



Instructions for DMS Yamaha TT 500 Frame

Assembly procedure is simple re-assembly of the stock components. All nuts and bolts supplied for this frame are American thread. Don't use metric from the stock machine. The only exceptions are the front engine mount bolt and nut, and the top engine mount bolt and nut. Most of the threaded bosses, or tabs are coarse thread and should be assembled with a good grade of loc-tite type compound. The coarse thread exception is the seat mount bolts, $5/16 \times 3/4$ " SAE. Both exhaust pipe mounts, $3/8 \times 3/4$ " SAE and foot peg bolts $3/8 \times 1$ " SAE. I use no loc-tite on these as they need to be tightened frequently when the bike is first ridden. Use lock-washers on these bolts.

Before you install the motor, remove the oil filter from the front down tube from your stock machine, clean it and install it in the new frame. Next while you still have lots of room, scrape the epoxy away from the coil mounts that are in a new position on the left side of the frame by the number plate. This position is more accessible in case of ignition trouble, etc.

Then install the motor, rear first from the right side. Position the motor by using the long $3/8$ " SAE stud through the lower front motor mount without the aluminum spacers on it. Next the front engine plates. Then install the rear motor mount bolts ($3/8 \times 5$ " SAE) from the right side leaving room for ex pipe clearance. The $1/4$ " thick aluminum spacers are located one on each side of the motor. (The longer aluminum spacers go in the front lower engine mount one on each side.)

It may be easier to install these spacers last, after the motor is located by snugging the other motor mount bolts. After everything is in place, tighten everything up. Do not over tighten the $5/16$ " coarse cap screws. Use a lock washer and a flat washer in the aluminum front motor mount and lock washer only in the top motor mount, flat washers on the $3/8 \times 5$ " SAE bolts, and no washers in the $3/8$ "

SAE stud. You may tighten the "nylock" SAE nuts tighter as they are on grade 5 bolts (as are all the SAE nuts and bolts supplied).

Connect the lower feed oil line in the usual manner. The return line on the top right side of the frame is connected by means of the short neoprene line and 2 clamps. Just leave the nut on the oil line and forget it. The fitting on the left side is connected to the rocker box like the stock frame.

Use Metering Rod clear to the Richest position for this pipe
Install the carburetor and air box using the stock bolts and rubber grommets.

Install the rear splash shield by means of nylon ties. Be sure it meets the bottom of the seat to seal out any dirt from the air intake.

Seat installation can be simplified by slotting the bolt holes downward on the seat bracket. Remove the seat bracket and use a hack saw. This means you only have to loosen the bolts a turn or so to remove the seat. Use a flat and a lock washer in the 5/16" SAE bolts.

The rear fender is held on by the three 1/4 x 3/4" SAE nuts and bolts.

The tank is mounted in the usual manner, but the two rubber pads that are glued on the innersides of the tank should be pulled off and taped to the top of the frame tube about 2 1/2" behind the oil filter neck. Do not bottom the front tank bolts in the threaded fitting or you may "pry" it off. Use lock-tite.

If the standard shocks are used, the top left mounting eye must be drilled to 7/16".

I recommend using Fox Shox as they offer many advantages. They save about 4 1/2 lbs weight, give 7/8" more travel and let you tuck in the exhaust system a little more. The geometry is enhanced by the dual rate spring "setting" somewhat when you sit on the bike.

When installing Fox Shox be sure each end of the shock is free to pivot on the bushing sleeve when the shock mount bolts are tight.

Do not leave the bolts loose as suggested in the Fox manual, as the type of mounts used on the frame and swing arm need to be tight.

Be sure and have the big washer on the outside of the left shock as it can

slip off the rubber grommet without it.

When you install the foot pegs you will notice they have a certain amount of built in flex which helps reduce shock to your legs. (I also recommend 4130 handle-bars with no cross bar, for the same reason.)

The exhaust pipe I have available is designed not only to be out of the way, but to give you the right length head pipe which is important. Also you will notice the diameter is 1 5/8" not the usual 1 3/4" of most accessory bolt-ons. This diameter of pipe helps in getting a good combination of performance. When installing this pipe, be sure to drill and safety wire the flange nuts. (I use a light spring between the nuts for safety wire.)

Use your old dip stick-oil cap. If you drain your engine and filter holders the bike will hold about 2 liters. Always start the machine and let it run before checking the oil level as the oil drains into the crank case when not running.

Rear wheel installation is simplified by front cam adjusters. The only spacer needed is the one on the sprocket side. Check the axle in the wheel before assembly to see that it has enough clearance. If not the plating can be easily removed with sand paper, emery cloth, etc. I put the axle in from the left and the nut on the right. To help make the wheel even more quick-change I cut the back 1/3" off the eye of the brake lever arm. (The aluminum one on the brake.) This way when the axle nut is loosened, and the torque arm removed at the bottom, the backing plate can be spun around and the brake rod will fall out. The axle is then removed, the chain slid off without breaking it, and the wheel removed.

When adjusting the chain, the tightest position is about 1/3" of the travel, so check it there. Be sure you have enough slack when the wheel is extended. The swing arm is made to accept a pro tec chain tensioner. I recommend you use one.

To adjust the chain with the weight of the bike on the wheels (or on side stand), I stand on the left side, reach over on the right and loosen the swing arm nut. When the nut is loosened, the arm will slide back by the weight of the machine. Turn the cams a few degrees then reach down with your left hand, get a hold of the

chain and pull up forcing the swing arm forward. Check the right cam to see it is all the way forward. (If not, nudge the rear wheel with your right knee.) You are now qualified for most advanced Yoga lessons, but it is a lot easier to do than say and only requires one wrench. When adjusting the chain with the rear wheel off the ground, you will force the wheel back by moving the cams in a more conventional manner.

Number plates will have to be trimmed slightly around the top shock eyes. You also have to remove the inside front mounting boss on the left number plate to clear the coil. Check and make sure the coil wire has clearance and is not touching the number plate. Trim the plate if it is. Use large scissors, razor blade, etc. for trimming.

Remove the split pin that holds the stock fasteners. Remove the stock fasteners, but use the thin stock washers along with the 1/4 x 20" slotted head screws which are supplied to hold the plates in place.

Steering Stem Assembly

Remove the stock steering stem from the bottom yoke and replace it with the new one. The thin ^{steel} ~~aluminum~~ ring is just a spacer to go under the stock rubber dust seal and give the correct spacing into the new frame.

Place the spacer on the bottom yoke first then the rubber dust seal with the sharp lip facing upward. Then press on the lower bearing.

Grease bearings with wheel bearing grease and assemble. Tighten the large jam nut ring tight enough to cause a slight drag in the bearing. Do this before installing the top yoke. The top jam nut should not be over tightened.

Maintenance

The maintenance required is to frequently check all nuts and bolts. If one bolt becomes loose it puts extra load on some other bolt or frame part and can cause damage. The swing arm must be lubed after every wet ride, or after every wash job, especially if you use a high pressure wash system to clean it. The grease will displace any moisture that might get in, or the condensation that occurs with

temperature changes.

The steering head bearings should be checked for tightness every event or two. Keep the lower jam nut tightened enough to cause a slight drag on the bearings. Have the front wheel off the ground and the cables free when you check this. Do not over tighten the top jam nut. The steering head bearings should be cleaned, check for pitting or wear and repacked with heavy wheel bearing grease every few months. More often in the winter.

Tips on Handling

This frame was designed with six day trials type of competition in mind. That means it must be very versatile to do well in the qualifying rounds, which are in the desert one week, tight woods the next and mountain trails the next. The bike must also be a disguised moto crosser to do well in the special tests, which are what six day riding is all about. You may use it in the same way, or you may be only interested in one type of riding, or one type of terrain.

I'm sure with the right set up it will work for your needs.

For tight woods and trails, you should try keeping the rear wheel adjusted more to the front of the adjustment. Even if you need to use a link and a half in the chain to get this. This steepens the head angle and reduces the trail slightly. Also increases the ground clearance and ability to loft the front wheel over logs etc. In other words, it is quicker and more responsive.

If you are a desert rider or moto crosser for the weekend or just want to slow the handling for high speed work, do just the reverse, keeping the wheel base long. A 13 inch shock will do the same thing or slow it even more.

Sliding the front fork tubes up and down in the yokes also changes the handling in the same way. Shorter for slower speeds and quicker handling and longer for more stability. At first work them together so you are not too far off. Later when you gain more experience you can make finer adjustments by alternating front and rear changes. You can spend more time adjusting your chassis than you do riding it, so sometimes it is better to set it up like you like it and leave it

alone as it is easy to screw it up. I recommend to start with the wheel adjusted more toward the rear and about ^{1/2} inches of fork tube showing above the top yoke.

When you first ride the bike you will notice the bike is now very responsive to the throttle. When the throttle is off the weight is on the front wheel making the wheel stick better than stock. When the throttle is on a little, the weight is neutral, and when on hard or sudden the weight is on the rear wheel making it bite very hard and the front wheel light. As you will see, very little effort is needed to make it turn, or get the front over holes, logs, etc.

The answer to a good riding style on a four stroke depends on how smooth you work the throttle. Try to avoid the sudden sharp blasts of throttle off and on that a two stroke rider seems to need. Roll the throttle on a four stroke and you get more power to the ground.

Rough down hills and wash board sections can be done much easier with a slight amount of throttle, as a four stroke has a greater amount of compression braking and you want the handling neutral under these conditions.

Tires

My experience with four stroke dirt bikes has shown that the large section, widely spaced center knob tires detract from the handling in a couple of ways. They seem to be unstable on hard surfaces and fast dirt roads. In mud they spread the load over too wide of an area and reduce the bite of the knobs.

I prefer to use the European style of tire, Metzeler, Trelleborg, Goodyear, full bore, Barum, etc. All in 4.00 size or in some cases 4.50. When using other brands, stay with the smaller sizes, 4.00-4.25. The four stroke motor gets traction in a manner most two strokes can't match. The smaller sizes put it to the ground smoother and make it easier to control. They also work in better harmony with the narrow front tires, 3.00-3.10 at the most.

Be careful choosing tires. The wrong combination of tires and tubes can add as much weight to the bike as you have saved in this frame kit. Desert riding has its own problems and if you ride in the desert I'm sure you have a good idea of your needs. You may need larger tires for floatation and rim protection.

Have a good ride,

A handwritten signature in black ink that reads "Dick Mann". The signature is written in a cursive style with a long, sweeping underline.

Dick Mann