 mm (0.024-0.028 in.)	0.6-0.7 mm (0.024-0.028 in.)
Ignition:		
Type	CDI	CDI
Timing	<hr style="border: none; border-top: 1px solid black; margin: 0;"/> 10° BTDC @ 1000 rpm <hr style="border: none; border-top: 1px solid black; margin: 0;"/> 30° BTDC @ 6000 rpm <hr style="border: none; border-top: 1px solid black; margin: 0;"/>	
Carburetor	See Text	See Text
Throttle Cable Free-Play	3-5 mm (0.12-0.20 in.)	3-5 mm (0.12-0.20 in.)

**YTM200EK, YTM200K,
YTM200EL, YTM200L,
YTM200ERN,
YTM200N**

**YTM225DXK,
YTM225DXL,
YTM225DXN**

MODELS**Sizes-Clearances**

Valve Clearance (cold):

Intake	0.05-0.09 mm (0.0020-0.0035 in.)	0.05-0.09 mm (0.0020-0.0035 in.)
Exhaust	0.11-0.15 mm (0.0043-0.0060 in.)	0.11-0.15 mm (0.0043-0.0060 in.)
Valve Face Angle	45°	45°
Valve Seat Angle	45°	45°
Valve Seat Width	0.9-1.1 mm (0.035-0.043 in.)	0.9-1.1 mm (0.035-0.043 in.)
Valve Margin (Min.)	0.8 mm (0.031 in.)	0.8 mm (0.031 in.)
Valve Stem Diameter:		
Intake	5.975-5.990 mm (0.2352-0.2358 in.)	5.975-5.990 mm (0.2352-0.2358 in.)
Exhaust	5.960-5.975 mm (0.2346-0.2352 in.)	5.960-5.975 mm (0.2346-0.2352 in.)
Valve Guide Bore Diameter:		
Intake And Exhaust	6.000-6.012 mm (0.2362-0.2367 in.)	6.000-6.012 mm (0.2362-0.2367 in.)
Valve Stem-To-Guide Clearance:		
Intake	0.010-0.037 mm (0.0004-0.0015 in.)	0.010-0.037 mm (0.0004-0.0015 in.)
Exhaust	0.025-0.052 mm (0.0010-0.0020 in.)	0.025-0.052 mm (0.0010-0.0020 in.)
Valve Spring Free Length:		
Inner	35.5 mm (1.40 in.)	35.5 mm (1.40 in.)
Outer	37.2 mm (1.46 in.)	37.2 mm (1.46 in.)
Rocker Arm Bore	12.000-12.018 mm (0.4724-0.4731 in.)	12.000-12.018 mm (0.4724-0.4731 in.)
Wear Limit	12.03 mm (0.474 in.)	12.03 mm (0.474 in.)
Rocker Shaft Diameter	11.985-11.991 mm (0.4719-0.4720 in.)	11.985-11.991 mm (0.4719-0.4720 in.)
Wear Limit	11.94 mm (0.470 in.)	11.94 mm (0.470 in.)
Camshaft:		
Lobe Height Wear Limit—		
Intake	36.58 mm (1.440 in.)	36.58 mm (1.440 in.)
Exhaust	36.62 mm (1.442 in.)	36.62 mm (1.442 in.)
Base Circle Wear Limit—		
Intake	30.18 mm (1.188 in.)	30.18 mm (1.188 in.)
Exhaust	30.26 mm (1.191 in.)	30.26 mm (1.191 in.)
Camshaft Journal Diameter ..	19.960-19.980 mm (0.7858-0.7866 in.)	19.960-19.980 mm (0.7858-0.7866 in.)
	24.960-24.980 mm (0.9827-0.9834 in.)	24.960-24.980 mm (0.9827-0.9834 in.)
Camshaft Bushing Diameter ..	20.000-20.021 mm (0.7874-0.7882 in.)	20.000-20.021 mm (0.7874-0.7882 in.)
	25.000-25.021 mm (0.9843-0.9851 in.)	25.000-25.021 mm (0.9843-0.9851 in.)

MODELS Sizes-Clearances (Cont.)	YTM200EK, YTM200K, YTM200EL, YTM200L, YTM200ERN, YTM200N	YTM225DXK, YTM225DXL, YTM225DXN
Camshaft Runout (Max.) . . .	0.03 mm (0.0012 in.)	0.03 mm (0.0012 in.)
Cylinder Head Distortion (Max.)	0.03 mm (0.0012 in.)	0.03 mm (0.0012 in.)
Piston-to-Cylinder Wall Clearance Measured 4mm from Skirt Bottom	0.025-0.045 mm (0.0010-0.0018 in.)	0.025-0.045 mm (0.0010-0.0018 in.)
Cylinder Bore Diameter	66.970-67.000 mm (2.6012-2.6386 in.)	69.970-70.020 mm (2.7547-2.7567 in.)
Cylinder Taper (Max.)	0.005 mm (0.0002 in.)	0.005 mm (0.0002 in.)
Cylinder Out-of-Round (Max.)	0.01 mm (0.0004 in.)	0.01 mm (0.0004 in.)
Piston Ring End Gap: Top & Second Ring	0.15-0.30 mm (0.006-0.012 in.)	0.15-0.30 mm (0.006-0.012 in.)
Oil Ring	0.3-0.9 mm (0.012-0.035 in.)	0.3-0.9 mm (0.012-0.035 in.)
Piston Ring Side Clearance: Top Ring	0.03-0.07 mm (0.0012-0.0027 in.)	0.03-0.07 mm (0.0012-0.0027 in.)
Second Ring	0.02-0.06 mm (0.0008-0.0024 in.)	0.02-0.06 mm (0.0008-0.0024 in.)
Connecting Rod Big End Side Clearance	0.35-0.65 mm (0.014-0.025 in.)	0.35-0.65 mm (0.014-0.025 in.)
Connecting Rod Small End Shake (Max.)	2.0 mm (0.08 in.)	2.0 mm (0.08 in.)
Crankshaft Runout	†	†
Clutch Friction Plate Thickness (Min.)	2.8 mm (0.110 in.)	2.8 mm (0.110 in.)
Clutch Steel Plate Warpage Limit	0.2 mm (0.008 in.)	0.2 mm (0.008 in.)
Clutch Spring Free Length . . .	34.9 mm (1.37 in.)	34.9 mm (1.37 in.)
Rear Axle and Drive Gear Backlash	0.1-0.2 mm (0.004-0.008 in.)	0.1-0.2 mm (0.004-0.008 in.)

†Maximum allowable crankshaft runout with crankshaft supported at main bearings is 0.02 mm (0.0008 in.) at flywheel taper and 0.06 mm (0.0024 in.) at outer right end.

Capacities

Engine/Transmission Sump . .	1.8 L (1.9 qt.)	1.8 L (1.9 qt.)
Fuel Tank	9 L (2.4 gal.)	9 L (2.4 gal.)
Forks	194 cc 6.5 fl. oz.	117 cc 4.0 fl. oz.

**YTM200EK, YTM200K,
YTM200EL, YTM200L,
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**YTM225DXK,
YTM225DXL,
YTM225DXN**

**MODELS
Tightening Torques
(All Models)**

Balancer Shaft Nut	50 N·m (36 ft.-lbs.)	50 N·m (36 ft.-lbs.)
Camshaft Sprocket	60 N·m (43 ft.-lbs.)	60 N·m (43 ft.-lbs.)
Chain Tensioner Nut	30 N·m (22 ft.-lbs.)	30 N·m (22 ft.-lbs.)
Clutch Nut:		
Centrifugal Clutch	50 N·m (36 ft.-lbs.)	50 N·m (36 ft.-lbs.)
Disc Clutch	78 N·m (56 ft.-lbs.)	78 N·m (56 ft.-lbs.)
Crankcase	7 N·m (62 in.-lbs.)	7 N·m (62 in.-lbs.)
Cylinder Base Screws	10 N·m (84 in.-lbs.)	10 N·m (84 in.-lbs.)
Cylinder Head:		
Flange Head Screws	22 N·m (16 ft.-lbs.)	22 N·m (16 ft.-lbs.)
Plain Head Screws	20 N·m (14 ft.-lbs.)	20 N·m (14 ft.-lbs.)
Engine Mount:		
Front & Top	36 N·m (24 ft.-lbs.)	36 N·m (24 ft.-lbs.)
Rear	44 N·m (32 ft.-lbs.)	44 N·m (32 ft.-lbs.)
Front Axle	50 N·m (36 ft.-lbs.)	50 N·m (36 ft.-lbs.)
Manual Starter Pulley	50 N·m (36 ft.-lbs.)	50 N·m (36 ft.-lbs.)
Rear Axle Nuts:		
Slotted Ring Nut	100 N·m (72 ft.-lbs.)	100 N·m (72 ft.-lbs.)
20 mm Nuts	130 N·m†† (94 ft.-lbs.)	130 N·m (94 ft.-lbs.)
Spark Plug	20 N·m (14 ft.-lbs.)	20 N·m (14 ft.-lbs.)
Steering Stem Screw	90 N·m (65 ft.-lbs.)	90 N·m (65 ft.-lbs.)
Steering Stem Slotted Nut ...	38 N·m (27 ft.-lbs.)	38 N·m (27 ft.-lbs.)

††On shaft drive 200 cc models, tightening torque for castellated axle nuts is 145 N·m (105 ft.-lbs.) while tightening torque for plain axle nuts is 210 N·m (150 ft.-lbs.).

**Tightening Torques
(Shaft Drive)**

Transmission Output Shaft Gear Nut	60 N·m (43 ft.-lbs.)	60 N·m (43 ft.-lbs.)
Bearing Retainer Nut in Drive Shaft Housing	60 N·m§ (43 ft.-lbs.)	60 N·m§ (43 ft.-lbs.)
Pinion Bearing Nut	100 N·m§ (72 ft.-lbs.)	100 N·m§ (72 ft.-lbs.)

§Nut has left-hand threads.

LUBRICATION

ENGINE AND TRANSMISSION. The engine and transmission are lubricated by a crankshaft driven oil pump. Recommended oil is SAE 20W-40 with an API classification of SE. The oil should be changed and the oil filter should be cleaned after the first month of operation and after every six months thereafter.

The oil sump is filled through fill plug (F—Fig. Y6-1) opening. The oil level should be maintained between the two marks on the oil plug dipstick. When checking the oil level, rest the plug threads against the top threads of the hole; do not screw the plug into the cover.

Oil is drained by removing the oil drain plug (D—Fig. Y6-2) located on the left side. Note that the spring and oil strainer will be released when the drain plug is unscrewed. The oil filter element is located behind cover (C—Fig. Y6-1). Unscrewing lower cover screw (S) will allow oil to drain from the filter compartment. Clean the oil filter element in a suitable solvent; renew the filter element if it is damaged or blocked.

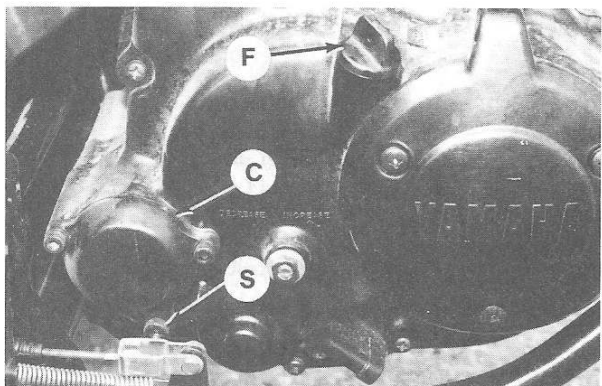


Fig. Y6-1—View showing location of oil fill plug (F). A dipstick is attached to the plug. The oil filter is located behind cover (C).

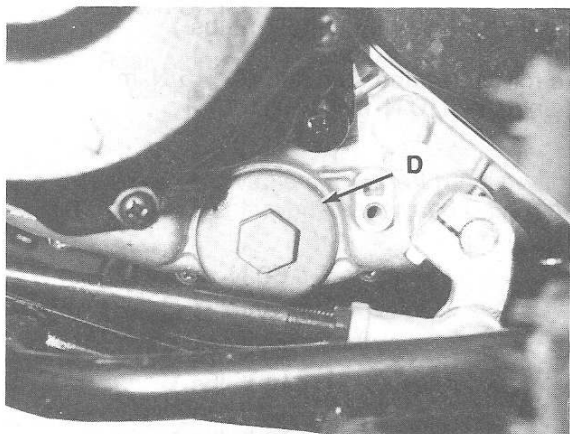


Fig. Y6-2—Remove plug (D) to drain oil from engine/transmission.

Approximately 300 mL (0.3 qt.) of oil will be retained in the crankcase compartments after draining the oil. Fill the sump with 1.5 L (1.6 qts.) so the proper oil level is obtained on the oil dipstick. If the engine crankcases are disassembled, it will require 1.8 L (1.9 qts.) of oil to fill the sump.

To be sure the oil pump is pumping oil to the engine, slightly unscrew oil passage screw (W—Fig. Y6-3). Start the engine and note if oil seeps past the screw within one minute. If oil seepage is noted, tighten the screw. If no oil is observed, determine the reason for no oil flow.

FINAL DRIVE. To check final drive oil level on shaft drive models, remove fill plug (F—Fig. Y6-4). Oil should reach bottom edge of fill plug hole with vehicle on a level surface. Recommended oil is SAE 80 API GL-4 hypoid gear oil.

Remove drain plug (D) to drain oil. Oil capacity of final drive housing is 130 cc (4.4 fl. oz.).

The final drive housing oil should be changed every year.

DRIVE CHAIN. The drive chain, on models so equipped, is constructed with "O" rings to retain lubricant in the inner components. The chain must be lubricated only with chain oils designed for lubricating this type chain. SAE 30, 40 or 50 oil is the recommended chain lubricant. The drive chain should be lubricated prior to each period of vehicle operation.

Only kerosene should be used to clean the chain. Do not use gasoline, cleaning solutions or solvents to clean the chain as the "O" rings may be damaged.

WHEEL BEARINGS. Wheel bearings should be packed with wheel bearing grease once each year. Disassemble components as needed for access to bearings.

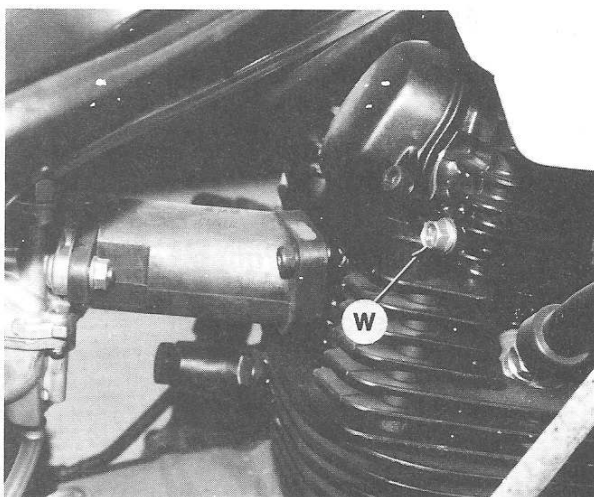


Fig. Y6-3—With engine running at idle, oil should seep around cap screw (W) when it is loosened.

STEERING BEARINGS. Steering bearings should be lubricated with wheel bearing grease once every two years. Disassemble steering components as outlined in **STEERING** section for access to bearing.

CABLES AND LEVERS. Depending on use and riding conditions, lubricate all cables with cable lubricant or light oil. Lubricate lever pivot pins and cable ends.

The front brake camshaft should be lubricated with a lithium base grease after the first three months of vehicle operation and every six months thereafter. Do not lubricate the camshaft excessively as grease may contact brake shoes.

AIR CLEANER ELEMENT

All models are equipped with a foam type air cleaner element located underneath the seat. The air cleaner element should be removed and cleaned after the first three months of vehicle operation and every six months thereafter.

Detach the seat and fender assembly from the frame for access to the air cleaner. Remove the air cleaner cover and remove the air cleaner element assembly. Disassemble the element assembly. Clean the filter elements in a nonflammable solvent. Carefully squeeze solvent out of filter. Inspect the filter elements for tears, holes or other damage. Allow the filter to dry then pour SAE 10W-30 oil into the filter. Squeeze out any excess oil. Too much oil in the filter elements may affect the fuel:air ratio. Reinstall the filter.

FUEL SYSTEM

CARBURETOR. The carburetor is connected to the throttle lever by a cable. Throttle lever free play must be

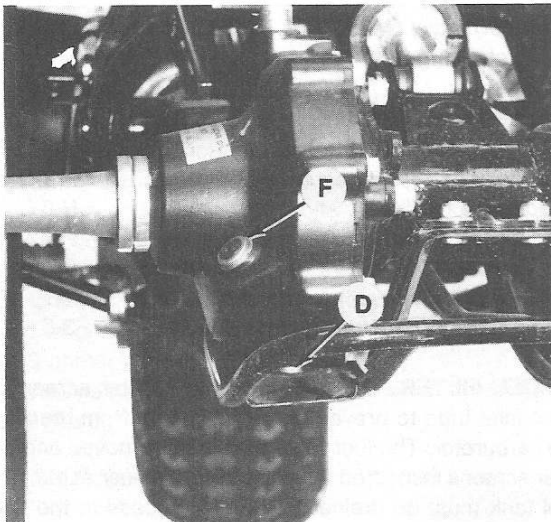


Fig Y6-4—View showing location of oil fill plug (F) and drain plug (D) on shaft drive.

adjusted for proper operation. Throttle lever free play should be 3-5 mm (0.12-0.20 in.) as measured at end of lever. Adjust free play by turning adjuster in throttle cable near upper end of cable, or by turning adjuster (A—Fig. Y6-5) at carburetor.

On some later models, starter lever free play is adjusted by turning cable adjuster (J—Fig. Y6-5). There should be 1-2 mm (0.04-0.08 in.) free play with the starter lever end in the up position.

Refer to Fig Y6-6 for location of idle mixture screw (16). On 200 cc models with chain drive the idle mixture screw is located at (M). Initial setting of idle mixture screw is 1¾-2½ turns out from a lightly seated position on 200 cc models. Initial setting of idle mixture screw is 1-2 turns out on 225 cc models. Final adjustment should be performed with engine running at normal operating temperature.

Adjust the idle speed screw (19—Fig. Y6-6) so engine idles at 1350-1450 rpm. After adjusting carburetor, check throttle lever free play.

Float height may be measured after removing carburetor, removing the fuel bowl and inverting the carburetor. Float height (H—Fig. Y6-8) should be 21-22 mm (0.827-0.866 in.).

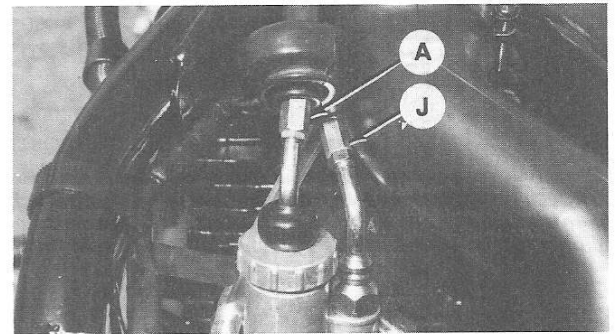


Fig Y6-5—Rotate adjuster (A) to adjust throttle lever free play. Rotate adjuster (J) to adjust starter lever free play. Refer to text for adjustment procedure.

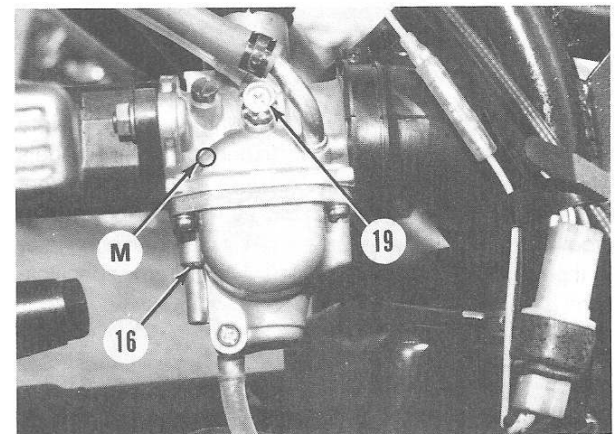


Fig. Y6-6—View showing location of idle speed screw (19). The idle mixture screw is located at (16) or at (M).

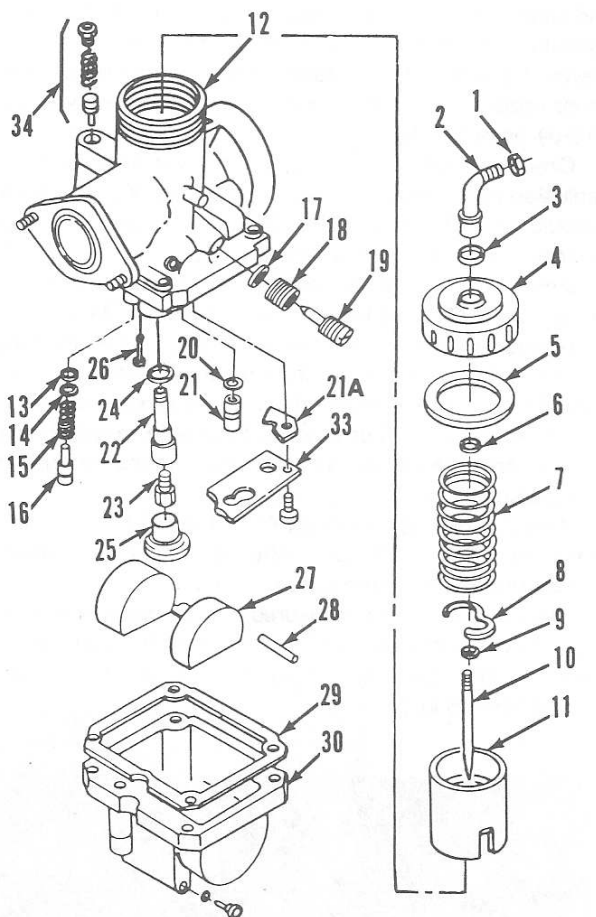


Fig Y6-7—Exploded view of typical Mikuni carburetor used on YTM200 and YTM225 models. Inlet valve retainer (21A) is used on models with an unthreaded inlet valve (21). Idle mixture screw (16) is located in side of body on 200 cc chain drive models (see Fig. Y6-6).

- | | | |
|--------------------|------------------------|-------------------------|
| 1. Nut | 12. Body | 22. Needle jet |
| 2. Cable guide | 13. "O" ring | 23. Main jet |
| 3. Washer | 14. Washer | 24. Washer |
| 4. Cap | 15. Spring | 25. Cover |
| 5. Washer | 16. Idle mixture screw | 26. Pilot jet |
| 6. "E" ring | 17. "O" ring | 27. Float |
| 7. Spring | 18. Spring | 28. Float pin |
| 8. Retainer | 19. Idle speed screw | 29. Gasket |
| 9. Jet needle clip | 20. Washer | 30. Fuel bowl |
| 10. Jet needle | 21. Inlet valve | 33. Retainer |
| 11. Throttle slide | 21A. Retainer | 34. Starter valve assy. |

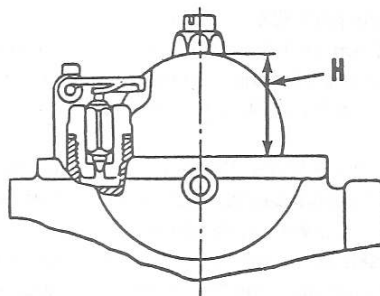


Fig. Y6-8—Float height (H) should be 21-22 mm (0.827-0.866 in.).

YTM200K (Cont.)

Main jet	#102.5
Needle jet	N-8
Pilot air jet	#1.3
Pilot jet	#35
Starter jet	65
Throttle slide cutaway	3.5

YTM200EK, YTM200EL, YTM200ERN, YTM200L & YTM200N

Carburetor mfg.	Mikuni
Model	VM22
Jet needle	4H23
Main air jet	1.7
Main jet	#112.5
Needle jet	N-6
Pilot air jet	#130
Pilot jet	#25
Starter jet	65*
Throttle slide cutaway	4.0

*YTM200ERN is equipped with a number 85 starter jet.

YTM225DXK, YTM225DXL & YTM225DXN

Carburetor mfg.	Mikuni
Model	VM22
Jet needle	5L10
Main air jet	1.6
Main jet	#112.5
Needle jet	N-8
Pilot air jet	#60
Pilot jet	#20
Starter jet	65
Throttle slide cutaway	3.5

Refer to Fig. Y6-7 when overhauling carburetor. Note that fuel inlet valve seat is threaded on some models while seat is unthreaded and retainer (21A) holds seat on other models. Jet needle clip (9) should be in third groove from top of jet needle (10) on all models. Refer to the following tables for standard carburetor specifications.

YTM200K

Carburetor mfg.	Mikuni
Model	VM22
Jet needle	4L25
Main air jet	1.5

FUEL FILTER. The fuel valve has a filter screen on each inlet tube to prevent foreign material from reaching the carburetor. The fuel valve should be removed and the filter screens inspected if fuel blockage is suspected. The fuel tank must be drained of fuel for access to the filter screens as the fuel valve must be removed from the fuel tank.

IGNITION SYSTEM

All models are equipped with a pointless, capacitor discharge ignition system. The charge coil and trigger coil are attached to the inside of the left side cover. The CDI unit and ignition coil are attached to the frame assembly.

Ignition timing is not adjustable. Ignition timing should be correct if all components are in good working condition. Ignition timing can be checked by removing plug (P—Fig. Y6-9) on the upper side of the left side cover. Use a power timing light to check ignition timing with the engine running at idle speed. At idle speed, the "F" mark on the flywheel should align with notch (N) in the timing plug hole.

Some ignition components can be checked using an ohmmeter. To check the trigger coil, disconnect the connector between the magneto components and the CDI unit. Connect one ohmmeter lead to the white/red lead from the magneto and the other ohmmeter lead to the white/green lead from the magneto. The ohmmeter reading should be 176-216 ohms.

To check the charge coil, disconnect the connector between the magneto components and the CDI unit. Connect one ohmmeter lead to the brown lead from the magneto and the other ohmmeter lead to the black lead from the magneto. The ohmmeter reading should be 347-425 ohms.

Ignition coil resistance readings should be 0.72-0.98 ohms for the primary windings and 5000-6790 ohms for the secondary windings.

If the ignition system malfunctions and all components test satisfactory, replace the CDI unit with a new or known to be good unit and recheck the ignition system.

ELECTRICAL SYSTEM

Chain Drive Models

Chain drive models are equipped with a lighting coil attached to the inside of the left side cover. The lighting coil provides electrical power for the lights.

The lighting coil should produce at least 12 volts AC at 3000 rpm and at least 18 volts AC at 8000 rpm. The lighting coil may be checked using an ohmmeter by connecting one ohmmeter lead to the yellow/red wire leading to the light switch and connecting the other ohmmeter lead to ground. The ohmmeter reading should be 0.70-0.86 ohms.

The headlight is a 45W/45W unit while the taillight is an 8W unit.

Shaft Drive Models

Shaft drive models are equipped with a charging system, battery and electric starter. Electricity for the lights

when the engine is running is provided by the generating coil attached to the inside of the left side cover. When the engine is not running electricity for lighting is provided by the battery.

BATTERY. The battery is accessible after removing the seat and fender assembly. The negative battery terminal is grounded on all models. The battery is a 12 volt unit with 14 amp-hour capacity. Battery size is GM14AZ-4A.

CHARGING SYSTEM. The charging system consists of a generating coil attached to the inside of the left side cover and a rectifier/regulator located just ahead of the taillight.

The charging system should produce 14-15 VDC at 5000 rpm.

NOTE: Do not disconnect battery terminal wires while the engine is running as excessive generator coil output will damage the rectifier/regulator.

To check the generator coil, remove the seat and fender assembly for access to the wiring. Disconnect the white wire lead from the magneto at the connector. Measure resistance between the white magneto lead and negative battery terminal. Resistance should be 0.36-0.44 ohms.

To check the rectifier in the rectifier/regulator using an ohmmeter, disconnect the connector for the rectifier/regulator. Connect the positive ohmmeter lead to the red wire lead of the rectifier/regulator and the negative lead to the black rectifier/regulator wire lead. There should be no resistance. Reverse the ohmmeter leads so the posi-

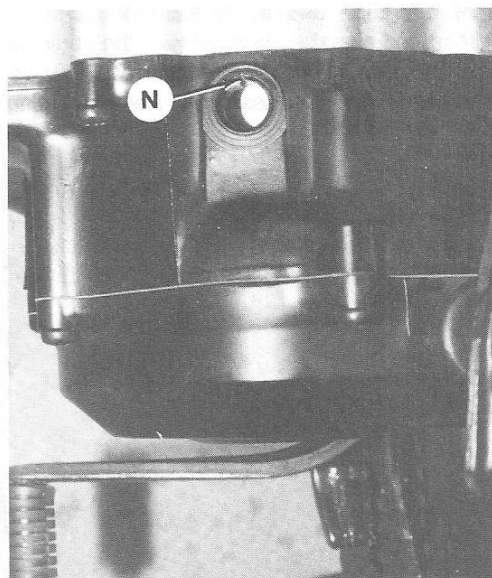


Fig. Y6-9—Remove plug (P) to view timing marks on flywheel.

Yamaha YTM200 & YTM225

tive lead is connected to the black wire and the negative lead is connected to the red wire. There should be infinite resistance. Replace the rectifier/regulator if resistance readings are incorrect.

If the charging system produces less or more than 14-15 VDC and the battery, generating coil and rectifier are believed good, then the rectifier/regulator may be faulty and should be replaced with a new or good unit.

ELECTRIC STARTER. All shaft drive models are equipped with an electric starter. The starting circuit consists of the starter, starter relay, starter switch, cutoff relay and neutral switch. The cutoff relay and neutral switch prevent actuation of the starter relay unless the transmission is in neutral.

The starter relay is located to the left of the rectifier/regulator while the cutoff relay is located near the right side of the rectifier/regulator. The neutral switch is located above and to the right of the engine drain plug. The electric starter motor is mounted on the front of the engine.

The starter motor may be removed after detaching the brake pedal spring and unscrewing the two screws securing the motor. Note the "O" ring on the front of the motor. Minimum brush length is 5 mm (0.197 in.). Minimum commutator diameter is 22 mm (0.866 in.). Armature coil resistance should be 0.023 ohm.

VALVE SYSTEM

The valves are actuated by rocker arms which ride against a single camshaft located in the cylinder head. The camshaft is driven through a roller chain by the left end of the crankshaft.

Valve clearance should be adjusted after the first month of operation and every six months thereafter. Valve clearance must be checked with the engine cold.

To adjust valve clearance, proceed as follows: Remove the seat and fender assembly. Remove timing plug

(P—Fig. Y6-9) and the intake and exhaust valve covers (IN and EX—Fig. Y6-10). Rotate the crankshaft so the "T" mark (TDC) on the flywheel is aligned with the notch in the timing plug hole and the piston is on its compression stroke. Note that the intake valve rocker arm will not move as the "T" mark approaches the notch if the piston is on the compression stroke. Clearance between the valve end and the rocker arm screw should be 0.05-0.09 mm (0.002-0.004 in.) for the intake valve and 0.11-0.15 mm (0.004-0.006 in.) for the exhaust valve. Loosen the locknut and turn the screw to adjust valve clearance. Use the proper tool when turning the adjusting screw. Retighten the locknut and recheck the clearance. When installing the intake valve cover, the "V" ridge on the inside must be at the top and point down when installed.

Check decompression lever adjustment as outlined in the following section.

DECOMPRESSION LEVER

All models are equipped with a decompression mechanism which allows holding the exhaust valve open a slight amount to ease starting. The decompression lever is actuated either by moving the lever by hand on some models or through a cable on other models.

To adjust the cable actuated decompression lever, remove the seat and fender assembly. Remove timing plug (P—Fig. Y6-9) and the intake valve cover (IN—Fig. Y6-10). Rotate the crankshaft so the "T" mark (TDC) on the flywheel is aligned with the notch in the timing plug hole and the piston is on its compression stroke. Note that the intake valve rocker arm will not move as the "T" mark approaches the notch if the piston is on the compression stroke. There should be 2-3 mm (0.08-0.12 in.) free play at the end of the decompression lever. Adjust free play by turning the cable adjuster. When installing

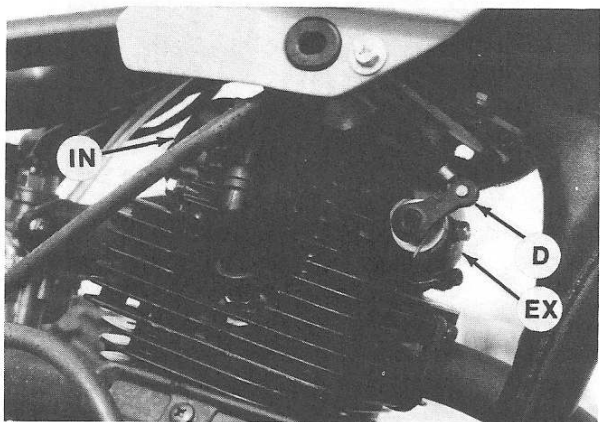


Fig. Y6-10—View showing location of intake valve cover (IN), exhaust valve cover (EX) and decompression lever (D).

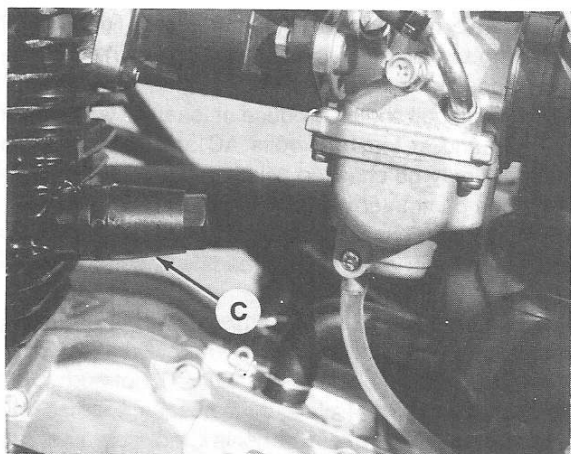


Fig. Y6-11—Remove cap (C) for access to camshaft chain adjuster (J—Fig. Y6-12).

the intake valve cover, the "V" ridge on the inside must be at the top and point down when installed.

CAMSHAFT CHAIN

The camshaft is driven by a roller chain which is connected to the left end of the crankshaft. Camshaft chain tension is determined by a spring loaded plunger that bears against the chain follower.

To adjust cam chain tension, remove timing plug (P—Fig. Y6-9) and the intake valve cover (IN—Fig. Y6-10). Rotate the crankshaft so the "T" mark (TDC) on the flywheel is aligned with the notch in the timing plug hole and the piston is on its compression stroke. Note that the intake valve rocker arm will not move as the "T" mark approaches the notch if the piston is on the compression stroke. Unscrew cap (C—Fig. Y6-11). Loosen locknut (N—Fig. Y6-12) and turn adjuster (J) so pushrod end (P) is flush with end of adjuster. Reinstall timing plug and intake valve cover. When installing the intake valve cover, the "V" ridge on the inside must be at the top and point down when installed.

Start and run the engine at idle. Note movement of pushrod (P). Pushrod should move slightly. If pushrod does not move back out adjuster until slight pushrod movement is obtained. Retighten locknut and install cap.

CLUTCH

All models are equipped with two clutches, a centrifugal type clutch and a multiple-disc type clutch. The centrifugal clutch is located on the right end of the crankshaft and is actuated by engine rpm. The multiple-disc clutch is attached to the right end of the transmission input shaft and is actuated by the gear shift mechanism. During gear

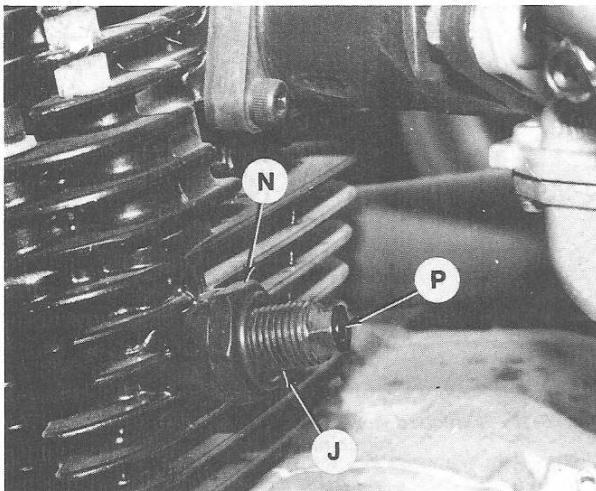


Fig. Y6-12—Plunger (P) should move slightly with engine running at idle. Refer to text for camshaft chain tension adjustment.

selection the multiple-disc clutch is disengaged to permit smooth transmission operation.

To adjust clutch, loosen locknut (N—Fig. Y6-13). Turn adjuster screw (S) counterclockwise until resistance is felt then turn screw $\frac{1}{8}$ turn clockwise. Retighten locknut.

MANUAL STARTER

All models are equipped with a manual starter. On some models, a gear mechanism inside the starter pulls the cable connected to the decompression lever to ease starting.

To disassemble the starter, remove the starter then detach the starter handle and allow the rope to wind into the starter. Remove the starter shaft nut, drive plate, wire clip, pawl and pawl spring. Carefully remove the rope pulley. If necessary, remove decompression mechanism components on models so equipped. If necessary, remove rewind spring cover and spring while being careful not to allow spring to uncoil uncontrolled.

When assembling the starter, note that the rewind spring must be installed so spring coils are wound in a counterclockwise direction from outer end. If so equipped, install decompression mechanism with springs in proper location. Wrap the starter rope around the rope pulley in a clockwise direction as viewed from pawl side of pulley. Leave approximately 400 mm (16 in.) of rope unwrapped (if equipped with decompression mechanism leave 650 mm (25½ in.) unwrapped). Install rope pulley, pass rope end through rope outlet and install rope handle. Install the pawl spring and pawl with the long end of the spring inserted into the rope pulley and the short end against the backside of the pawl. Install pawl so narrow end points in a counterclockwise direction. Install wire clip, drive plate and nut: closed end of wire clip must be adjacent to wide end of pawl. Pull rope into notch in

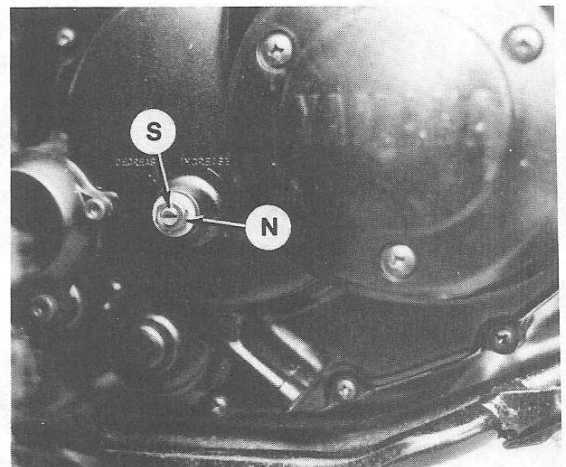


Fig. Y6-13—View showing location of clutch adjusting screw. Refer to text for adjustment procedure.

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pulley and rotate pulley four turns clockwise to preload rewind spring. Check starter operation, then install starter on engine.

FRONT AXLE

The front axle is supported by two wheel bearings. To remove the wheel assembly, support the front of the vehicle, detach the brake cable, remove the axle nut cotter pin, unscrew the axle nut and withdraw the axle.

If the wheel bearings must be removed, move the inner spacer aside then use a suitable driving tool to dislodge the wheel bearings.

Before installation, apply a suitable grease to each wheel bearing. Install wheel bearings and inner spacer while using a suitable driving tool to seat bearings. Apply lithium grease to seal lips. Be sure retainer notch on brake plate engages lug on fork leg. Tighten axle nut to 50 N·m (36 ft.-lbs.).

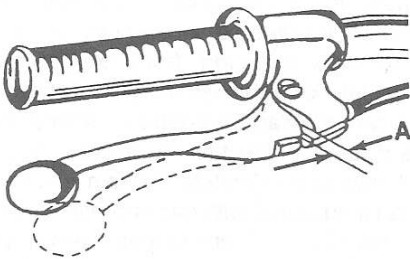


Fig. Y6-14—Front brake lever free play (A) should be 5-8 mm (0.2-0.3 in.).

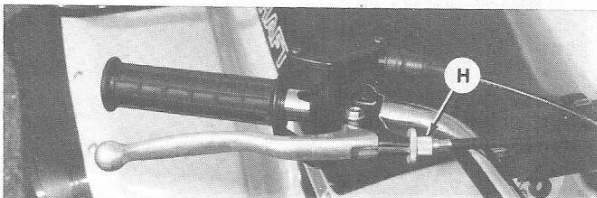
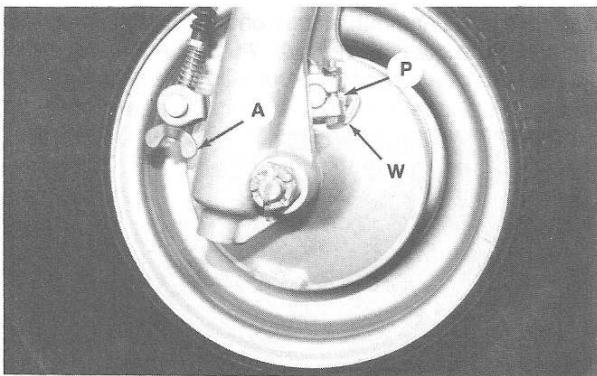


Fig. Y6-15—Adjust front brake lever free play by rotating cable adjusters (A or H). Pointer (P) indicates brake lining wear.

FRONT BRAKE

BRAKE LEVER FREE PLAY. Front brake lever free play (A—Fig. Y6-14) should be 5-8 mm (0.2-0.3 in.). Brake lever free play may be adjusted by turning adjuster (H—Fig. Y6-15) at handlebar lever or adjuster (A) at the cable end.

OVERHAUL. Brake lining wear is indicated by pointer (P—Fig. Y6-15). The brake shoe lining should be measured when the pointer reaches the lower portion of wear indicator (W).

The front brake assembly is accessible after removing the front axle and wheel. Renew the brake shoes if they are damaged or if lining thickness is less than 2 mm (0.079 in.). Minimum allowable brake drum inside diameter is 111 mm (4.37 in.).

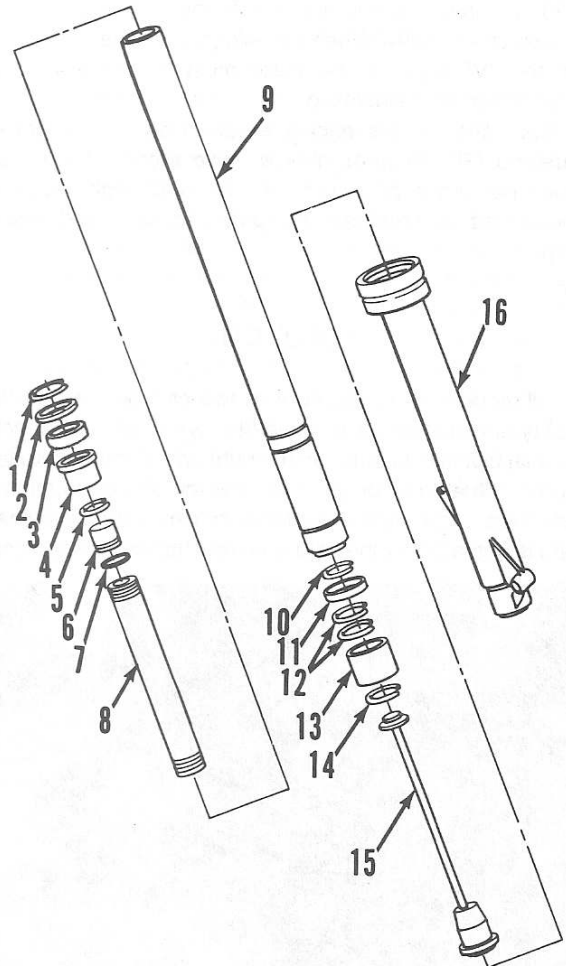


Fig. Y6-16—Exploded view of front fork assembly used on 200 cc models.

- | | | |
|-------------------|--------------------|---------------------|
| 1. Snap ring | 7. "O" ring | 12. Retaining rings |
| 2. Washer | 8. Spring | 13. Piston |
| 3. Oil seal | 9. Inner fork tube | 14. Retaining ring |
| 4. Bushing | 10. Retaining ring | 15. Damper rod |
| 5. Retaining ring | 11. Collar | 16. Outer fork tube |
| 6. Spring seat | | |

FRONT SUSPENSION

LUBRICATION. The front fork legs should be removed, drained and refilled with oil after the first month of operation and every six months thereafter.

To remove the fork legs, remove the front wheel, remove the front fender, detach the brake cable, loosen the clamp screws and remove each fork leg.

To drain oil from fork leg, remove cap at top of fork leg, push down spring seat (6—Fig. Y6-16 or 2—Fig. Y6-17) and detach the circlip retaining the spring seat. Remove the spring seat and pour out the fork oil (note that fork spring may fall out when fork leg is inverted).

Fill fork leg with SAE 10 hydraulic oil. Oil capacity for each fork leg is 194 mL (6.55 fl. oz.) for 200 cc models and 117 mL (3.95 fl. oz.) for 225 cc models. Reassemble the components and reinstall fork legs. A new retaining ring should be installed and be sure retaining ring is

seated in groove. Position the fork legs in the brackets so the top of the fork tube (not the cap) is flush with the upper bracket on 225 cc models or 10 mm (0.4 in.) above the bracket on 200 cc models. See Fig. Y6-18.

OVERHAUL. Refer to Fig. Y6-16 and Y6-17 for an exploded view of fork assembly. To disassemble fork leg, remove fork leg and drain oil as outlined in previous section. On 200 cc models, remove snap ring (1—Fig. Y6-16) and washer (2), then using a suitable tool remove oil seal (3). Pull out inner fork tube to disassemble remainder of components. On 225 cc models, unscrew retaining screw (12—Fig. Y6-17) and withdraw inner fork tube. Remove retaining ring (8) and pry out oil seal while being careful not to damage surrounding metal.

Minimum fork spring free length is 395.1 mm (15.56 in.) on 200 cc models or 501.1 mm (19.73 in.) on 225 cc models. Inspect components for damage and excessive wear. Check straightness of inner fork tube.

Note when reassembling fork assembly that small diameter end of fork spring on 200 cc models should contact top of damper rod (15—Fig. Y6-16). On 225 cc models, install fork spring (4—Fig. Y6-17) so close wound end is towards spring seat (2). Apply Loctite to retaining screw (12) and tighten to 23 N·m (17 ft.-lbs.). Fill with oil as outlined in previous section.

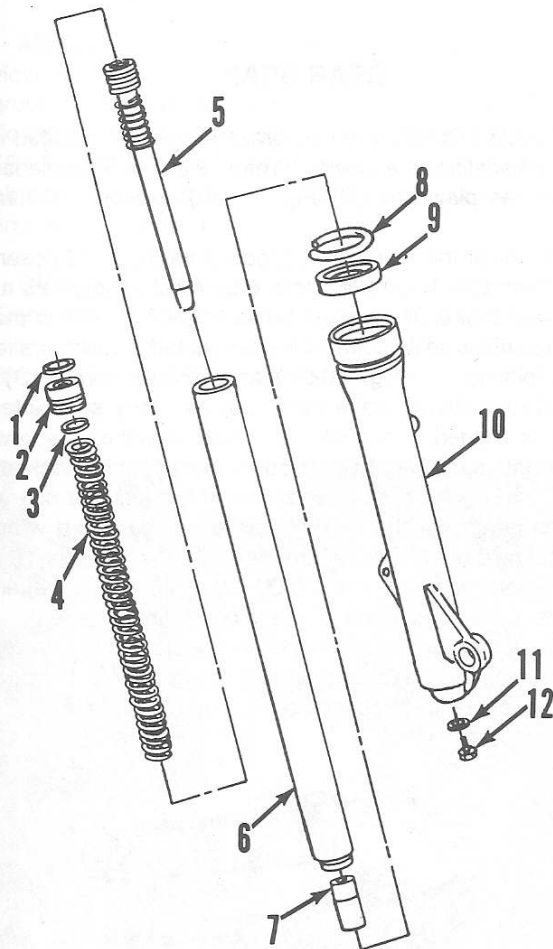


Fig. Y6-17—Exploded view of front fork assembly used on 225 cc models.

- | | | |
|-------------------|---------------------|---------------------|
| 1. Retaining ring | 5. Damper rod assy. | 9. Oil seal |
| 2. Spring seat | 6. Inner fork tube | 10. Outer fork tube |
| 3. "O" ring | 7. Damper | 11. Copper washer |
| 4. Spring | 8. Retaining ring | 12. Screw |

HANDLEBARS

The handlebar retaining clamps are constructed so that when properly installed there is a gap at the rear of the clamp. See Fig. Y6-18. Tighten clamp screws to 20 N·m (14 ft.-lbs.).

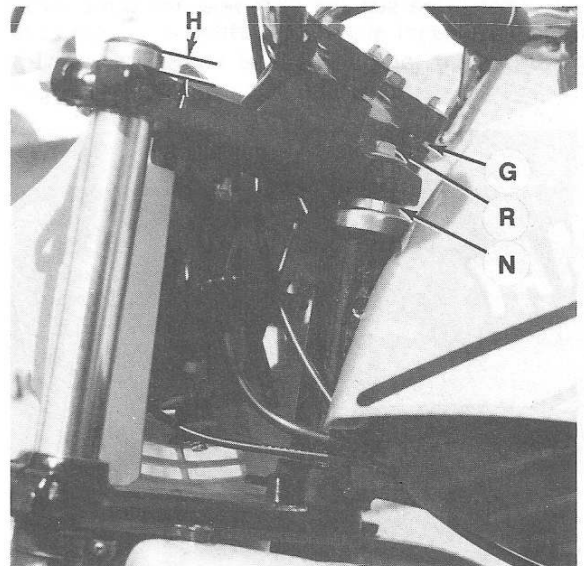


Fig. Y6-18—On 200 cc models, the inner fork tube end should protrude (H) 10 mm (0.4 in.) above bracket.

STEERING

ADJUSTMENT. Check the steering by supporting the vehicle so the front wheel is off the ground and the handlebars are free to turn. Attempt to move the bottom of the fork legs back and forth and check for looseness in the steering head assembly. Also rotate the handlebars and check for binding or roughness.

Adjust steering as follows: Loosen the upper fork leg clamp screws and the steering stem retaining screw (R—Fig. Y6-18). Rotate slotted steering stem nut (N) to remove steering play (tighten nut) or remove binding (loosen nut). Do not overtighten nut as binding will occur and bearings may be damaged. Do not loosen nut excessively as bearing balls may fall out. Tighten steering stem retaining screw (R) to 90 N·m (65 ft.-lbs.). Recheck steering play.

OVERHAUL. To separate the steering stem from the frame's steering head, proceed as follows: Remove the fork legs as previously outlined. Remove the headlight assembly and handlebars. Unscrew steering stem retaining screw (R) and separate steering stem from steering head while being careful not to lose bearing balls which fall out as steering stem is lowered.

If suitable tools are available, the bearing races on the steering stem and in the steering head may be removed and installed. Be sure to inspect and install grease seals. Check the steering stem for straightness. Note that there are 22 bearing balls of ¼ inch diameter located at the top of the steering stem and 19 bearing balls of ⅜ inch diameter used at the lower end of the steering stem. Use a good quality grease to lubricate the bearing balls and to hold them in place during installation. Reassemble components by reversing the removal procedure. Tighten the steering stem nut (N—Fig. Y6-18) to 38 N·m (27 ft.-lbs.). Tighten the steering stem retaining screw to 90 N·m (65 ft.-lbs.).

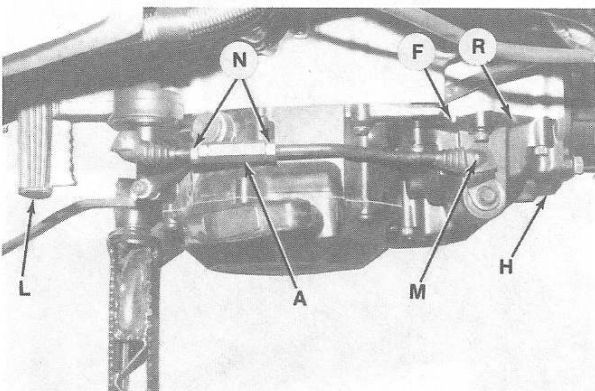


Fig. Y6-19—Rotate shift rod adjuster (A) so marks (F and R) on crankcase align with mark on shift arm cover. See text.

FORWARD-REVERSE SHIFT LINKAGE

Model YTM200ERN

Model YTM200ERN is equipped with a reverse gear which is engaged by operating the forward-reverse shift lever (L—Fig. Y6-19). The shift linkage operates a dog clutch inside gear housing (H). The dog clutch engages either the forward or reverse gear. Forward gear is selected when the shift lever (L) is down while reverse gear is engaged when the shift lever is up. The transmission must be in first gear when shifting to reverse as a pin in the shift linkage must index in a hole in the transmission shift drum.

For proper gear engagement, the forward-reverse shift linkage should be adjusted as follows: Note mark (M) on shift arm cover and marks (F and R) on crankcase. Move shift lever (L) and note that mark should point towards marks (F and R) on crankcase as forward and reverse gears are engaged. If marks do not align, loosen locknuts (N) and rotate shift rod adjuster (A).

REAR BRAKE

ADJUSTMENT. The rear brake should be adjusted if brake pedal travel exceeds 50 mm (2 in.) or if handlebar lever free play gap (G—Fig. Y6-20) exceeds 10 mm (0.4 in.).

To adjust the rear brake, proceed as follows: Loosen the handlebar lever adjuster and both cable adjusters at the rear brake. There must be sufficient free play in the brake cables so adjustment is not affected. Loosen brake arm locknut (N—Fig. Y6-21) and adjuster screw (S). Rotate handlebar brake cable adjuster (H) so pointer (R) is aligned with mark (M). Turn in adjuster screw (S) until tight then back it out ¼ turn. Tighten locknut (N) while holding adjuster screw. If the adjuster screw bottoms against the locknut, the brake pads are worn and should be renewed. Turn in pedal cable adjuster (P) until there is a 0-1 mm (0.00-0.04 in.) gap between cable nut and front end of slot in brake arm.

Block up rear end of vehicle so wheels can turn freely and check for brake drag while rotating wheels. If brake drag is present, repeat preceding brake adjustment.

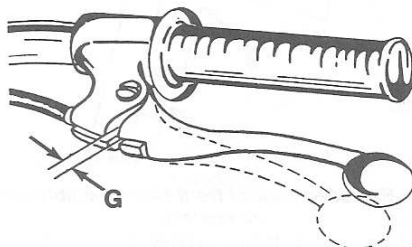


Fig. Y6-20—The rear brake should be adjusted if rear brake handlebar lever free play (G) exceeds 10 mm (0.4 in.).

OVERHAUL. A disc type rear brake is used on all models. The brake assembly is located on the right side of the rear axle housing. The brake assembly may be inspected after removing the brake cover. The brake arm assembly must be detached before the brake cover can be removed. If the brake disc must be removed, remove the right rear wheel and wheel flange as well as the brake caliper. Minimum brake pad thickness is 1.5 mm (0.06 in.). Minimum brake disc thickness is 3 mm (0.12 in.) while maximum allowable deflection is 0.5 mm (0.02 in.).

Reverse removal procedure to install brake components. Tighten caliper retaining screws to 45 N·m (32 ft.-lbs.). Refer to REAR AXLE section for axle nut tightening torque.

DRIVE CHAIN AND SPROCKETS

Models YTM200K, YTM200L And YTM200N

ADJUSTMENT. Remove the plug in the chain cover to view the drive chain. With both rear wheels on the ground, chain tension should be 10-15 mm (0.4-0.6 in.). To adjust chain tension, loosen rear axle housing screws (S—Fig. Y6-22). Turn chain tension adjusting nut (A) to obtain correct chain tension. Tighten axle housing screws and recheck chain tension.

OVERHAUL. The drive chain is an endless type chain. To remove the drive chain it is necessary to remove the rear wheel. The rear wheel and wheel flange must be removed before the rear axle sprocket can be removed.

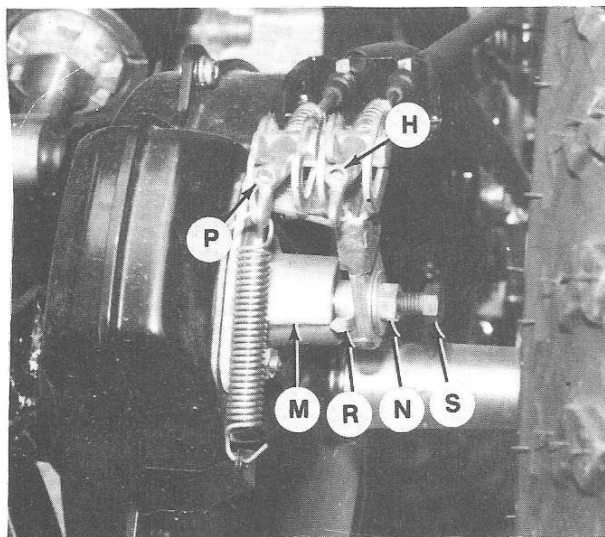


Fig. Y6-21—View of rear brake assembly.

- | | |
|-----------------------------------|-------------------------------|
| H. Handlebar brake cable adjuster | P. Brake pedal cable adjuster |
| M. Alignment mark | R. Pointer |
| N. Locknut | S. Adjusting screw |

Tighten the sprocket retaining screws to 45 N·m (32 ft.-lbs.). Tighten the drive sprocket screws to 10 N·m (88 in.-lbs.). Tighten axle nut to 130 N·m (94 ft.-lbs.).

REAR AXLE, BEARINGS AND HOUSING

Models YTM200K, YTM200L And YTM200N

R&R AND OVERHAUL. The rear axle is supported by ball bearings contained in the rear axle housing. The rear axle may be removed after removing the rear wheels, wheel flanges, slotted nuts, brake disc, rear sprocket and sprocket flange. Pull the axle from the right side. Axle runout should not exceed 1.5 mm (0.06 in.) when measured at ends with axle supported at bearing surfaces.

The rear axle housing may be removed after removing the retaining screws. Move the inner spacer aside, then use a suitable driving tool to dislodge the wheel bearings.

Before installation, apply a suitable grease to each wheel bearing. Install wheel bearings and inner spacer while using a suitable driving tool to seat bearings in housing. Tighten slotted nuts to 140 N·m (100 ft.-lbs.). Tighten outer axle nuts to 130 N·m (94 ft.-lbs.).

All Other Models

Disassembly of the rear axle and final drive assemblies on these models should be performed by a technician with the required experience and tools. Improper servicing may cause extensive damage.

NOTE: Axle nut tightening torque for Models YTM200EK, YTM200EL and YTM200ERN is determined by the type of axle nut. If the nut is a castellated type, the tightening torque is 145 N·m (105 ft.-lbs.). If the nut is a plain type, the tightening torque is 210 N·m (150 ft.-lbs.).

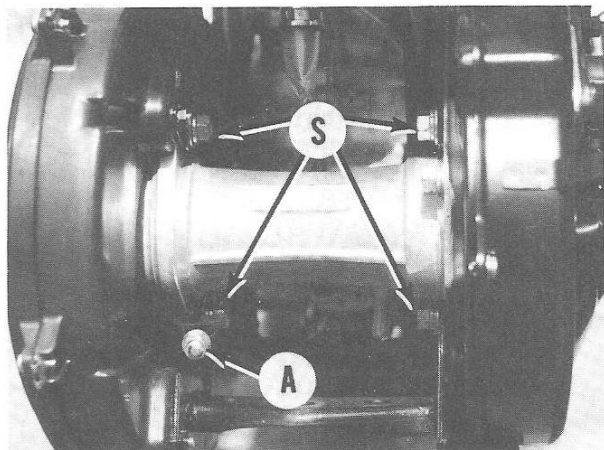


Fig. Y6-22—View showing location of rear housing retaining screws (S) and chain tension adjusting nut (A).

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SHOCK ABSORBER

Models YTM225DXK, YTM225DXL And YTM225DXN

A gas pressurized shock absorber provides damping for the rear suspension on Models YTM225DXK, YTM225DXL and YTM225DXN. The shock absorber attaches to the frame underneath the seat and to the rear axle housing.

Spring preload may be adjusted by removing cotter pin, loosening locknut (V—Fig. Y6-23) and rotating preload nut (T). Tightening the preload nut increases spring tension. Note punch mark (P) on shock eye. Do not set preload so distance from punch mark to back of preload nut is less than 57.8 mm (2.28 in.).

The shock absorber may be removed after removing the seat and fender assembly and raising the rear of the vehicle. Remove the upper mounting bolt and lower pivot

pin and remove the shock absorber out the rear of the vehicle.

Tighten the upper mounting bolt to 42 N·m (30 ft.-lbs.).

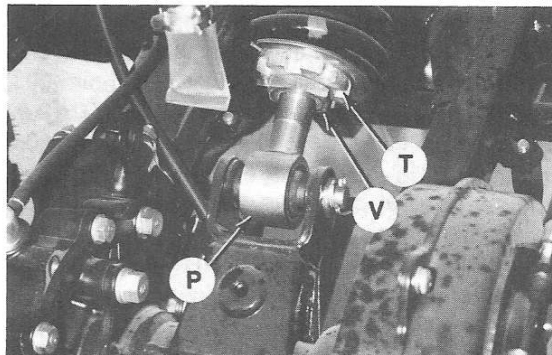


Fig. Y6-23—Shock absorber spring preload is adjusted by turning nut (T). Refer to text for adjustment.