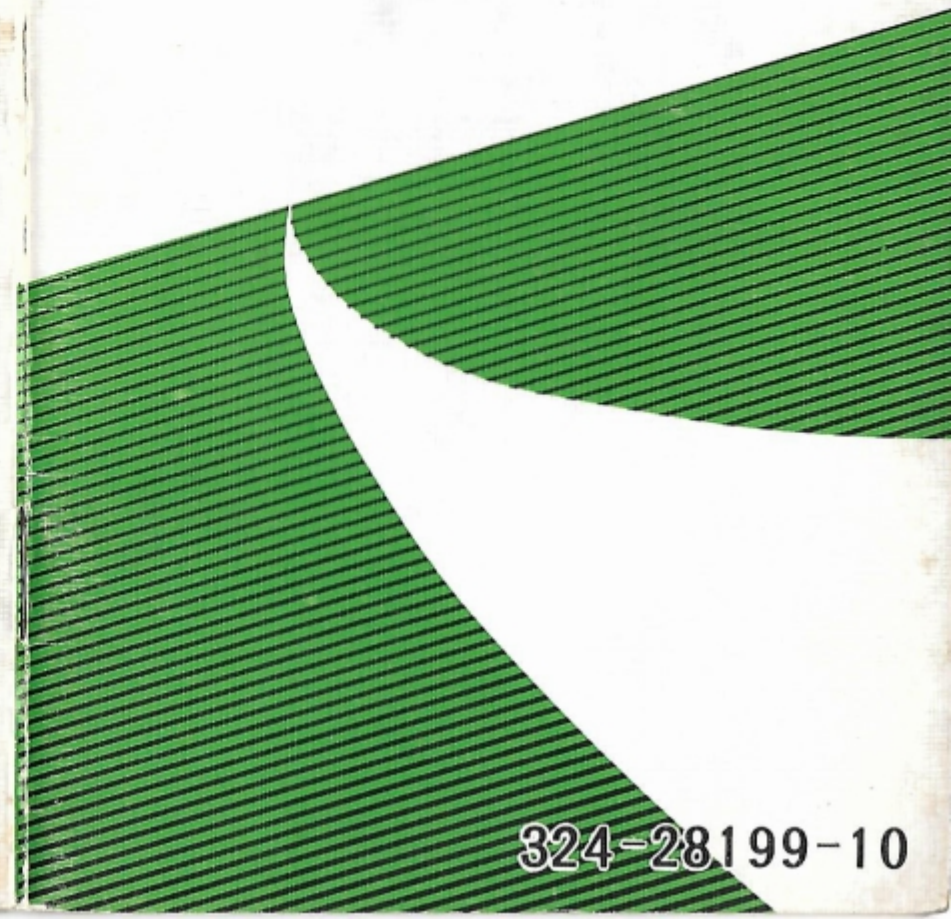
YAMAHA

250DT2MX
360RT2MX

RIDER'S MANUAL



YAMAHA MOTOR CO., LTD.
PRINTED IN JAPAN

324-28199-10

Congratulations! You are now the owner of a new Yamaha ENDURO 250DT2MX-360RT2MX. The DT2MX-RT2MX is a high-performance, motorcycle manufactured by the leading manufacturer of motorcycles in Japan.

The DT2MX-RT2MX, the newest and top of the Yamaha line model is designed for competition. It features a rugged, powerful, 2-stroke single cylinder, reed valve engine, and Autolube, the revolutionary lubricating system developed by Yamaha Technical Research Laboratory and proven in all Yamaha models.

This manual explains some steps necessary for operating and caring for your new motorcycle. Please read it carefully to become throughly familiar with all the features and advantages built into your DT2MX·RT2MX.

CONTENTS

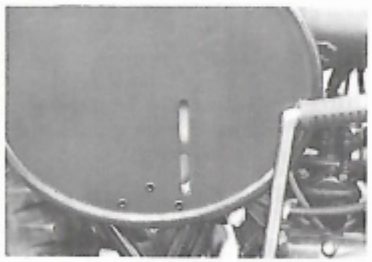
PROFILE

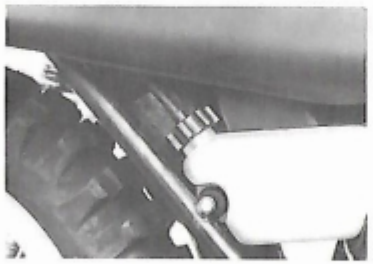
1. What you should know

For the DT2MX and RT2MX, a gas-oil mixture should be used. The recommendable gas and oil and mixing ratios are as specified below:

Gasoline	High octane gasoline
Oil	Shell super M, Castrol R-30 Mineral single grade oil #40 or #50
Mixing ratio	With Autolube pump used: 30 : 1 With Autolube pump removed: 15 : 1

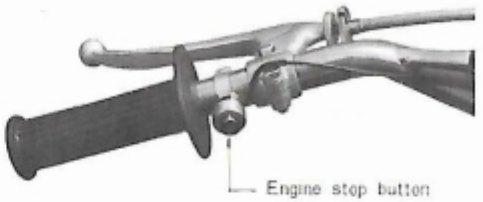
Note: The pre-mixed gasoline-oil mixture will become inferior in lubricating property 24 hours after preparation. Avoid using any mixture remaining in the fuel tank.





2. Engine Stop Button

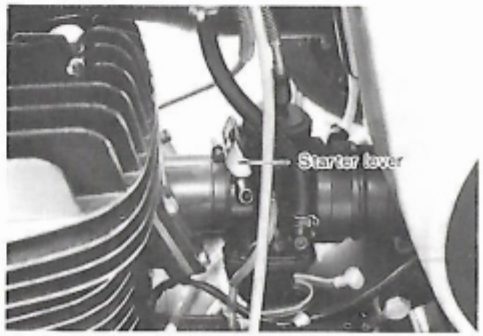
This safety device is used when your machine is upset or when you need to stop the engine quickly.



3. How to Start the Engine

(When the engine is cold)

a. Replace the spark plug with a hotter type (B-7ES or 8ES) for warming up.
b. Open the fuel cock.
c. Push down the starter lever, and fully close the throttle valve. Then, kick the kick crank hard.
d. After starting the engine, keep it run for a few minutes for warming up. Then, replace the spark plug with the regular type.



(When the engine is warm)

a. Slightly twist the accelerator grip, and kick the starting lever hard. It is unnecessary to replace the spark plug.

4. How to Stop the Engine

The motorcrosser is not equipped with the main switch, but the DT2MX and RT2MX are provided with the engine stop button. By depressing the engine stop button, the engine can be stopped, whenever required.

Besides, you can stop the engine without using the engine stop button. First, disengage the clutch, and apply the rear brake at any gear position (except neutral). Release the clutch lever, and the engine will come to stop.

Note: When stopping the engine, take care so that the spark plug will not get wet with the fuel. Make it your habit to close the fuel cock after stopping the engine.

5. Break-in

Your brand new machine has to be broken in at least for 10 miles. If breaking in the machine is improper, the result may be: (1) Engine noise, (2) Engine seizure, (3) Engine power loss, and (4) Shorter engine service life. After observing the break-in in a correct manner, the machine should be checked for frictional contact between the piston, piston rings and the cylinder. You will end up with a smooth-running, trouble-free machine.

How to Break-in the Machine

Operation:

0 ↓ 10 miles, — you should keep the throttle opening below half in each of the gears.

Checking:

Remove the cylinders, and check the cylinder walls, pistons and piston rings for scratches and contacts between them. If any high spot or any scratch is found, it should be smoothed out with sandpaper (#600). If the scratch by a ring is excessive, replace the ring.

Operation:

10 miles, ↓ — the machine can be run with full throttle.

6. Checking and Service Racing

To keep the machine run a race in top condition, routine check-ups and service are very important, Before a race, the following check-ups should be made:

1. Check and adjust the brakes.
2. Check and adjust the clutch.
3. Clean the air cleaner element.
4. Check and adjust the ignition timing.
5. Remove the carbon from the cylinders, cylinder heads and pistons, and check the cylinder walls for scratches and high spots.
6. Check the gear oil, and if necessary, replace it.
7. Check the spokes for looseness, and if necessary, adjust them.
8. Lubricate the drive chain, etc.
9. Retighten bolts and nuts.

7. Setting to be made at a Racing Circuit

Whether you will win a race or not depends on your driving skill and your machine performance. It will not be easy for you to snatch a victory in any race, because the performance of your machine will be affected to a large extent by conditions of the racing course, weather and the like.

To keep your machine run at best condition, the machine must be so adjusted as to best suit to the racing course.

a. Selection of spark plugs
b. Carburetor adjustment
c. Selection of secondary reduction ratio
d. Tire pressure adjustment
e. Rear cushion adjustment

A. Selection of Spark Plugs

Standard spark plugs are recommended, but you may have to change the spark plugs depending on the conditions of running and racing circuits.

Remember that for warming up the engine, hotter type spark plugs should be used, and a few minutes of warming up is needed.

After the warming up, replace the spark plugs with those you have selected.

Colder type . . . . . If the standard type spark plug is found running too hot and white, replace it with a colder type.

↑
STD
↓

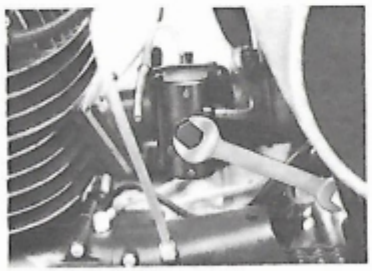
Hotter type . . . . . If the standard type spark plug is found sooty and oily, replace it with a hotter type.

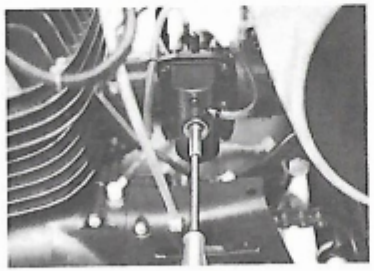
Heat Range		Champion	AC	Autolite	Bosch	KLG	Lodge	Marchal
Hot	B-4E	N21	47XL	AG9		FE20	BL14	
		N18			W95T2	FE30	BLN	
	B5ES	N8	46XL,46N	AG7	W125T2 W145T2	FE50	CL14,CLN CLNH	
		N84		AG5				
	B6ES	N6	45XL,45N	AG4	W160T2	FE70	HBLN	36HS
		N5	44XL,44N	AG3	W175T2		HL14,HLNP	35H
			C44N		W200T27			35HS
	B7ES		C44XL		W215T28			
		N4	43XL,43N	AG2	W225T2	FE75	HF2HL	
			C42N		W225T28		2HL,HLN	34HS
	B8ES	N3	42XL	AG901	W240T28 W250P21	FE80 FE100	2HLN	2/33H
	B9ES		41XL	AG701	W260T2		3HLN	
Cold	B10ES							

B. Carburetor Adjustment

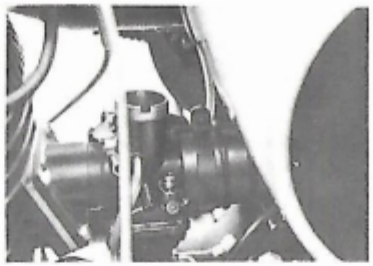
Carburetor settings should be determined according to the burning condition of the spark plug. Generally speaking, a motocrosser is run with full-throttle, and therefore, the carubertor main jet greatly affects the performance of the engine.

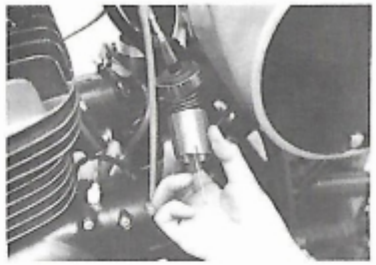
- When the spark plug is in a tan color:
  Best. That is, the carburetor settings are the most suitable for the condition of the racing circuit, weather, and operation.
- When the electrodes are white:
  The spark plug runs too hot. In this case, the main jet should be replaced with a larger one.
- When the electrodes are sooty and oily:
  If the electrodes are sooty and oily, the main jet should be replaced with a smaller one.
  * The larger the main jet calibration No., the more the gasoline is supplied. The calibration Nos. are designated as follows:
    Up to No.100 . . . . . Calibrated by 5
    Over No.100 . . . . . Calibrated by 10

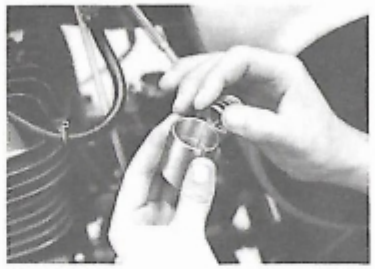




After replacing the main jet, check the engine operating condition in the following manner. Rapidly open the throttle valve, and observe the increase of the engine speed. If the speed will not increase smoothly, showing irregularity, the position of the jet needle must be changed.







The position of the jet needle affects the increase of the engine speed in the range of medium to high.

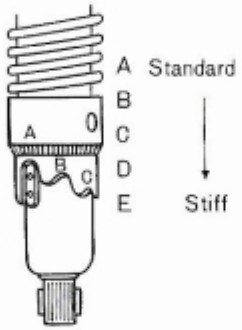
Note: When you select the carburetor main jet, start with a larger one for testing. Do not begin with a smaller one.

8. Tire Pressure Adjustment

Tire pressures are determined depending on the condition of the racing circuit and the choice of the rider.
If the racing course is rough with many pebbles, low tire pressures will result in damage to the tire rims.

9. Rear Cushion Adjustment

The rear cushion can be adjusted in five ways according to the rider's choice.



10. Selection of Secondary Reduction Ratio

The secondary reduction ratio must be selected according to the racing circuit condition-bumpy or smooth.
To enable the rider to select the most suitable reduction ratio, a variety of drive sprockets and sprocket wheels are available.

Drive sprocket	Sprocket wheel
214-17461-30 13T 214-17461-40 14T 214-17461-50 15T 214-17461-60 16T	322-25451-00 51T

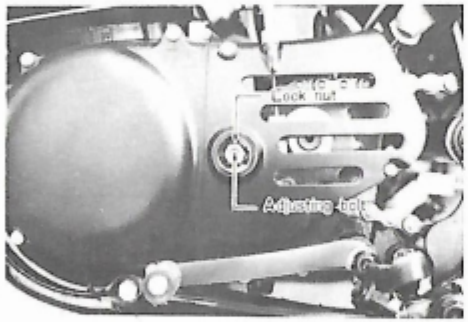
Inspection and Adjustment

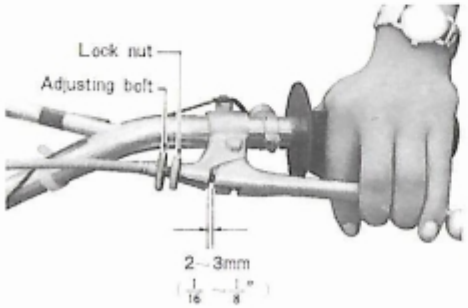
1. Clutch

If the clutch is adjusted improperly, it may drag or slip. It should be adjusted periodically (particularly before racing).

Adjustments

a. Fully tighten the adjusting screw attached to the clutch lever.
b. Remove the clutch adjusting cover.
c. Loosen the lock nut, and gently tighten the adjusting screw. From a lightly seated position, back it out ¼ turn, and tighten the lock nut.
d. Adjust the play of the clutch lever to 2-3 mm by turning the clutch lever adjusting screw.
e. After the adjustment, tighten the lock nut.





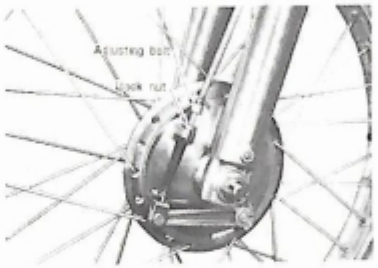
2. Brake Adjustment

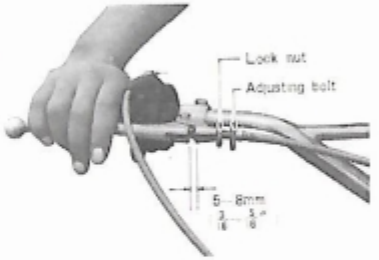
To allow the brakes to operate effectively and accurately, the front brake lever should have a play of 5-8 mm, while the rear brake pedal a play of 20-25 mm.

How to Adjust the Brakes

Front Brake

a. Adjust the brake lever to 5-8 mm by turning the brake adjusting bolt.
b. For easy adjusting, the front brake can be adjusted by brake lever adjusting bolt.
c. After the adjustment, be sure to tighten the lock nut.





Rear Brake

a. Adjust the brake pedal with the rear brake adjusting nut so that the pedal will have a play of 20-25 mm.

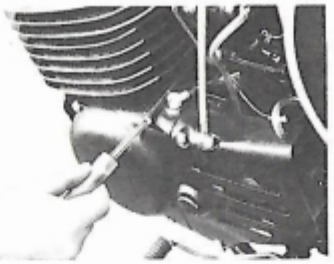
3. Adjusting the Ignition Timing

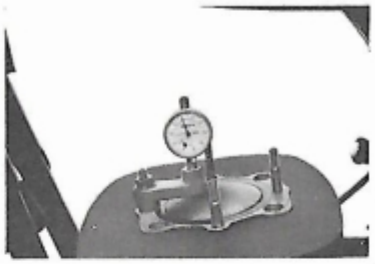
The DT2MX uses the flywheel magneto for ignition, while the RT2MX employs the C.D.I.

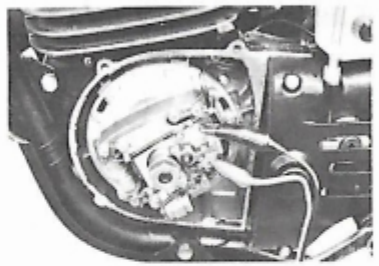
DT2MX (Magneto ignition)

1. Remove the spark plug, and install a dial gauge in the spark plug hole.
2. Turn the crankshaft to the left and locate TDC.
   (When the dial gauge pointer begins to turn in reverse, the piston is at about TDC.)
3. When TDC is located, turn the dial and set "O" to the pointer.
4. Connect the contact breaker to the red lead wire of the point checker, and ground the other to the frame.
5. Turn "ON" the switch of point checker, and make sure that the needle points to "OPEN".
6. Turn the crankshaft to the right. When the dial gauge pointer indicates 2.3 mm before TDC, watch the point checker needle. If it moves from OPEN to CLOSE, the ignition timing is considered to be correct.
7. Adjustment can be made by moving the contact breaker.

Note: Before adjusting the ignition timing, check the breaker point surfaces. If points are roughened, or not in full contact, smooth them out with # 600 sandpaper, and then adjust so that they are in full contact with each other.

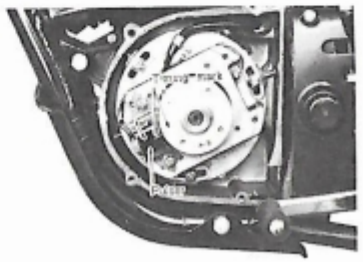






RT2MX (C.D.I.)

1. Follow the procedures, 1, 2 and 3 above.
2. Turn the crankshaft to the right, and when the dial gauge pointer indicates ___ mm before TDC, check to see if the mark on the rotor aligns with the mark on the pulser. If they aligns with each other, the ignition timing is correct.
3. Adjustment can be made by moving the pulser.



4. Cleaning the Air Cleaner Element

If the air cleaner element is clogged with dust, the performance of the air cleaner will be greatly reduced. Particularly, the air cleaner on a motocrosser tends to be dirty quickly. It should be cleaned as often as possible.

Removing the Air Cleaner Element

1. Remove the seat and cleaner case cap.
2. Take out the element.

5. Washing

The element removed should be washed thoroughly with an oil mixture and installed after fully squeezed.

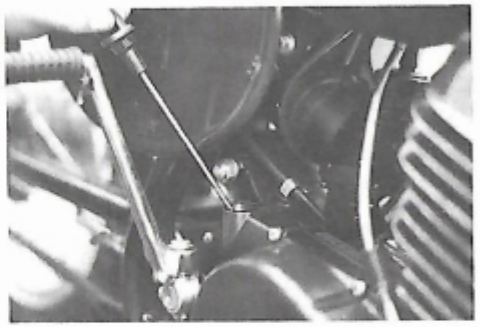
6. Checking and Replacing the Gear Oil

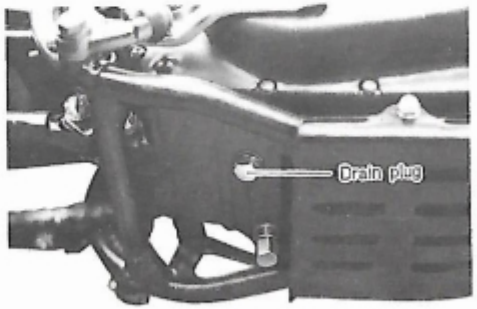
Check the gear oil for its level. It should be within the specified range of levels.

Gear oil MOTOR OIL 10W/30

Amount 1000cc

The gear oil tends to deteriorate after a long time of use. It is advisable to replace the gear oil for each race, because the engine will be placed under severe operating condition.





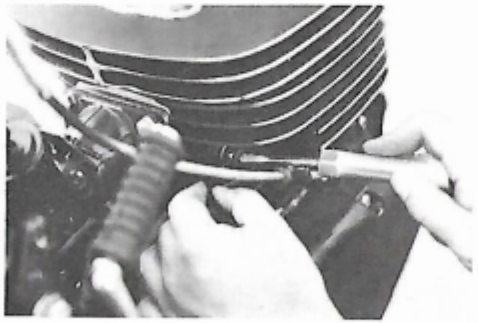
7. Checking the Cylingeer and Piston Rings for contact

After the first 10 miles of operation, the contact between the cylinder and piston rings should be checked.

If necessary, any irregularity should be corrected.

1. Remove the muffler.
2. Remove the cylinder head bolts.

3. Remove the cylinder head.
4. Remove the delivery pipe.



8. Cover the crankcase with a cloth, and remove the piston clip with a screwing motion.

9. Push out the piston pin, and remove the piston.
   (Take care not to drop the small end bearings.)
10. Check the piston, piston rings and cylinder wall for scratches and high spots.
    High spots are bright, and should be smoothed out with oil stone or fine sandpapaer.

11. If any piston ring is found stuck or scratched, it should be replaced.

Installation

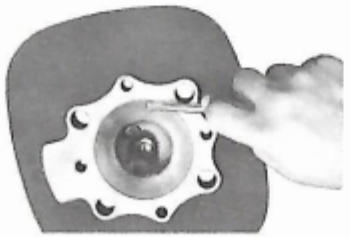
1. Oil the small end bearings, cylinder, etc.

2. Install the piston with the arrow mark pointing to the exhaust port. (Cover the piston pin drop it,) clip with a cloth so that you will not

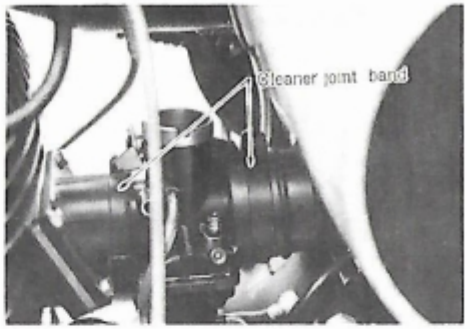
3. Install the piston rings, Make sure that the ring locating pin is between the ends of the rignt
4. Tighten the cylinder head bolt nuts cross-pattern and in separate steps. Tightening torque must be correct.

Note: Each time the cylinder is removed, use a new cylinder gasket and cylinder head gasket.
Other gaskets should be thoroughly cleaned.

5. Removing the Carbon from Cylinder Head, Cylinder and Piston The cylinder should be disassembled in the manner,as specified above, and the carbon. remove

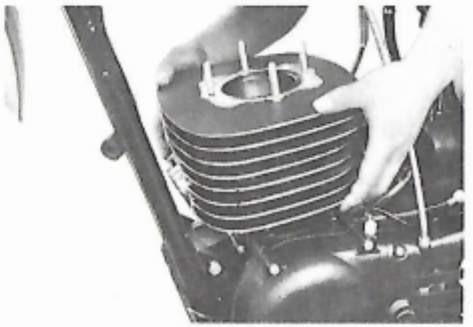


5. Loosen the air cleaner joint band.



6. Remove the carburetor .

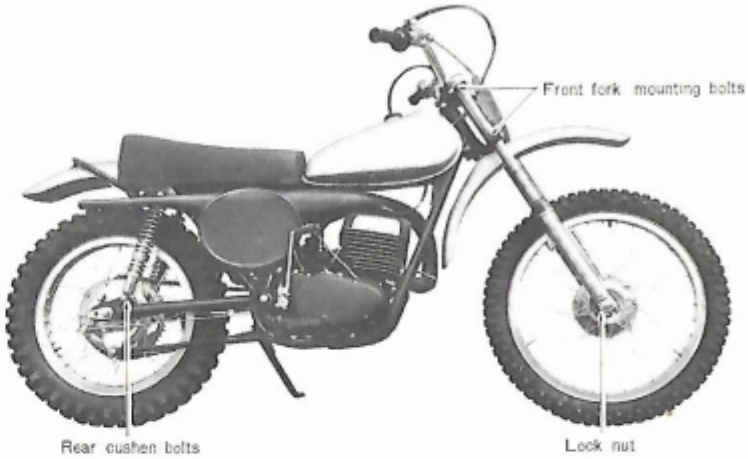
7. Remove the cylinder while tapping around the exhaust port with a soft-face hammer.

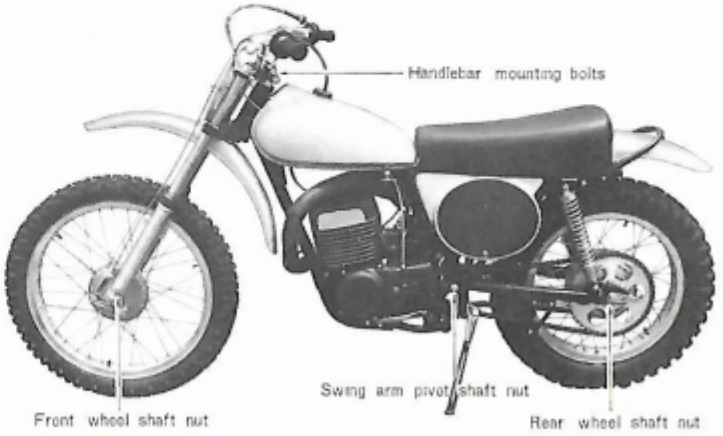


6. Checking the Spokes for Looseness

Check the spokes for looseness by tapping them one by one with a wrench. Any loose spoke should be tightened.

7. Retightening Bolt and Nuts





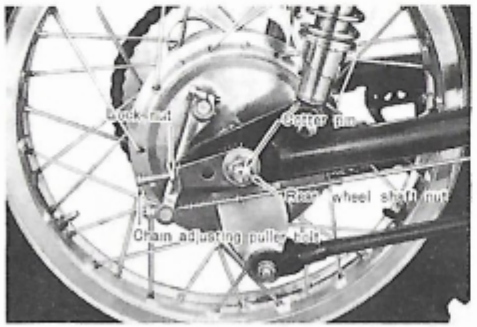
10. Lubricating the Drive Chain

If the drive chain lacks oil, it tends to stretch quickly and shorten its service life. Engine power loss will also result. It should be lubricated periodically.

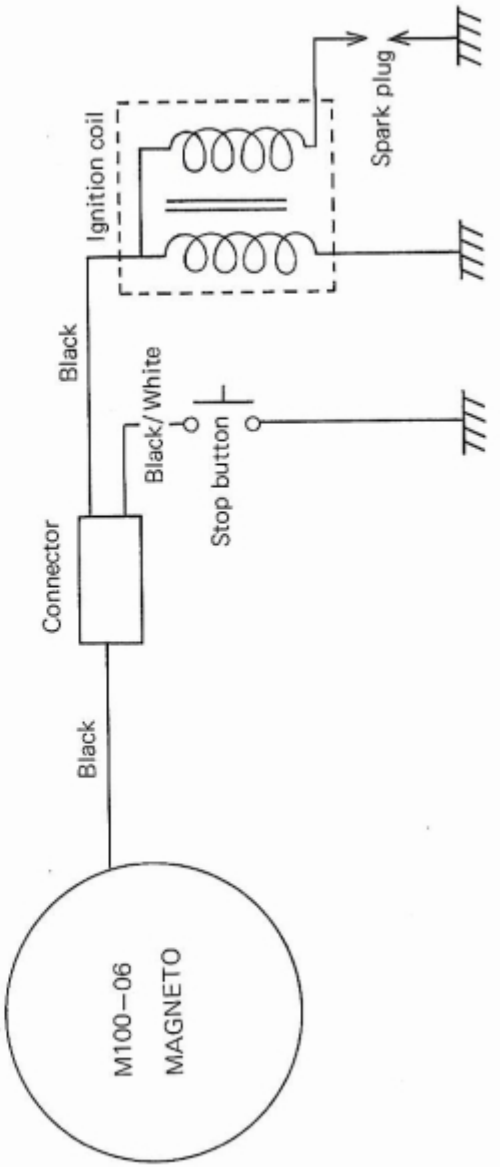
11. Adjusting the Drive Chain

The drive chain must have an up-and-down movement of 20 mm at the center of the drive chain with the rear wheel on the ground. Adjustment should be in the following manner.

1. Loosen the rear brake adjusting nut.
2. Remove the cotter pin and loosen the rear wheel shaft nut
3. Loosen the chain adjusting puller lock nuts.
4. Tighten the chain adjusting puller so that the drive chain deflects 20 mm at its center.
   The chain pullers, both right and left, must be positioned evenly.
5. Tighten the rear wheel nuts and other bolts and nuts.
6. Be sure to bend the cotter pin ends.
7. Adjust the rear brake.



DT2MX WIRING DIAGRAM



RT2MX WIRING DIAGRAM