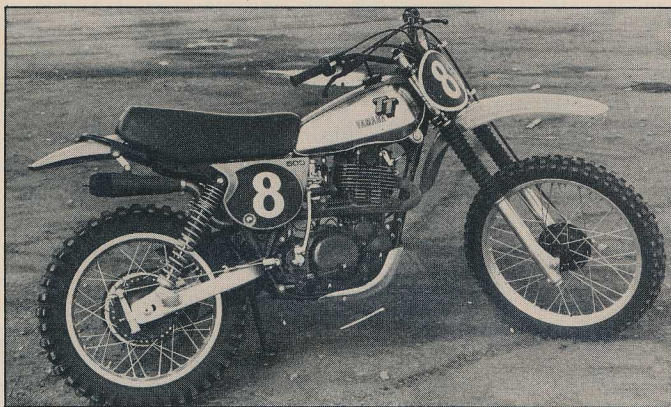


Building Next Year's TT?

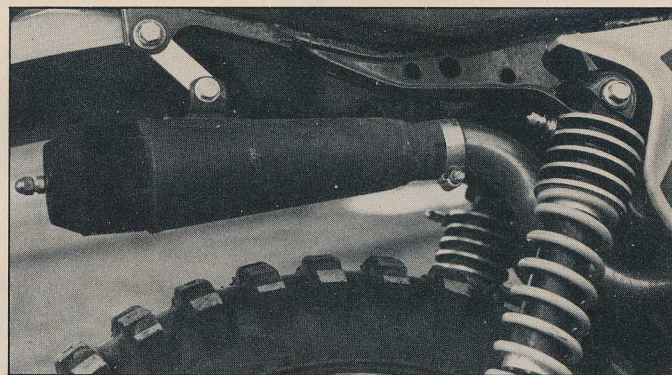
PROJECT: KING KONG

A better Yamaha thumper

By Ned Owens



Project King Kong begins to take shape with longer legs and a modest weight reduction.



White Brothers' bolt-on rear pipe section comes complete with brackets, bolts, clamps and extra Super Trapp discs to fit stock head pipe. Gained are an increase in performance and a decrease in weight.

It used to be that almost any off-road bike was a good candidate for a lot of modifications. Shocks, forks, carb, air box, fenders, spokes, rims, tires, engine, ignition, tank and even seats all got some kind of treatment. Many times, the owner of an old CZ, Bultaco, Husky, Honda or Suzuki — just to name a few — had nothing left stock on the machine but the frame.

But as bikes get progressively better each subsequent year, less and less has to be done to the racers, until now where some of them are as close to perfect as is possible on a production machine. The Suzuki RM125N is a very good example.

Despite this, there are always a couple of bikes that, for various reasons, are extremely popular as off-road machines, but have not been put through the evolutionary changes, massive engineering and design thought — and budget — to which the motocrossers are subjected.

Most of the machines in this category are usually warmed-over dual-purpose machines that have

picked up a large off-road following. One of these machines is the Yamaha TT500. Obviously, the main attraction of the TT500, over other large-displacement dual-purpose bikes, is its massively powerful four-stroke heart.

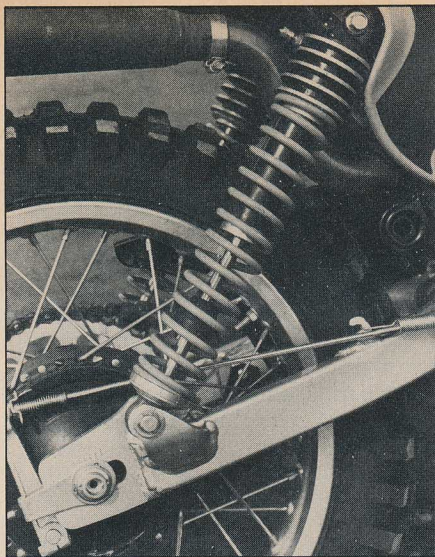
Although the TT500 has gone through a series of evolutionary changes, most of them are quite modest compared to the MXers. Still, the TT remains just a dual-purpose machine turned into a play-bike. For many riders these shortcomings are of no consequence. But for the guy who wants all the torque and grunt of the big thumper, but needs a little more refined package, he must "roll his own."

As is evident by our test of the TT500F in the April '79 DB, we feel that there is a lot of room for improvement in many areas — with the notable exception of perhaps the engine. Can the TT500F be turned into a potent off-roader compared to the likes of the IT Yamahas, for instance? We decided to build up the TT and see.

With many project bikes, the first

step is to build more power to match the suspension. But in the case of the TT, it's the other way around. We will try to bring the suspension up to a par with the powerful thumper. Besides the suspension, the other obvious areas of improvement are in weight reduction, improvements in braking and traction, ease of maintenance, and lastly — for you gonzo power freaks — more beans.

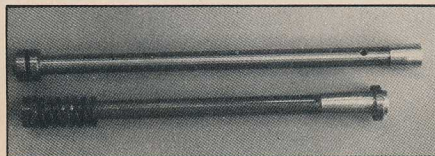
In each area, though, we're going to try several approaches, from the absolute low-buck end, to moderately expensive, to a third "wallets to the wind" expenditure that will humble even the Defense Department spenders. Our intent here is to build a good, legal off-road machine that will be as at home on the trails and whoop-de-dos as it already is on the fireroads. While we're not building a motocrosser (as the Hunk did with the DR370), we are confident that the machine will be fairly competent on a track with a horde of other thumpers. Versatility is the key here.



Works Performance Gassers are the choice at the rear, with S&W Stokers as the option for those on a budget. Fifteen-inch units seem to be optimum.



Threaded coupler, found in almost any hardware store, fits not only the fork cap (right) but also the top of the damper rod and is necessary for removal of either.

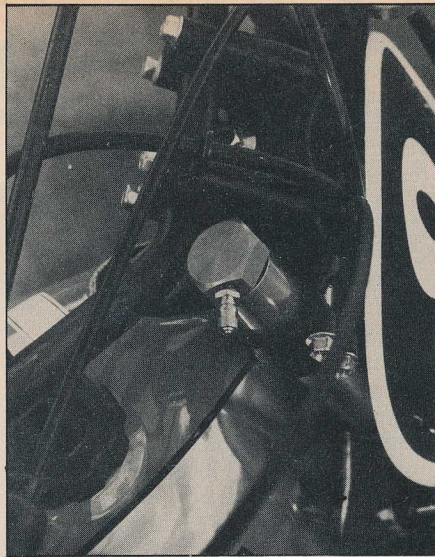


Terrykit damper rod is one inch longer than stocker, and provides much smoother, more progressive fork action.

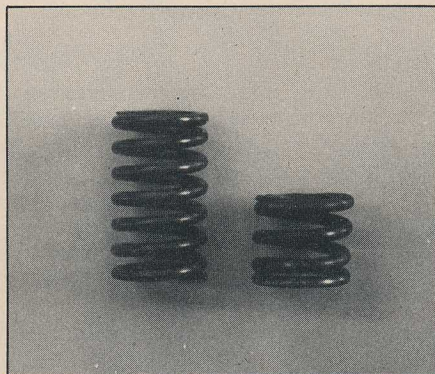
Forks

Yamaha's new leading axle forks on the TT500F are quite similar to those on the IT models, with a couple of exceptions. The damper rod/piston assembly is a one-piece steel affair with a fiber piston ring. Also, the fork cap has a 19mm hex socket *in* it. Fortunately, a simple 7/16-inch coupler (with a 3/4-inch hex), that is readily available at hardware stores, will effectively remove the fork cap. It is also precisely the same tool that is needed to hold the damper rod in position when the assembly Allen bolt is removed.

To achieve more travel and a higher ride height, without spending much money, we opted for shortening the topping spring. The stock topping spring length is 60mm (2.4 inches). This spring can either be replaced or shortened (cut and ground smooth) to end up with a spring that is 35mm (1.4



O'Neal fork caps provide a wider range of fork spring tuning. Valves are positioned to outside to avoid cable snagging.



Stock topping spring can be cut and ground smooth, or replaced with a shorter version from another bike. One-inch shorter spring nets the same distance in front end ride height and travel. (Note: Don't use this travel mod if the fork kit is used.)

inches) long. Usually when this method is used, an extra preload spacer is added to take up the difference, but in this case the stock preload spacer is too long to begin with and is pretty close with the short topping spring in place. (Shortening the topping spring is not recommended if a replacement fork kit with longer damper rods is to be installed, since it will require the stock length springs.)

To change the damping characteristics, we merely went from the recommended ten-weight down to Bel-Ray five-weight for smooth terrain, low-speed operation. This takes some of the harshness out of the forks, but it isn't a cure-all. (The stock rods are fitted with a long topping cone and a floating ring valve that appears to be more complicated than might be necessary. Hence, we ran into a few problems trying to modify the rods for

performance.) Approximately one inch of travel is gained by this method.

To provide a wider spring tuning range, we also added a pair of Jim O'Neal air fork caps. Pressure ranged from 4 to 8 psi with the stock springs and slightly reduced preload (as a result of the topping spring mod).

A slightly higher dollar approach, with much more dramatic results to boot, is the installation of a Terry fork kit. This simple drop-in kit provides one full inch of travel with much smoother, more progressive damping. We used 240cc (eight ounces) of Bel-Ray 20-weight fork oil per leg. Since the Terry rods utilize the stock topping spring, we cut the stock preload spacer in half. With the O'Neal fork caps we added 2 to 6 psi depending on conditions.

Shocks

Keeping in mind the budget nature of phase one, we went after some reasonably inexpensive S&W Freon Stokers (FE-10) with dual-rate springs from Al Baker Distributing. They were equipped with 80-175-pound springs (coded red/brown/red). Equipped with these springs, the TT is ready for flat-out hauling over rough terrain, but with a loss of low-speed sensitivity. As a kind of trade-off, we went for 75-155-pound springs (red/orange/red). This is recommended for woods-type riding. These springs are calculated for 160-200-pound riders.

The longest shock that can be successfully used with the stock swingarm is 375mm (15 inches). The S&W's net 194mm (7.75 inches) of rear wheel travel. With the use of any longer shocks, the chain just eats through the swingarm. Ride height at the rear is increased by approximately 25mm (one inch), which corresponds to our increase in the front.

(If the rider chooses only shock replacement at this stage, the stock forks must be dropped in the triple clamps to within 6mm (1/4-inch) of the top clamp. This brings the geometry back around to 30 degrees fork rake. If, on the other hand, the long shocks are used in conjunction with the Terry kit or the one-inch topping spring modification, then the tube-to-clamp measurement is approximately 32mm (1 1/4 inches). This allows adjustment in either direction for tight woods [tubes up farther] or straight line/whoops stability [tubes down].)

For a higher-bucks approach to the rear suspension, we went for Works Performance shocks — the Gassers. These 375mm (15-inch) nitrogen/oil shocks are equipped with either straight-wound or dual-rate springs. We decided on the straight springs,

computed to the weight of a 180-pound rider, on fast trails. Works shocks are custom-built to the specifications of each rider and machine. Not only are the damping characteristics variable, but the "cross-over" points in the springing are also variable with spacers. Travel is a full 202mm (eight inches).

The improvement over the harsh, stock shocks is immediately noticeable. The shocks are supple on the washboard stuff, yet soak up the really bad, square-edged holes. The back is improved enough that we have reached the limits of the swingarm — but that is a future problem.

Pipe

Although Yamaha went to a lot of trouble making some of the parts on the TT as light as possible (i.e. plastic air box, aluminum tank and skid plate, plastic seat base), it seems that their quiet exhaust system didn't receive the same consideration. The rear silencer portion of the pipe alone weighs 12.5 pounds. To help improve the gas exhaust flow and reduce some of the weight, but still stay reasonably quiet and USFS-legal, we installed the rear portion pipe and Super Trapp muffler from White Brothers Cycle Specialties.

The complete unit, including connector pipe, Super Trapp with additional discs, bracket, clamps and bolts weighs only 3.5 pounds, a reduction of nine pounds over stock. No cutting or fiddling is necessary, but we suggest drilling an 1/8-inch hole through the silencer body and connector pipe where they mate, and securing the two with a short sheetmetal screw. Wrap the hose clamp over the screw and the unit will stay together nearly indefinitely. It's just a precaution.

Power is up some already with just the addition of the pipe. It is noticed most in the upper range with an increase in top rpm. By reducing the number of discs (18 seems to be the maximum number for optimum power) more torque and mid-range can be obtained. Also, the fewer discs, the quieter the exhaust note is if you ride in an overly sensitive area.

Air filter

Another aid to engine breathing that works well in conjunction with the pipe is the addition of a K&N cloth filter element to the stock air box. It not only breathes better, but works longer in dusty conditions and will usually stay together much longer than the short hair foam element. Be sure that you use K&N air filter oil, or another oil made especially for the K&N cloth-type filter. We have seen

some filters that were treated with regular foam filter oil and were literally ruined. The heavy foam filter oil will effectively close off the breathing spaces in the cloth, and under high-velocity situations will suck a hole or tear in the cloth.

Chain guard

To help protect the cases if the chain should get tossed off in muddy situations, we installed a White Brothers case protector. This aluminum unit ensures that the chain will stay on the front sprocket. It also protects the shift shaft by keeping a tossed chain from bunching up in front of it. The guard can be used with or without the sprocket cover. An added advantage, especially if the sprocket cover is left on, is that it makes installing the chain easier after washing the bike or servicing the chain. (Of course, you remove the chain before you wash it at the car wash! Doesn't everyone?)

Oil line

Something that is inexpensive, but can save you some bucks in the future is the Pro-Tec high-volume oil line. Tuners find that under high-rev, racing conditions — especially when a high-lift cam and high-performance springs are installed — the camshaft and rocker arms can gall. The reason for this is apparently an oil passage in the head that is too small. The high-volume oil line feeds directly into the end of the cam at the exhaust valve side.

Installation is easy. Simply remove the metal line from the case to the upper right side of the head, plug that top hole with the supplied bolt and attach the new hose to the case outlet with the stock banjo bolt and washers. By running the hose up over the top of the engine the line can be hooked into the end of the cam tower through a special adapter. Simple and not even messy. The oil volume is increased by approximately 25 percent. This is a worthwhile mod, even if you don't plan to do any other engine mods.

Part II

In the upcoming part two, we'll get into carburetion and a high volume air filtration system (air box), do some brake tuning, and sorry to say for you F-model buyers a considerably stronger, longer and lighter swingarm. Thought that you had the swingarm problem licked with the Yamaha version? Not so.

We'll have some control changes and speculate on the possibilities of enduro lighting, and what's needed to wire this baby. The points ignition is going

to have to take a hike, as well as the push-pull throttle and carb — a tuning/maintenance nightmare.

Plug cap

Part of the reason, we understand, that the TT is such a balky starter is a result of the resistor-type spark plug cap. One way to handle it is to disassemble the cap and replace the resistor element with a piece of solid copper wire. We decided to just replace it completely with a Malcolm Smith waterproof plug cap. With just this simple mod, a much fatter, blue spark is evident at the plug tip. Starting is already more consistent — but it's no CDI.

Box scores

Fork kit	\$39.00
S&W Stokers, w/springs	\$115.00
Works Gassers, w/springs	\$149.95
Pipe w/Super Trapp	\$47.50
Air filter	\$8.20
Chain guard	\$8.95
Oil line	\$9.95
Plug cap	\$1.95
Air fork caps (pair)	\$9.75

Where to get the goods

AL BAKER R&D

6878 Santa Fe Ave E.
Hesperia, California 92345
(714) 244-5425

For: S&W Stokers with dual-rate springs. Catalog \$2.00.

BEL-RAY

From your local dealer for: fork oils, lubricants.

MOTOCESSORIES

P.O. Box 824
Northridge, California 91328

For: O'Neal air fork caps, Works Performance shocks. Detailed price brochure: 50 cents, catalog: \$2.00.

MALCOLM SMITH MOTORCYCLES

7563 Indiana
Riverside, California 92507
(714) 687-1300

For: spark plug cap, K&N air filter.

WHITE BROTHERS CYCLE SPECIALTIES

11611 Salinaz Dr. "M"
Garden Grove, California 92643
(714) 638-1653

For: pipe with Super Trapp, case protector, Terry fork kit, Pro-Tec high-volume oil line. Catalog: \$1.50.

WORKS PERFORMANCE SHOCKS

20970 Napa St.
Chatsworth, California 91311
(213) 998-1977

For: original oil shocks, Gassers, and springs. □