

**YAMAHA**

**TX650**

**OWNER'S MANUAL**



**YAMAHA MOTOR CO., LTD.**

**366-28199-10**

## FOREWORD

It is our greatest pleasure that you are now a member of the Yamaha TX650 riders.

The Yamaha TX650, now ready for your use and service, is a motorcycle which has been manufactured by us under the strictest quality control in our Factory.

Naturally, like any other model, proper handling, and daily inspection, adjustment and care are a prerequisite for a successful continuity of the top performance of this model.

This Manual discusses these points to assist you in your best operation and handling of the Yamaha TX650. Your perusal of the various items in this Manual is sincerely requested.



YAMAHA MOTOR CO.,LTD.

ENGINEERING & SERVICE DEPARTMENT

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General view

Rear cushion

Headlight

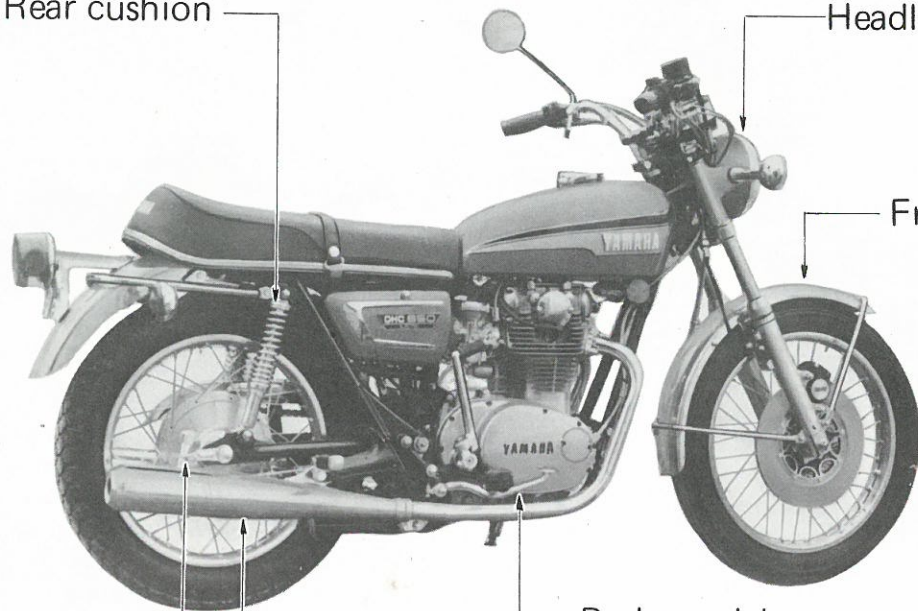
Front fender

Brake pedal

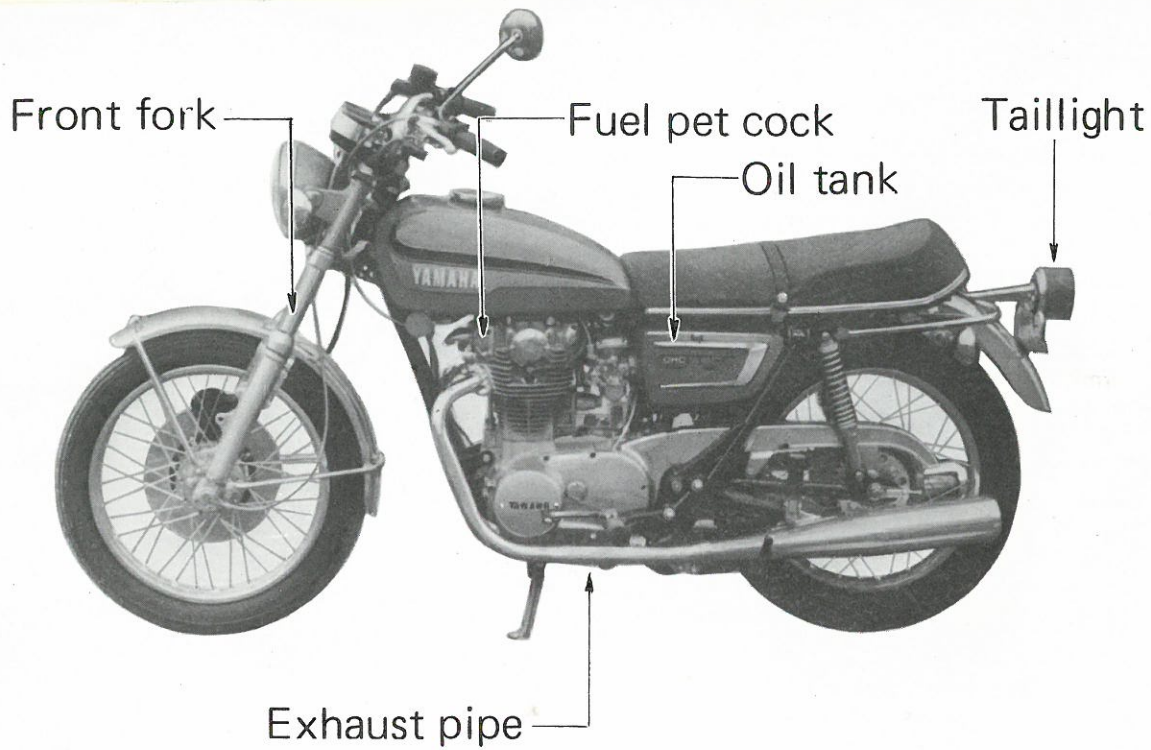
Rear brake

Muffler

Right hand side view







Left hand side view

## Features of TX650

### FOUR-CYCLE O.H.C. ENGINE

The Yamaha TX650 is equipped with Yamaha's first four-stroke, parallel twin cylinder, O.H.C. engine. This new engine has been developed fully utilizing Yamaha's experience in the manufacture of the four-stroke engines adopted for the Toyota 2000GT and the Toyota 7.

The high-performance engine is mounted on a double-cradle type steel tube frame which features light weight and high rigidity. With a combination of high horsepower and well-balanced transmission, the TX650 exhibits outstanding acceleration which is essential to a large displacement, high-performance sportster.

#### 1. Performance

In order to increase the intake efficiency of the air-fuel mixture, the combustion chamber is hemispherical. In addition to over-sized valves, the SU type carburetor is employed. Consequently, engine performance is steady throughout the speed range from idling speed to high speed.

#### 2. Valve and camshaft mechanism

The valve mechanism employs the O.H.C. system which is most suitable for a high speed, high output engine. A single row endless chain is used as the cam drive. A chain guide and chain tensioner are employed to minimize the vibration and noise of the cam chain.

The control of vibrations stabilizes the valve action at high speed. In addition, double springs are used for the valves in order to prevent surging of the valves at high rpm's.

**3. SU type carburetor with built-in starter**

The TX650 is equipped with SU type twin carburetors. This carburetor is equipped with a variable venturi. That is, the section area of the venturi automatically changes according to fluctuations of the negative pressure in the intake manifold. This type carburetor is capable of supplying fuel at the correct ratio according to the air flow throughout the speed range, thus assuring excellent acceleration. The built-in starter is most effective in starting the engine in cold weather.

**4. Lubrication system with trochoid pump**

The oil pump is the trochoid type, driven by means of a crankshaft gear. A pressure-feed lubrication system is employed. The oil filter, made of long-lasting wire netting, is of a double-filtrating type, and thereby the wear of the engine will be effectively minimized.

**5. Well-balanced 5-speed transmission**

Coupled with the well-balanced 5-speed transmission, the TX650 engine assures steady engine performance under any road conditions such as city streets, hills, high-speed highways, etc.

**6. Well-proportioned frame and light weight**

The TX650 uses a double-cradle frame which is best suited to its high output, large displacement engine and thus features superiority in maneuverability, stability, and durability. The over-all weight is lighter than other makes in the same class; that is, weight per horsepower is the most effective.

**7. Adoption of disc brake**

The large size disc brake has been adopted to ensure efficiency in steady braking both at low and high speeds and in rainy weather.

#### **8. Three-way adjustable rear suspension**

The TX650 uses a three-way adjustable rear suspension. The spring tension can be adjusted according to the rider's option and road conditions. The cushion stroke is 70 mm (2.75"). An oil lock system is employed as a shock-absorber and to prevent bottoming.

#### **9. Air cleaner**

A larger air cleaner is used compared with that for other motorcycles in the same class. The paper filter element has an oversize filtering area for improved air intake efficiency. Coupled with the SU type carburetor the superior acceleration and economy are ensured.

#### **10. Bright head lamp**

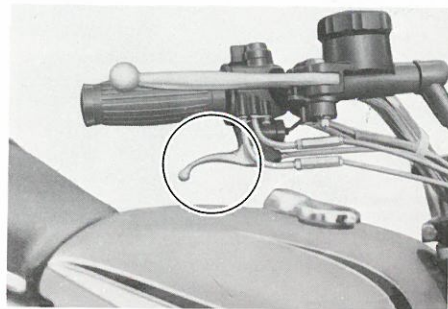
The head lamp is 170 mm (6.7") in diameter with a 12V 50/40W bulb. Additional safety is guaranteed at night. The head lamp unit is of a special sealed beam type in which the bulb is rubber mounted.

#### **11. Double-edged key**

The double-edged main switch key is designed to allow the rider to insert the key more readily.

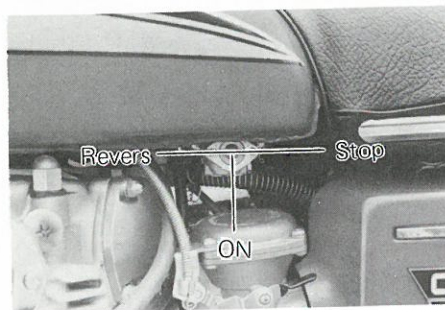
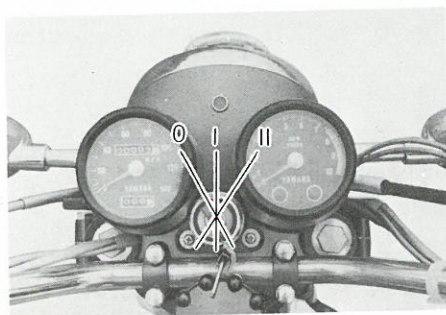
#### **12. Installation of electric starter**

The TX650 is equipped with electric switch built-in decompression.





## Control Function



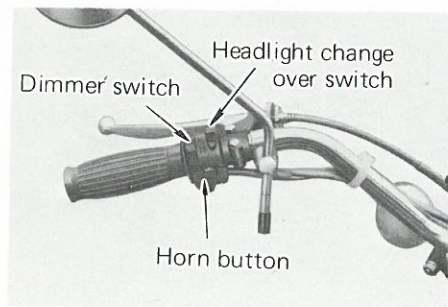
### 1. Main switch

The following chart shows the key position at which the lights, horn and ignition circuit are switched on or off: (The circle (O) denote "Switch on")

Parts Name	Key position			Instructions
	OFF	I	II	
Ignition circuit		○		Kick starting or pull the starter lever
Headlight		○		Turn on left handlebar switch
Taillight		○	○	Turn on left handlebar switch use II when parking at night.
Neutrallight		○		The change pedal is in neutral.
Stoplight		○		The brake is applied
Meterlights		○		Turn on left handlebar switch
Horn		○		The horn button is depressed
Flasherlights		○		Turn on left handlebar switch

### 2. Fuel pet cock

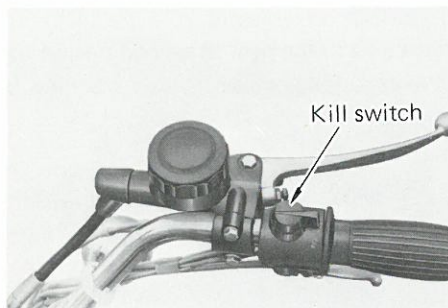
To fill the carburetor float bowls, set the fuel pet cock lever to the OPEN position. If you should run low of fuel on the road, turn the lever to REVERSE position. With just over a quart of fuel,



remaining you can drive nearly 25 miles (40 km), enough to get you to the nearest service station for refueling. When parking or storing your machine, be sure that the lever is in the STOP position.

### 3. Handle Lever Switch

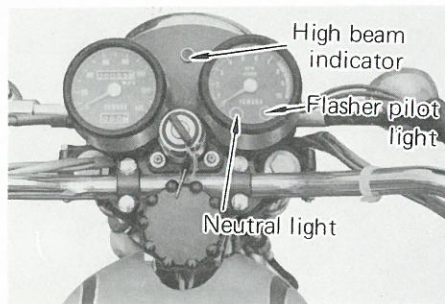
- Light switch:** When the switch is pushed up, the headlight, meter lamp and tail lamp are turned on.
- Dimmer switch:** When the dimmer switch is pushed up, the head light is switched to low beam. When pulled down, the headlight is turned to high beam.
- Horn button:** When the button is pushed, the horn sounds.
- Turn signal:** Push the switch forward for "RIGHT," pull back for "LEFT"
- Decompression lever:** When the decompression lever is pulled up, the engine will start.



**4. Make sure that the "kill" switch is "RUN"**

The "kill" switch has been equipped to ensure safety in an emergency such as when the motorcycle is brought to turn over and when trouble takes place on the throttle system.

The engine will not start when the "kill" switch is "OFF"



#### 5. Neutrallight

Mounted within the tachometer shell, the neutral indicator glows whenever the transmission is in neutral.

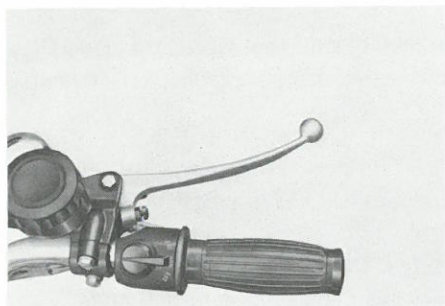
#### 6. Handlebar switch

- a. To sound the horn, depress the horn button.
- b. To raise the headlight beam, pull the switch toward you.  
To lower the beam, push the switch forward.
- c. Push the headlight change over switch forward.  
Light the headlight.

#### 7. High beam indicator

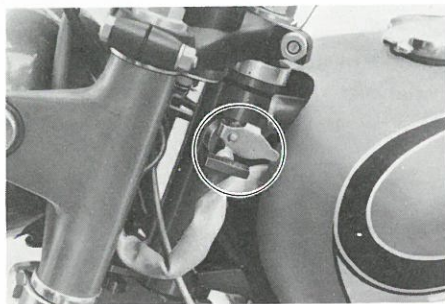
Mounted on middle of the headlight shell, the high beam glows whenever the headlight high beam is in use.





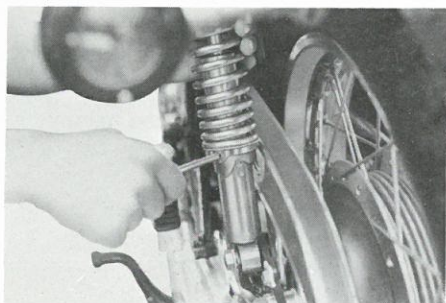
#### 8. Front brake

The right handle lever controls the operation of the front brake. The front brake is of the disc and is adjustable at one point one of the which is on the lever adjustment will be explained later.



#### 9. Steering lock key

Turn the handlebar to the right, insert the steering lock key and turn it 45° counter-clockwise then push the key and turn it 45° clockwise. Remove the key after checking to see that the front forks are securely locked. Be sure to lock your forks whenever you park.



#### 10. Rear cushion adjustment

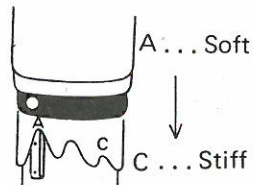
Grasp the notched collar with your hand and turn it to change the spring rate.

The rear suspension should be adjusted to fit the load, speed and road conditions.

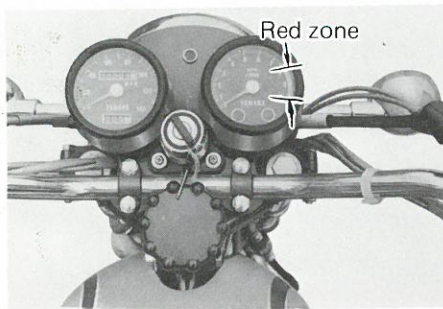
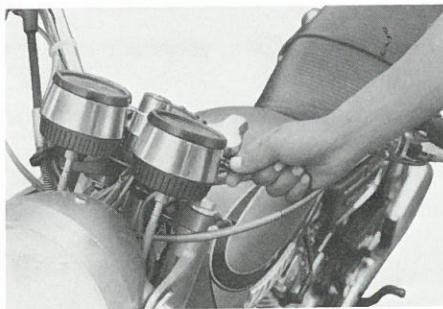
Standard . . . . . A

Intermediate . . . . .

Stiff . . . . . C



※ Both right & left in the same position



## 11. Speedometer

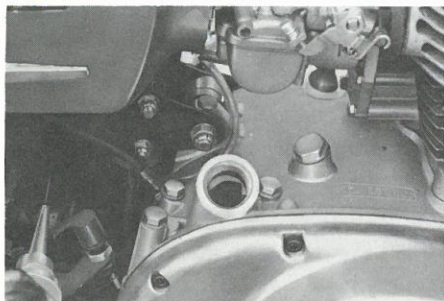
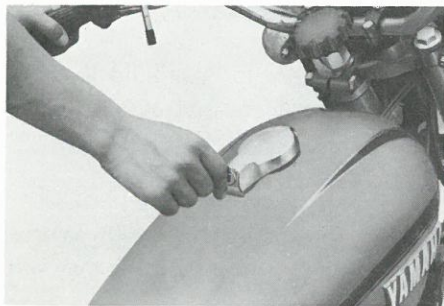
Tripmeter is built into the speedometer shell. Twist the knob to reset the tripmeter.

The meter will reset by tenth to desired milesge.

## 12. How to read the tachometer

A tachometer is provided so that the rider can easily maintain engine RPM sufficient to keep the engine within the power curve. For maximum performance accelerate in each gear to 6,500 rpm or at most to 7,000 rpm before shifting. The best range for city driving is 3,500 to 4,000 rpm in lower gears. In this range the engine has ample power and yet is quite docile. Never lug your engine! (i.e. operate below 3,500 r.p.m.) It is recommended, not to use red-zone 7,500 - 10,000 rpm.

## Basic Instruction



### 1. Gasoline

Use fuel with an octane rating of 90+. Some regular fuels and most mid-range have 90+ octane ratings. Ethyl grade fuels usually have octane ratings in excess of 100. In addition, they have considerable tetra-ethyl lead added which can cause spark plug problems. Whenever possible, use fresh, name-brand, gasoline.

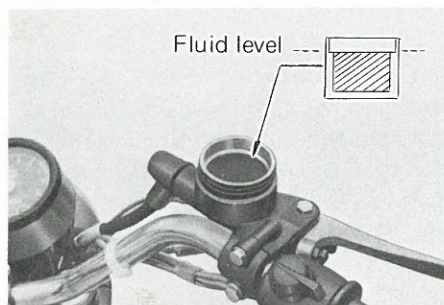
### 2. Oil

The quality of oil affects the life of the engine and therefore, the oil should be good quality and replaced at specified intervals.

Oil grade: SAE MS or better.

Viscosity: SAE 10W - 30 or  
SAE 20W-40





### 3. Checking the front brake fluid

If the brake fluid level becomes low, brake failures occur, leading to an accident.

Check the mastercylinder for the fluid level. If it is found below the specified level, add the fluid.

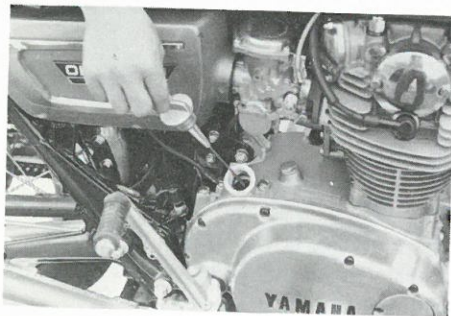
Commendable fluid     SAEJ1703B

Boiling point             240° C

#### Important Note:

1. To not allow any brake fluid to attach painted surfaces, plastic parts or rubber parts, Or they will be damaged.
2. If the brake fluid is found decreasing rapidly, have your Yamaha dealer check the brake immediately.
3. Avoid using any fluid other than Yamaha commendable fluid.
4. Avoid mixing the brake fluid with other makes. Or chemical reactions may occur, causing brake troubles.
5. When adding the brake fluid, take care not to allow any water to enter.

## Operation



### 1. Before starting

Before you start for a ride you should check several points for safety.

- a Do you have enough fuel?
- b Do you have enough oil?
- c Are your tire pressures correct?

Incorrect tire pressures affect the comfort, handling, acceleration and life of tires. Incorrect tire pressures can also lead to accidents!

	Front tire	Rear tire
Normal riding	23 lbs /in <sup>2</sup> (1.6 kg/cm <sup>2</sup> )	28 lbs /in <sup>2</sup> (2.0 kg/cm <sup>2</sup> )
Continuous high speed riding	29 lbs /in <sup>2</sup> (2.0 kg/cm <sup>2</sup> )	34 lbs /in <sup>2</sup> (2.4 kg/cm <sup>2</sup> )

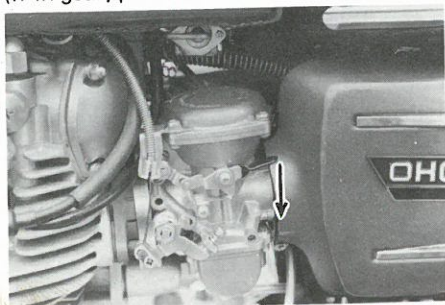
- d Do both brakes and the brake light work?
- e Are the lights and horn working in order?

Check the headlight, taillight, meterlights, and warninglights. The few minutes you save by not checking are not worth being stranded without lights!

## 2. Starting

- a Turn the fuel pet cock lever to the "OPEN" position.
- b Insert the ignition Key and turn it to the #1 position.

The use of a primary kick starting system enables you to start the engine either in gear or in neutral (if in gear, pull in the clutch lever)



### A Starting in cold weather

Most engine are difficult to statt in cold or freez-  
ing weather.

YAMAHA Motorcycles however, uses a carburetor  
with a built in starter jet that gives a richer mixture  
for easier cold weather starting.

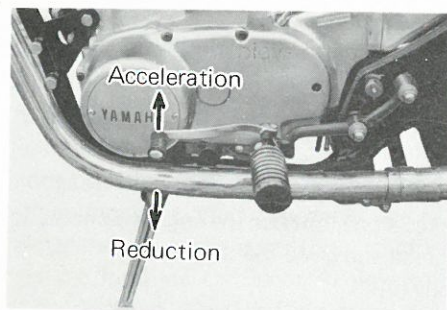
- a Depress the starter lever.
- b Start the engine with the kick starter, or electric  
starter, keeping the throttle closed.

### B Starting when your engine is warm

When your engine is warm, after riding or in warm weather, don't use the starter lever. Open the  
throttle slightly ( $\frac{1}{4}$  turns or less) and kick the starter

### C Warming up

To get maximum engine life, always "warm up" the engine for a few minutes before starting off.  
Never accelerate hard with a cold engine! To see wheather or not the engine is warm, see if it res-  
ponds to throttle hormally. Don't forget to raise the starter lever after the engine is warm.



### 3. Shifting and Acceleration

TX650 has a 5-speed transmission. The transmission allows you to control the amount of power you have available at a given speed or starting accelerating, climbing hills, etc.

The use of the gear lever is illustrated below.

To shift into NEUTRAL, depress the gear lever to the end of its travel (you will feel a stop when you are in low gear); then raise it slightly.

If you are in neutral, the green light in the tachometer will be on.

- a. Pull the clutch lever to disengage the clutch.
- b. Shift into LOW.
- c. Open the throttle gradually, and, at the same time, release the clutch lever slowly.
- d. At 10 to 15 mph, cross the throttle, and at the same time pull in the clutch lever quickly.
- e. Shift into SECOND, Be careful not to shift into neutral.
- f. Open the throttle part way and gradually release the clutch lever.
- g. To accelerate or decelerate, use the same procedure.
- h. Except for competition or high speed driving, shift so that the engine speed remains between 4,000 ~ 5,000 rpm. This is the optimum operating range for the engine.



**a Going Uphill**

When starting to climb a gentle grade, open the throttle little by little to avoid losing engine speed and power.

When climbing a steep grade, shift down from THIRD to SECOND or from SECOND to FIRST as required.

**b Going Downhill**

On a long down grade or sharp descent, don't rely on the brakes alone, but use the engine compression as a brake: shift into THIRD or SECOND as required by the grade and close the throttle.

**CAUTION:** Never attempt to turn off the ignition switch on a long hill.

This will only cause the spark plug to foul.

#### 4. Stopping

There are several ways to stop.

Pulling in the clutch lever and twisting the throttle grip in the closed direction will permit you to gradually glide to a stop. Downshifting through the gears, using the drag of the engine to slow down is another. However, the best method, and the one most universally used, is to use both engine compression (downshifting through the gears as the machine slows) and the front and rear brakes.

When stopping, gradually apply the rear brake while twisting the throttle grip in the closed direction. After the rear brake starts to take hold, gradually apply the front brake.

As the machine continues to slow shift down through the gears using engine compression to aid the slowing effect. When shifting down, watch the tachometer to see that the engine does not over-revolution.

**Note:** During periods of Inclement weather, snow, rain, sleet, or ice, or on poor road surfaces where traction is minimal, or in a sharp corner, IT IS NOT ADVISABLE TO FIRMLY APPLY THE FRONT BRAKE. While it is true that the front brake supplies the greater portion of braking portion of braking power, it is also true that stability can be upset very easily if it is used incautiously under the above conditions.

#### 5. Cruising

A frequently asked question is "What rpm should I cruise at?"

The BREAK-IN section provides limitations when the motorcycle is new, but once the engine has been broken in, then we suggest that you follow these guide lines. For sustained load and throttle conditions, such as those encountered on open highways, cruise at  $\frac{3}{4}$  throttle or at  $\frac{3}{4}$  of the rpm "red line", whichever comes first. Always bear in mind though, the maximum allowable speed limit for the area through which you are riding. This is a recommendation, not a "hard and fast" rule. Any modification or personalization of the running gear could possibly change the operating range most comfortable and most

efficient for the engine.

#### **6. Break-in**

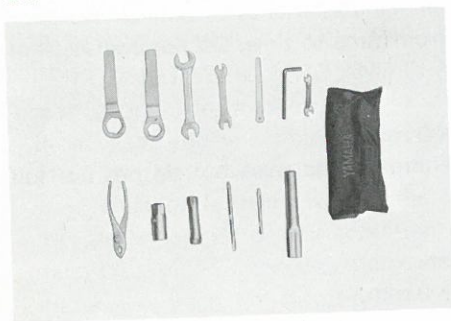
THERE IS NEVER A MORE IMPORTANT PERIOD, IN THE LIFE OF YOUR TX650 THAN THE PERIOD BETWEEN ZERO AND FIVE HUNDRED MILES. For this reason we ask that you carefully read the following material.

Because the engine is brand new, you must not put an excessive load on it during the first several hours of running you could look at it in this manner: During the first 100 miles the various parts in the engine wear and polish themselves to the correct operating clearances. During this period prolonged full throttle operation, or any condition which might result in excessive head and cylinder temperatures, must be avoided. However, momentary full throttle operation (2-3 seconds maximum) does not harm the engine. Each full throttle acceleration sequence should be followed with a substantial rest period for the engine by cruising at lower rpm's so the engine can rid itself of the temporary build up of heat. The method for breaking in an TX650 is quite simple.

- a 0 to 200 miles: Avoid operation above 3,500 rpm.  
Allow a cooling off period of five to ten minutes after every hour of operation.  
Vary the speed of the motorcycle from time to time. Do not operate it at one, set, throttle position.
- b 200 to 400 miles: Avoid prolonged operation above 4,000 rpm.  
Allow the motorcycle to rev freely through the gears but do not use full throttle at any time.
- c 400 to 600 miles: Avoid prolonged full throttle operation.  
Avoid cruising speeds in excess of 5,000 rpm.
- d 600 miles and beyond: Avoid prolonged full throttle operation.  
Avoid cruising speeds in excess of 6,000 rpm. Vary speeds occasionally.



## Service Tools



The servicing information included in this manual is intended to provide you, the owner, with the necessary information to provide a means of doing your own preventive maintenance and minor repairs. The tools provided in the owner's tool kit are sufficient for this purpose, except that a torque wrench is also necessary to properly tighten nuts and bolts.

Should you desire additional service information on your TX650 a copy of Service Manual can be purchased from Any Authorized Dealer or direct from the Literature Department, Yamaha International Corp., P.O. Box 54540, Los Angeles, Calif. 90054.  
(Canadian Distributor: Fred Deely Ltd., 854 West 6th, Vancouver B.C., Canada)

## Lubrication and Maintenance Chart

This chart should be considered strictly as a guide to general lubrication and maintenance periods. 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. 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 the ravages of water on metal parts. If you are in doubt as to how closely you can follow these time recommendations, check with the YAMAHA dealer in your area.

# Greasing and Oiling

			300 miles	1,000 miles	2,000 miles	every 2,000 miles	every 4,000 miles
1	Brake cam shaft	G		○	○	○	
2	Wheel bearing	G			○		○
3	Clutch wire	M/O		○	○	○	
4	Tacho, speedometer cable	M/O			○	○	
5	Meter gear unit	G			○	○	
6	Steering ball race	G					○
7	Front fork oil	M/O	○		○	○	
8	Brake pedal shaft	G		○	○	○	
9	Change pedal shaft	M/O,G			○	○	
10	Axle grip	G		○	○	○	
11	Engine oil	M/O	○	○	○	○	
12	Dynamo lubricator	G			○		○
13	Stand shaft	M/O,G					○
14	Rear arm pivot shaft	G			○	○	
15	Drive chain	M/O		○	○	○	

# Check Point Periodic Inspection Guide

		Preoperation check	300 miles	1,000 miles	2,000 miles	every 2,000 miles	every 4,000 miles
1	Checking the brake fluid	○	○	○	○	○	
2	Front and rear brake adjustment (F.R)	○	○	○	○	○	
3	Clutch adjustment		○	○	○	○	
4	Engine oil replacement	○	○	○	○	○	
5	Front fork oil replacement		○		○	○	
6	Grease up				○	○	
7	Battery electrolyte refilling	○	○	○	○	○	
8	Spark plug cleaning	○	○	○	○	○	
9	Ignition timing adjustment			○	○	○	
10	Fuel pet cock cleaning		○	○	○	○	
11	Carburetor adjustment			○	○	○	
12	Carburetor cleaning						○
13	Air cleaner cleaning	○		○	○	○	
14	Cylinder, piston cleaning			○		○	
15	Drive chain adjustment, oiling		○	○	○	○	
16	Bolt, Nut retightening		○	○	○	○	
17	Spoke, Rim inspection			○	○	○	
18	Oil filter element cleaning					○	
19	Tappet clearance adjustment					○	
20	Cam chain adjustment					○	

Be sure to check the above points before long-distance touring.

### Lubrication recommendation

Engine oil	Use a 10w/30 multi-viscosity oil, or a quality 30wt oil. (SAE MS)
Swing arm shaft grease Brake actuating cam grease. Steering head bearing grease. Rear brake pivot point grease. Throttle grip grease.	Use an all purpose, chassis-type grease that does not break down easily in water (Shell and Lubriplate, as examples, carry this grease).
Front fork oil.	Use 10w/30, 20wt, or 30wt oil for street, use 30 or 40wt oil for dirt (nonfoaming, if possible).

### Torque

All fittings require a minimal amount of torque during tightening to keep them from vibrating loose.

Excessive tightening will only lead to stripped threads and broken studs.

As a rule of thumb, use the following tightening chart:

STUD SIZE	TORQUE
6 mm	90 in/lbs.
7 mm	135 in/lbs.
8 mm	180 in/lbs.
10 mm	300 - 350 in/lbs.
12 mm	350 - 400 in/lbs.
14 mm	400 - 450 in/lbs.
Axle Nuts	500 - 600 in/lbs.

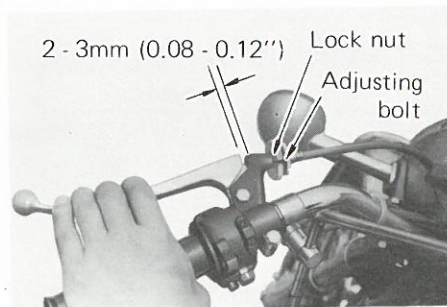


## Servicing

### 1. Clutch cable

The clutch cable requires periodic lubrication to prevent the cable strands from rusting or hanging up in the casing. First, disconnect the cable from the clutch lever by screwing the adjuster all the way back to the cable casing. This will provide enough free play, in the cable for your to slip the cable out of the lever holder through the slot in the lock nut, adjuster, and holder. Hold the cable upright and allow several drops of liquid graphite to flow down the cable. Hold the cable upright for several minutes to permit complete lubrication.

If the cable needs to be replaced, then perform the steps above and disconnect the cable at the lever. Next, disconnect the cable at the engine. Begin by taking off the cover that houses the clutch activating mechanism (left side of the engine). Looking at the inside of this cover, you will see the clutch actuating arm. Push the arm up and lift the cable and off. Removing the old cable and hooking up the new one will take but a few moments.

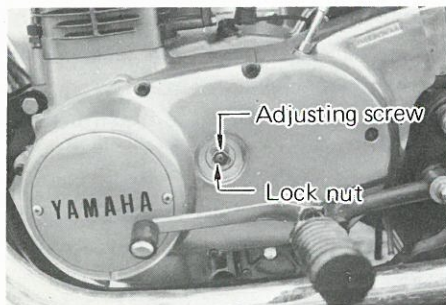


### 2. Clutch adjustment

The TX650 has two clutch adjustments. The first, adjustment located at the handlebar clutch lever, is used to take up slack from cable stretch and to provide sufficient free play so that the clutch engages and disengages completely. The picture below illustrates all the parts involved in making the adjustment.

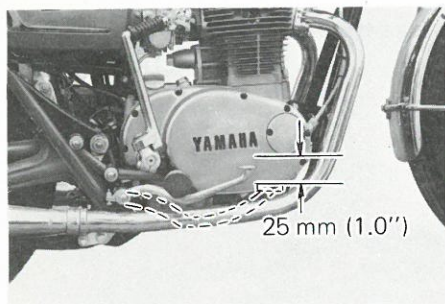
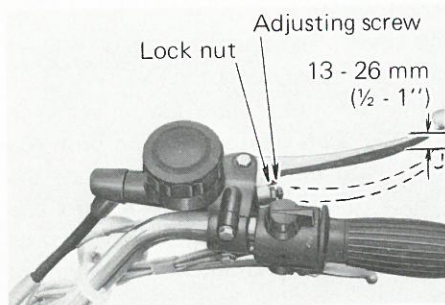
- a First, loosen the lock nut. Then turn the adjuster either in or out depending on which direction is necessary to arrive at 2-3mm (1/16" 1/8") free play.





- b The second adjustment is located behind the adjusting cover. Removing the cover will expose the adjusting set screw and lock nut.

Loosen the lock nut, rotate the set screw in until it lightly seats against a clutch push rod that works with the set screw to operate the clutch. Back the set screw out  $\frac{1}{4}$  turn and tighten the lock nut. This adjustment must be checked because heat and clutch wear will affect this free play, possibly enough to cause incomplete clutch operation.



### 3. Front brake adjustment

The front brake lever should be so adjusted that it has a free play of 13-26mm from when the brake lever is pooled to when the brake begins to be effected.

1. Loosen the adjust screw lock nut.
2. By turning in and out the adjust screw, adjust the play of the brake lever and then lock it with the lock nut.

### 4. Rear brake adjustment

The correct free play of the rear brake pedal is about 1.0 in. (25 mm.). Adjust by turning the adjusting nut at the end of the rear brake rod a half turn at a time. After adjusting the brake, make sure the brake light is working. If not, readjust the stoplight switch.

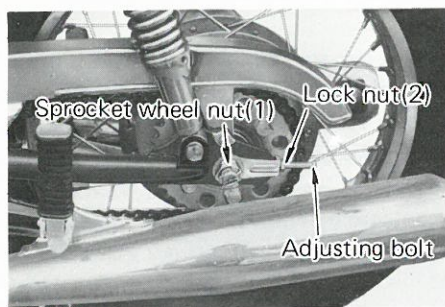
Note: Inspect the brake linings for wear and clean the brake shoes and drums every 2,000 miles (3,000 km). Always keep the shoes and drums free of oil.

## 5. Drive chain

Because the chain consists of an extraordinary amount of parts that rub against one another, it is prone to wear if it is not maintained constantly and correctly. Without any lubrication, a chain can wear out within 100 miles. You should develop a habit of servicing the chain on a regular schedule. This habit is especially important if you spend the major portion of your time riding in the dirt where dust and dirt can readily work into the chain links.

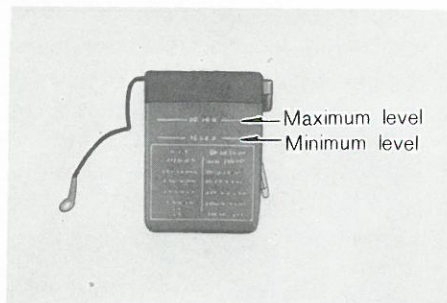
- a Lubrication - - there are several excellent pressure can lubricants available. Use a rag to wipe off any accumulation of dirt, then spray a liberal amount of lubricant on the chain at least every 200 miles.
- b Cleaning - - the chain has to be periodically removed from the machine and soaked in cleaning solvent. Completely saturate the chain with solvent to remove as much dirt as possible. Drain and dry the chain thoroughly. Immediately after the chain has dried completely, lubricate to prevent any rust from forming.
- c Adjustment - - proper drive chain up and down free play, with the rider in position, should equal 20mm ( $\frac{3}{4}$ " ) when measured at the center of the lower section of chain.

Follow these steps to obtain the correct free play:



- a Remove the cotter pin and loosen the wheel nut (1).
- b Loosen the chain adjusting bolt lock nuts (2).
- c Rotate the adjusting bolts in or out, whichever is needed to obtain the correct free play, and at the same time make sure that both ends of the axle are positioned evenly. This can be checked by utilizing the marks on the very end of the swing arms, just above and to the rear of the rear wheel nuts.
- d After completing the adjustment, retighten all the lock nuts.
- e Finally, be sure to bent a cotterpin and check for correct brake pedal operation as it could have changed due to the chain adjustment.

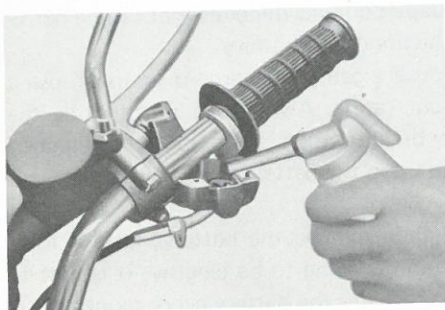
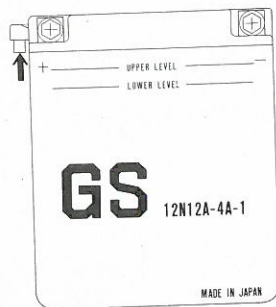




## 6. Battery

The life of your battery depends greatly on how well you keep it serviced. In order to service it completely and correctly, there are certain facts that you must know.

- a Always keep the battery fluid level between the "Maximum" and the "Minimum" level. It should be checked at least once a month, and more often during hot weather. If the battery needs filling, use distilled water. Do not use tap water as it usually contains minerals that can be harmful to the life of the battery.
  - b If for any reason the battery has become discharged, and you are going to charge it yourself, use a "trickle charger" that has no more than a one amp per hour rating. Also, make sure that all the battery caps have been taken off and that the rubber battery breather tube is not clogged or pinched shut. A charging battery creates gas, and pressure could build up in the battery if all the outlets were plugged up.
  - c If the motorcycle is to be stored for more than a month, then remove the battery, have it fully charged, and store it in a cool dry storage area. If storage time is going to be lengthy, it is best to leave the battery with your dealer with specific instructions to recharge the battery every month or so. This procedure is necessary to insure maximum battery life.
- When reinstalling the battery, be sure to hook up the RED lead to the positive terminal and the BLACK lead to the negative terminal (the polarity of each is stamped just below each terminal).



Note: Unfix breather pipe at arrowed position before dismantling battery. Also be sure to put pipe back after remounting battery. Make sure that no electrolyte is splashed on chain and others.

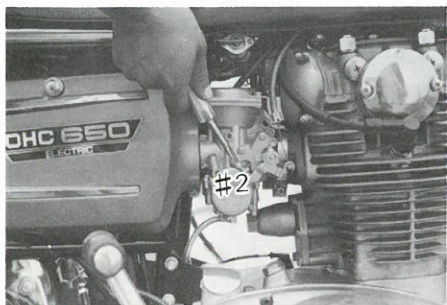
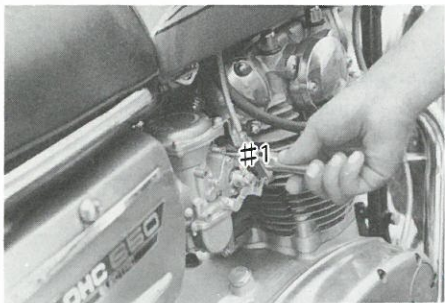
For breather pipe routing figure, refer to label back side of seat.

#### 7. Throttle cable and grip lubrication

The throttle twist grip assembly should be greased at the time that the cable is lubricated, since the grip must be removed to get at the end of the throttle cable. Two screws clamp the throttle grip to the handlebar. Once these two are removed, the end of the cable can be held high to pour in several drops of liquid graphite. With the throttle grip disassembly, coat the metal surfaces of the grip assembly with a suitable all-purpose grease to cut down friction.

#### 8. Carburetor

There are only three adjustments on the carburetor that do not require the services of a mechanic: the idle mixture, the engine idle speed throttle cable slack. Because the carburetor is such a critical part of the engine, any carburetor disassembly should be done by an experienced mechanic.

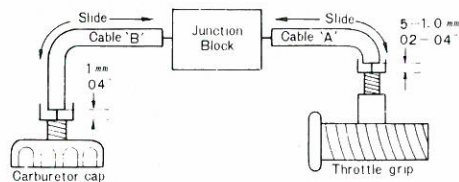


**a Idle mixture**

To set the idle mixture you must turn the idle mixture screw (#1) in until it lightly seats, then back it out  $1\frac{1}{4}$  turns: -- no more or no less. This is a factory setting that can be set with the engine stopped.

**b Idle speed**

Start the engine and let it warm up. Next, screw the idle speed screw (#2) in or out, whichever direction is necessary for the engine to idle between 900 and 1,000 rpm (check tachometer).



### c Throttle cable slack

After engine idle speed has been set, then loosen the cable adjuster lock nut (#5) and turn the adjuster on top of the carburetor until there is 1mm(.04") of slack in throttle cable 'B'.

Retighten the lock nut.

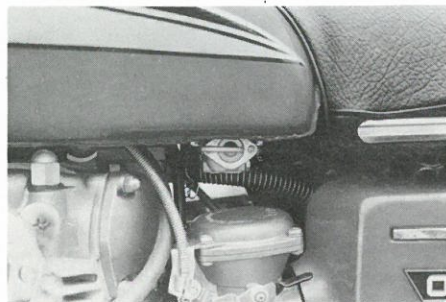
Make the second throttle cable slack adjustment right at the throttle grip. There is a lock nut and adjuster where cable 'A' meets cable guide 'A'. Loosen the lock nut and turn the adjuster until there is .5 - 1.0mm (.02 - .04") slack in throttle cable 'A'. Retighten the lock nut.

**Note:** To measure the amount of cable slack, slide the cable back and forth over the throttle wire, and see

how much end gap exists between the cable end and top of the carburetor (or cable guide 'A', if checking throttle cable 'A' slack).

#### 9. Fuel petcock

The petcock serves another purpose other than acting as a fuel on and off switch. A wire mesh filter is incorporated into the assembly. This filter must be removed once every few months and cleaned. Screw off the threaded cup at the bottom of the petcock and remove the filter. The filter might momentarily hang up in the petcock itself, if it does not drop down with the unscrewed cup.

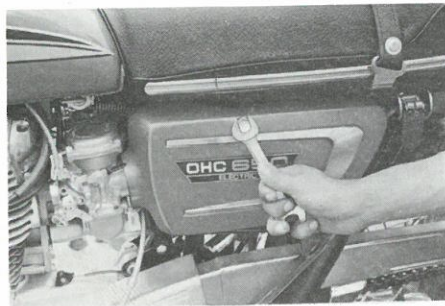


When reinstalling the cup, do not overtighten as the rubber sealing washer inside could buckle and jam up into the fuel passage of the petcock.

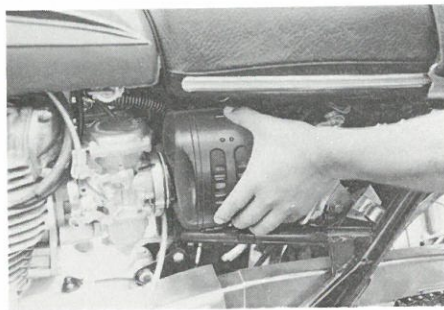


#### 10. Air filter

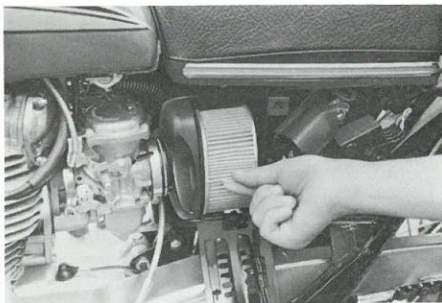
An air cleaner excludes dust and dirt from the engine. It must be clean at all times. If you drive often on dirt roads, be sure to clean it at least once a month.



a Remove the sidecover (L).



b Push the cleaner case stopper and take off the cleaner element.



## Cleaning

The air cleaner is a paper filter. Never wash the filter in gasoline. Blow compressed air through it from the inside. Never wash the filter in water or oil use air only. Coat the inoltplane on both end of the cleaner element with a small amount of oil so that the foam rubber parts can easily be installed in the cleaner case.

### 11. Ignition timing

Timing is of critical importance. If after both your service checkups have been completed, and for any reason you wish to check the timing, have your dealer check for you.

### 12. Breaker point

Unless you are sufficiently experienced, it would be advisable for a mechanic to replace the points, as ignition timing will change when the points are replaced. As it is, points (and condenser) normally last several thousand miles.

**Note:** In addition to the above, changes in point gap through wear and/or filing for cleaning purposes will also change timing, have your Authorized Yamaha Dealer service the ignition for you.

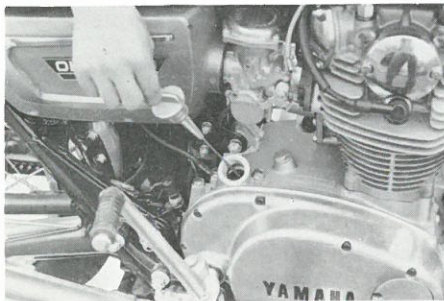
### 13. Spark plug

The spark plug in your machine can tell you a great deal as to how the engine is operating when you know how to "read" the plug. If the engine is operating correctly, and if it is being ridden correctly, then the tip of the white insulator in the spark plug will be a light tan color (standard plug is NGK B-8ES). If, when you remove the spark plug, it is very dark brown or black, then a plug with a hotter heat range might be needed. This situation is quite common during the engine break-in period. If the insulator tip shows a very light tan color, or is actually white, or if the electrodes begin to melt, then a spark plug with a colder heat range is required. Again, if the spark plug insulator tip does not have a light tan color, have your dealer install a spark plug with a different heat range to correct the situation. Do not attempt to experiment with different heat range spark plugs yourself, as it takes an experienced eye to gauge which spark plug to use, and to gauge if the spark plug is actually at fault. It is all right though for you to replace the standard plug. Engine conditions can cause any spark plug to slowly break down. If deposits begin to build up, or if the electrodes finally become too worn, or if for any reason you believe the spark plug to not be functioning correctly, replace it. Be sure, when replacing the plug, that you always clean the gasket surface, that you use a new gasket, and that the spark plug is torqued to 20-25 ft/lbs. Also wipe off any grime that might be present on the surface of the spark plug. The plug can be taken out to be cleaned and gapped. As long as deposit build-up on the insulator is not extreme, you can use a spark plug cleaner to quickly remove the deposits.

Use a wire type feeler gauge to set the electrode gap at 0.020" - 0.024" (0.5 mm - 0.6 mm.)

#### 14. Engine oil

The only servicing for you to do is to check and fill the engine lubricating oil. The engine dip stick is located right above the kickstarter. To check the level, warm the engine up for several minutes, screw the dip stick completely out and then just rest the stick in the hole.



**Note:** When checking Engine oil level with the dip stick, let the unscrewed dip stick just rest on the case threads. Also, be sure the machine is positioned straight up and on both wheels.

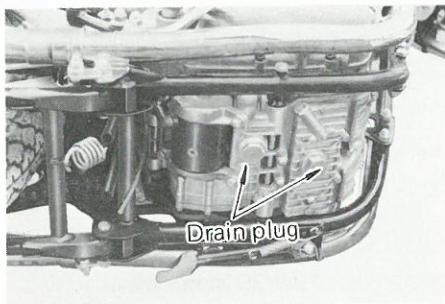
Commendable oil	10W/30 Motor oil or
Amount	20W/40 Motor oil
	2,500 cc (2.6 qts)

The dip stick has a Minimum and a Maximum mark, and the oil level should be between the two. If the level is lower, then add sufficient 10w/30 (or 20W/40) motor oil to raise it to the proper level.

During the break-in period, you should replace the gear oil 30 days after the date of purchase or after 500 miles. The transmission should be drained and refilled approximately every 2,000 - 4,000 miles. On the bottom of the engine there is a drain plug. Remove it and drain all the transmission oil out. Reinstall the drain plug (make sure it is tight). Add 10w/30 (or 20W/40) motor oil through the dip stick hole.

**Note:** DO NOT ADD ANY CHEMICAL ADDITIVES. ENGINE OIL ALSO LUBRICATES THE CLUTCH AND ADDITIVES COULD CAUSE THE CLUTCH TO SLIP.





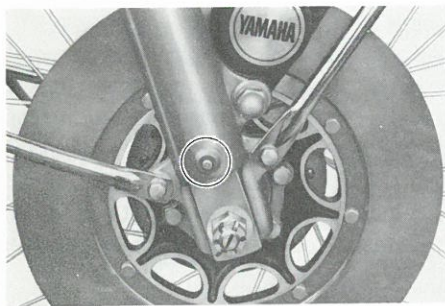
### 15. Steering

Periodically you should check for any looseness in the steering assembly. Do this by blocking the front end off the ground, grasping the bottom of the forks, and gently rocking the fork assembly backward and forward. You will feel any looseness in the steering assembly bearings. If any exists, do not attempt to correct it yourself but let your dealer make the adjustment with the correct tools.

Also, these same front fork bearings must also be lubricated every 3,000 miles. This the dealer should also do.



## 16. Front fork



roughly clean out each fork. Water and dirt eventually coat much of the inner fork surfaces and cannot be readily removed just by draining.

At least every 4,000 miles the front fork oil should be completely drained and refilled. Remove the Phillips head screws in the very bottom of the forks and most of the fork oil will drain out. Compress the forks several times to pump all the remaining oil out.

Reinsert the drain screw and make sure it is tight. Next, remove the fork cap found on top of each fork tube. Slowly pour in 4.5 oz. (136cc) oil in each fork leg. (see Lubrication Recommendations section for type oil).

At least every other time you should have your mechanic dismantle the fork assembly and tho-

## Warranty Information

Study your Warranty Policy thoroughly. This is for your own benefit.

You will note that this book does not explain how to proceed with repairs or extensive disassemblies. There was a definite reason for this. The acceptance of any warranty claim that your dealer might submit in the future depends greatly on just what has been done to the motorcycle. If any particular failure can be traced directly back to some repair or maintenance performed incorrectly by an owner, that should have been handled by a qualified mechanic, it is possible that the claim might not be accepted. We have tried to provide you with sufficient information to perform the standard maintenance projects that can be safely done by the person owning his first motorcycle. For your benefit we make specific recommendations as to which procedures should be done.

Another point to cover is that there are certain additional requirements that must be completed to qualify for warranty coverage. First, you must send in your Warranty Registration card within ten (10) days of purchase. This is important in that you **MUST** be registered with Yamaha International's Warranty Department as the legal owner of your motorcycle. Secondly, **YOU MUST HAVE** the Owner's plastic Warranty Identification card. No dealer can accept any motorcycle for warranty work until he has the plastic card as proof that the motorcycle can be considered for warranty coverage. Thirdly, you **MUST** have the free check-up completed at the proper time

Lastly, if any situation arises that would be considered a warranty item, **IMMEDIATELY TAKE IT TO YOUR DEALER**. Do not delay, as little problems left undone become big problems.

## REQUIREMENTS FOR A GOOD MOTORCYCLIST

1. Safety is more important than speed. Always observe traffic regulations & signs.
2. Always use quality gasoline and oil, and avoid the inconvenience of running out of gas or oil.
3. Check tire pressures before every ride.
4. Warm up the engine for about one minute before riding.
5. Shift gears gently, while momentarily closing the throttle, avoid power shifting.
6. During the break-in period, ride at the suggested speed in each gear.
7. Apply the front and the rear brake at the same time
8. Down a long hill, use engine compression as a brake.
9. When parking, be sure to turn off and remove the ignition key, turn off the fuel cock, and lock the steering.
10. Check parts at regular intervals as described in this manual.

## Troubleshooting

### 1 Factory Authorized Service

Your Yamaha dealer is a factory trained mechanic who guarantees thorough and correct maintenance for your motorcycle. We recommend that you let your dealer make all repairs and adjustments on your motorcycle. You will be assured prompt and good service.

### 2 Genuine Yamaha Parts

Always use genuine Yamaha parts and not "substitute" brands. Yamaha parts are manufactured to meet the factory's exacting standards of precision and quality.

### 3 If Something Should Go Wrong . . . . .

The TX650 undergoes rigid factory tests to assure you long and satisfactory performance. However, if something should go wrong with your machine, immediately ask your Yamaha dealer for advice.

He is always glad to answer your questions.

**IMPORTANT:** Some components are sealed or cannot be disassembled. If repairs to such components are necessary go to your Yamaha dealer. Yamaha cannot be responsible for repairs and adjustments to such components performed by non-thorised personnel.

**Note:** The inspection and maintenance of Autolube should be instrusted to your dealer.

## Consumer Information

### Stopping Distance

This figure indicates braking performance that can be met or exceeded by the vehicles to which it applies, without locking the wheels, under different conditions of loading and with partial failures of the braking system. The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions and the information may not be correct under other conditions.

Description of vehicles to which this table applies: Yamaha motorcycle TX650

#### A. Fully Operational Service Brake

##### Load

Light

170

Maximum

180

0 100 200 300

Stopping Distance in Feet from 60 mph.



## Acceleration and passing ability

This figure indicates passing times and distances that can be met or exceeded by the vehicles to which it applies, in the situations diagrammed below.

The low-speed pass assumes an initial speed of 20 mph and a limiting speed of 35 mph. The high-speed pass assumes an initial speed of 50 mph and a limiting speed of 80 mph.

NOTICE: The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions.

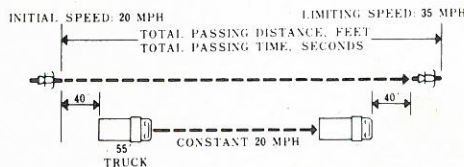
Description of vehicles to which this table applies: Yamaha motorcycle TX650

### Summary table:

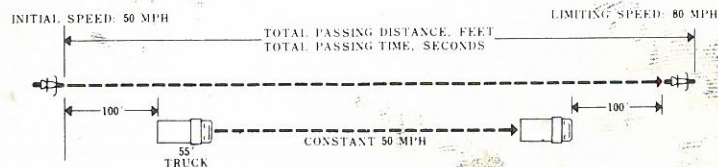
Low-speed pass . . . . . 335 feet; 6.6 seconds

High-speed pass . . . . . 850 feet; 8.1 seconds

### LOW-SPEED



### HIGH-SPEED





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