MINI BIKE RIDER ™

Www.AllAboutMiniBikes.Com

YAMAHA YZ-80, ONLY BETTER

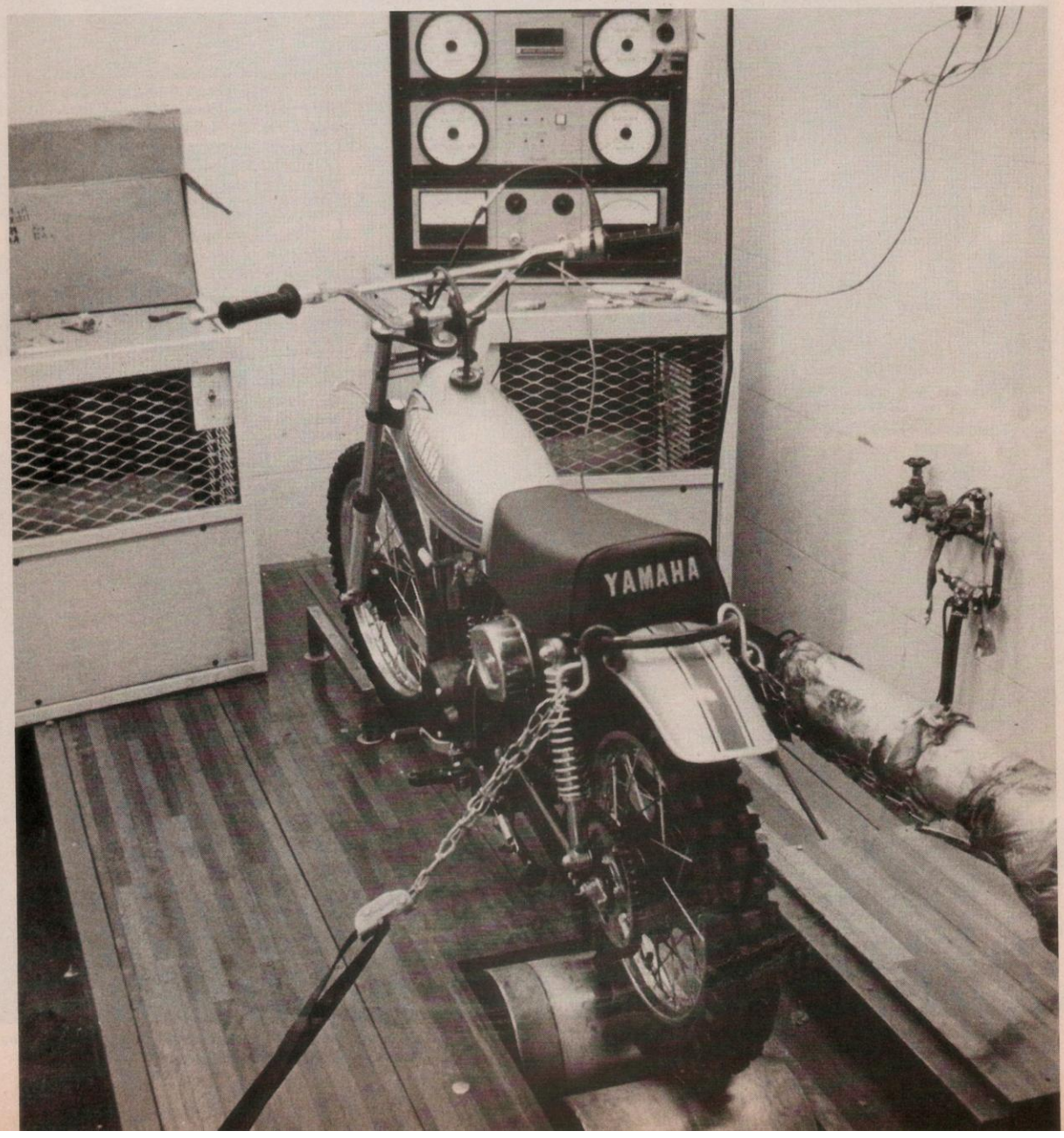
The Sport Time Yamaha Treatment

Although the YZ-80 is a pleasant little scooter with good handling and good looks, it isn't really competitive in 80cc motocross racing in its standard form because the engine is very mildly tuned. The modified version we are about to describe should be very competitive on anybody's race course. The dynamometer (Photo No. 1) tells us that the modified version has twice the horsepower of the stock model. That may sound incredible, but the dyno doesn't lie.

Let's first take a look at some of the stock items that are responsible for the rather low but flat power curve. The intake tract is the biggest culprit so lets look at it.

Starting out at the air filter we find a washable foam filter (No. 2) with a rougher outer surface that looks like a shag rug. It is contained in a small sheet metal air box and connected to the carb via a flexible rubber hose. While this filter is adequate with the stock performance, it is too small to be used on the modified engine, which passes a heck of a lot more air.

A look at the Fun N'Fast conversion used on the modified engine shows not only a much larger filter (No. 3) but the filter cover (No. 4) exposes a larger area of the filter to incoming air. This aids the air flow tremendously but also increases the chance of drowning the filter in wet going. From the air filter the air must pass through the carb and be mixed with the proper amount of fuel to satisfy the needs of the engine.

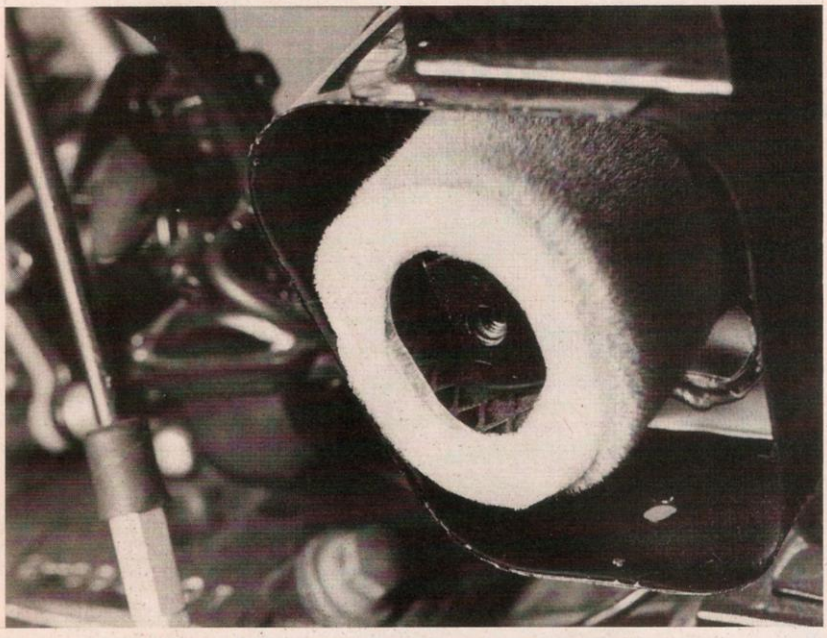


The standard carb is a concentric float, slide operated, affair, with a small 16mm bore (No. 5). It's easy to see why the 24mm Mikuni (No. 6) on modified engine is able to pass more valuable fuel/air mixture into the engine. The use of a carb this large on an 80cc engine is made possible with the use of reed valves which only let in as much as the engine requires, no matter how big the carburetor is.

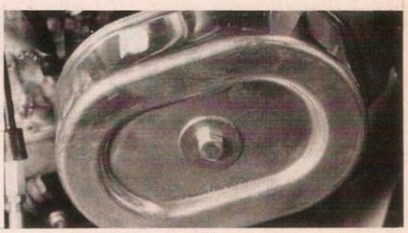
Lets have a look at the standard manifold (No. 7) and reed cage assembly. The small 16mm hole in the manifold matches the standard carb. The standard reed assembly (No. 8) has two small metal reeds on a 45 degree angled cage. The oil is injected through the fitting on top of the reed cage.

A look down the throat of the DH reed conversion shows the large 24mm bore (No. 9) to match the new carb. It also retains the auto-lube fitting on top. The DH reed assembly (Nos. 10 and 11) has two sets of reeds on a triangular cage. The increase in air flow thru here is easily understood—twice the area has to mean more air can get through!

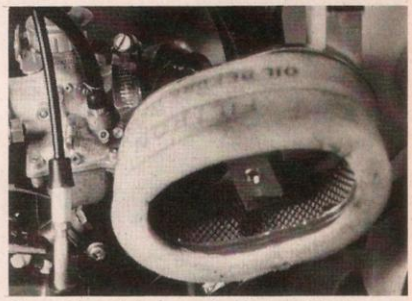
Once through the reeds, the fuel/air mixture passes through the intake port (No. 12) into the crankcase. When the piston starts its downward stroke, the reeds close and compression of the fuel/air mixture in the crankcases and the cavity of the piston begins. The mixture is compressed until the top of the piston uncovers (No. 13) the transfer ports in the cylinder wall. The mixture then flows up through the transfer passages



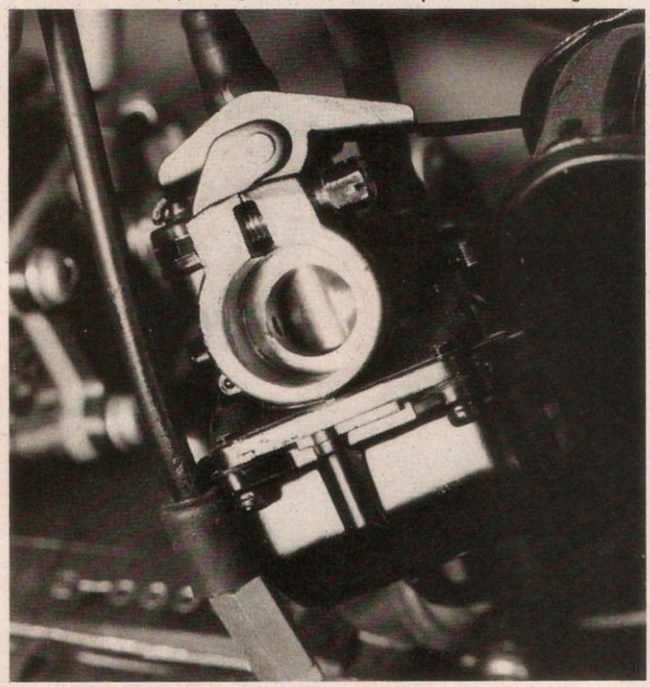
2) Standard air filter is fairly waterproof and seems adequate for stock engine.



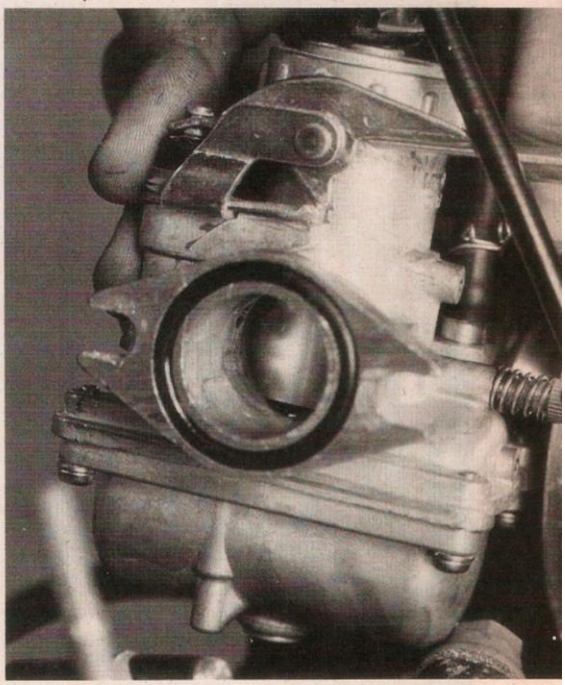
3) Fun N'Fast air filter conversion has attractive, large, aluminum cover, stays out of riders way but may be susceptible to water problems.



4) Greatly increased volume of air box and giant filter are a necessary part of the modified intake system.



5) The standard carb is an eye-dropper compared to the 24mm on the modified engine.



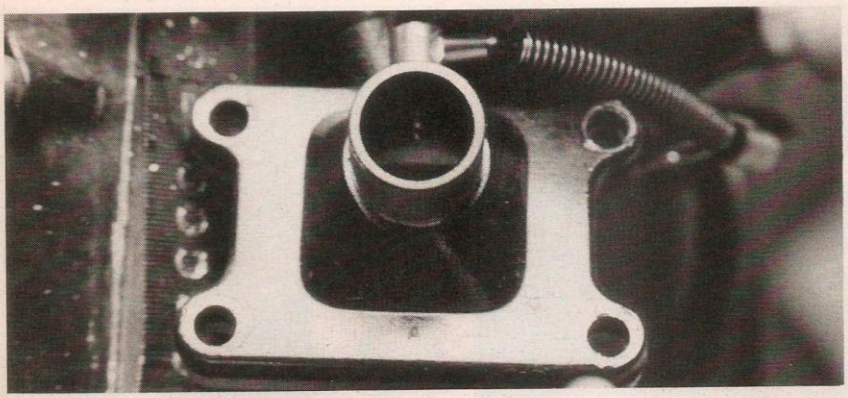
6) A 24mm Mikuni supplies the increase in breathing capacity for the modified engine.

(No. 14) cast into the cylinder, up into the combustion chamber through the transfer port windows.

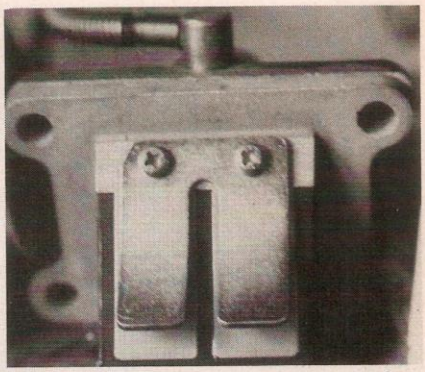
On the Yamaha, use of the reed induction allows the intake port to also function as a transfer port. Normally, in a piston-port engine the intake port is closed before the transfer ports are open very far, keeping the mixture from escaping back out through the carb instead of being forced up through the transfer system. With the reed valves in place, however, the mixture can't escape back through the carb, so the intake port can be left open longer.

At the rear of the cylinder base an additional transfer passage (No. 15) is cast into the crankcase. A matching one (No. 12) is connected to the intake port, which has two additional transfer windows cut into the cylinder wall above the intake passage. The mixture flows up through this passage until the intake port is closed by the piston. Then the mixture continues flowing through holes in the piston skirt (No. 15) until the reed valves open again starting the whole process over. Sport Time's hop up department elected to leave these passages untouched, and the only modification to the cylinder is at the exhaust port.

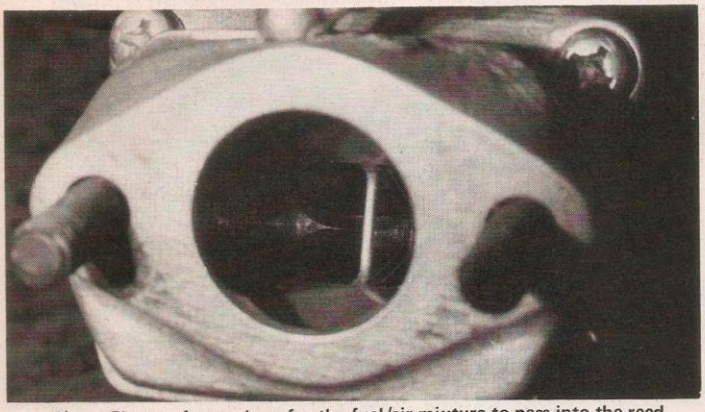
The exhaust port window (No. 16) has been raised and widened and the port ground and polished to match the new size and shape. This gives the effect of lengthening the duration of the exhaust opening time and increasing the flow coefficient through the port. These two modifications tend to narrow and



7) This peep-hole is where the standard carb mounts to the reed cage.

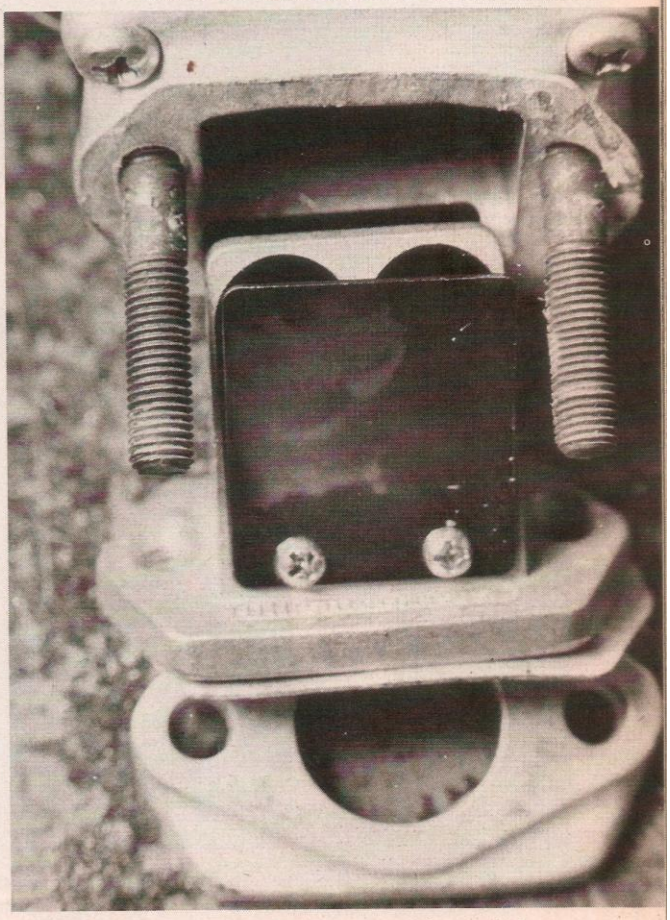


8) Two-petal reed cage on the standard engine has about one-half or the area of the DH conversion.



9) Plenty of room here for the fuel/air mixture to pass into the reed area. 24mm Mikuni bolts up flush.

10) Triangular shape of DH reed cage allows use of two sets of reeds, making better use of the available port area.



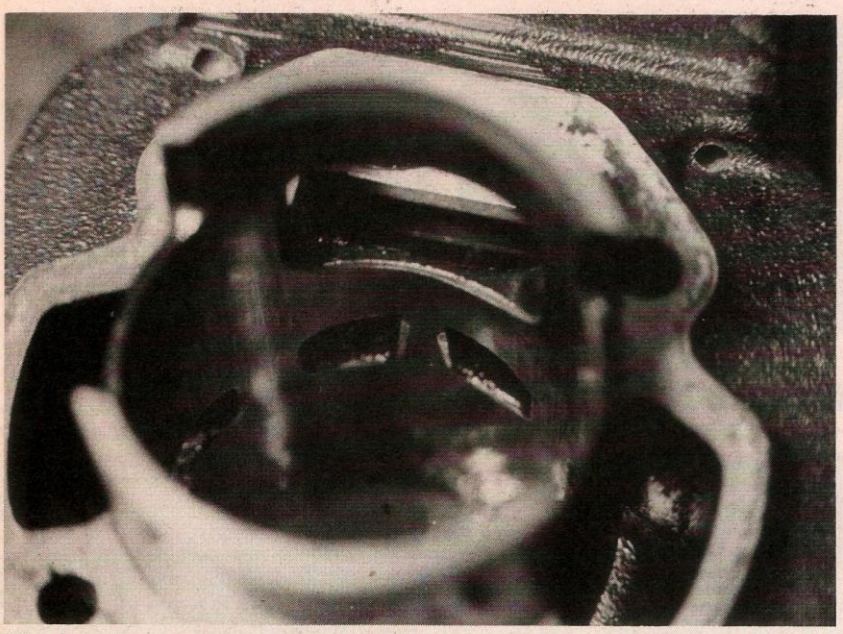
11) This is how the reed assembly mounts to the standard cyclinder. No drilling or tapping necessary for installation.

elevate the power band, depending upon the length and shape of the exhaust system.

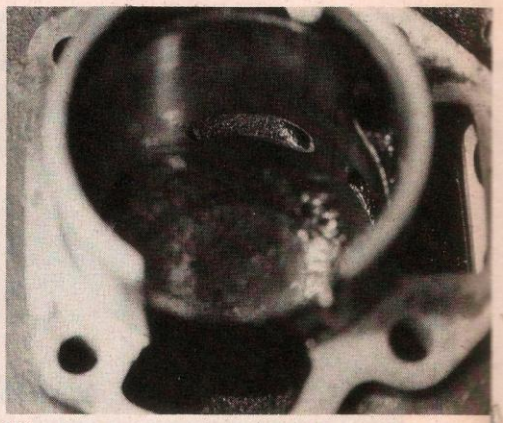
A look at the standard exhaust system, versus the expansion chamber worked out by Sport Time and Tommy Turner, helps explain, along with the modified exhaust port, the difference in the shape as well as the level of the horsepower curves on our dyno sheet (No. 17). Notice that the standard engine shows an extremely flat power curve, while the modified version has a much higher, but shorter, peak power range. Part of this difference in curves can be explained in the design of the two exhaust systems. The standard pipe has a rather long (No. 18) head pipe connected to a sort of expansion chamber/muffler (No. 19) of small angles and dimensions. The Turner pipe has a much shorter head pipe (No. 20), and a large angle of divergence and larger diameter overall (No. 21). The long head pipe is one way to widen the power curve on two strokes, but is detrimental to peak power after it passes certain proportions related to the entire design of the system.

The Turner pipe used on this application certainly is the key to the high performance brought out by this hop-up. Although it tends to get in the way of the rider's leg, there is no doubting its effectiveness in increasing power output on the YZ.

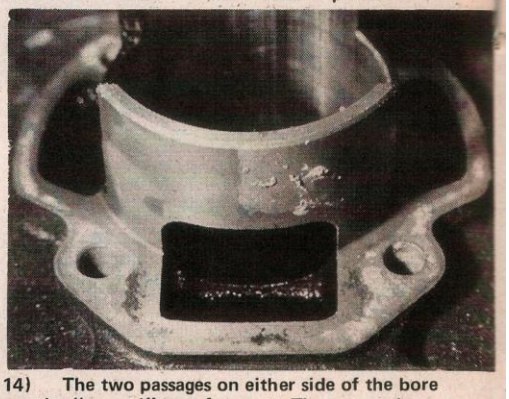
The next step in this hop-up is a modified cylinder head. Milling and reshaping of the combustion chamber (No.



12) Large intake port also serves as an additional transfer port when reeds are closed. Notice the two transfer windows directly above the intake.

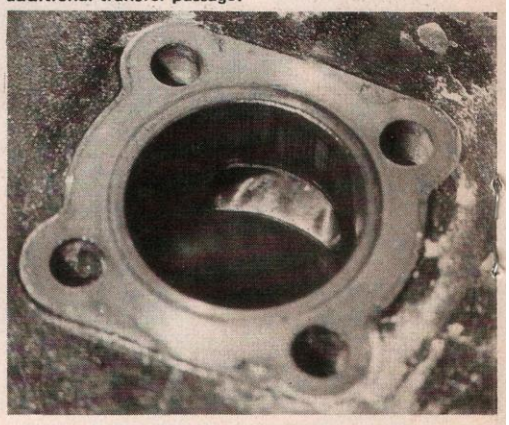


13) Small window visible on left of cylinder wall is one of two "normal" transfer ports.



14) The two passages on either side of the bore are the "normal" transfer ports. The one at the rear connects with the intake port to form the additional transfer passage.

15) The two normal transfer ports cast in the crankcase are on either side of the cylinder. The additional port is shown at rear of piston. Holes in the intake skirt of the piston allow the mixture to transfer through it into the intake port area after the skirt has closed the port.

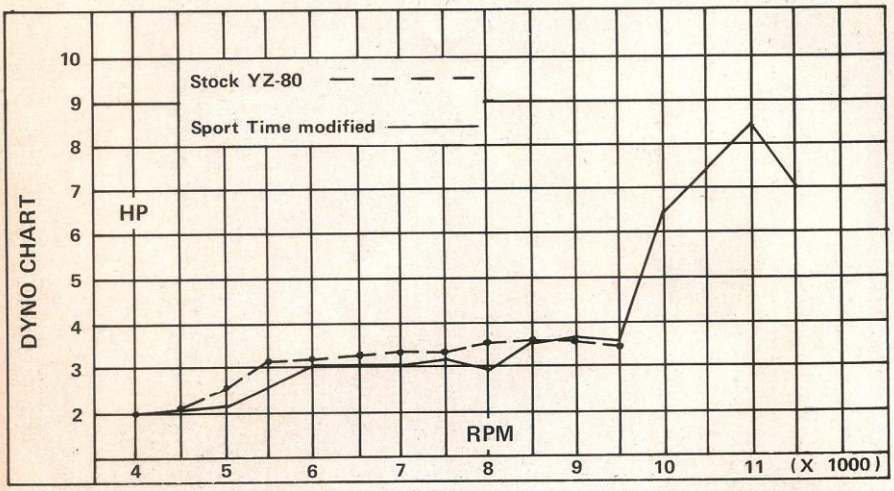


16) This view shows the modified exhaust port. Raising the top and widening the sides allow more efficient flow and longer duration of opening time.

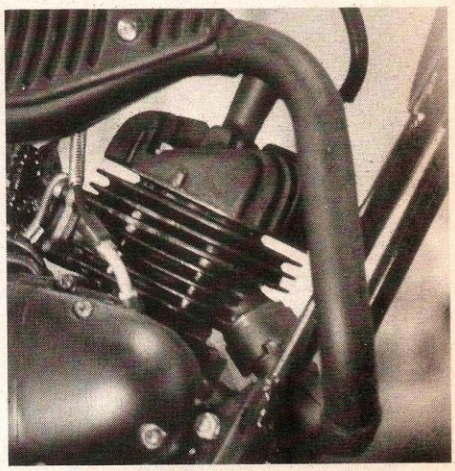
22) has raised the compression cranking pressure from 95 pounds per square inch (with the modified exhaust port) to 125 p.s.i., which allows a much greater torque peak due to the increased compression. Although the modified standard head didn't create any really bad overheating while dyno-testing, Sport Time is only using it as a prototype combustion chamber. They hope to have a racing cylinder head ready for production shortly, to go along with their hop-up kit. It will have increased cooling fin area and mass to aid cooling for longer engine life and sustained high performance running.

That rounds out the modification of the engine, a nice, simple, package that brings out a great, big boost in power at relatively small cost per power increase to the buyer. Riding the modified YZ is a blast. It seems to have two separate power ranges as the dyno would indicate. The use of the reed valves allows good low speed running and the bike can be used for puttering around or trail riding. However, once onto its second power range ("on the pipe"), it turns into a real tiger. Wheelies, power slides, fast starts and flat-out going are a real thrill on a bike this size, and the Sport Time hop-up kit supplies these in spades.

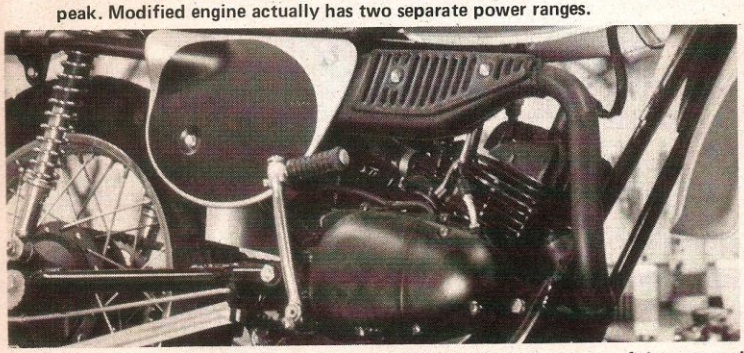
The final kit, still in the late stages of development, will probably cost under $225. For further information, contact Howard Hooper, Sport Time Sales and Service, 18449 Ventura Blvd., Tarzana, CA 91356. Phone: (213) 343-1936.



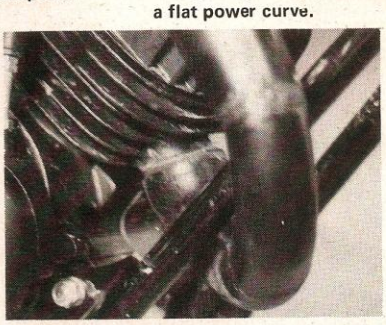
17) Notice the difference in the shape of the power curve as well as the maximum power peak. Modified engine actually has two separate power ranges.



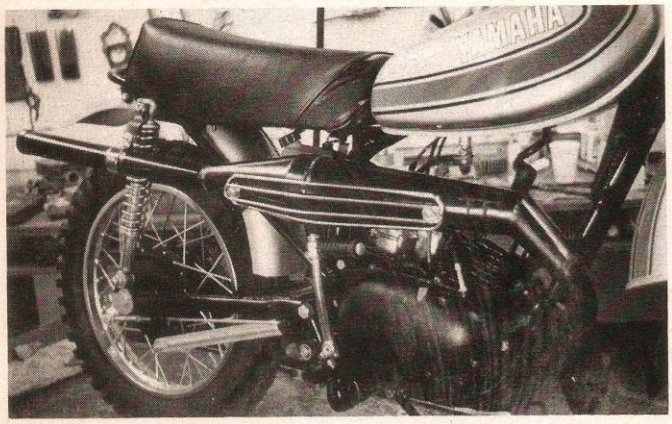
18) YZ's standard exhaust system features a very long head pipe which provides a flat power curve.



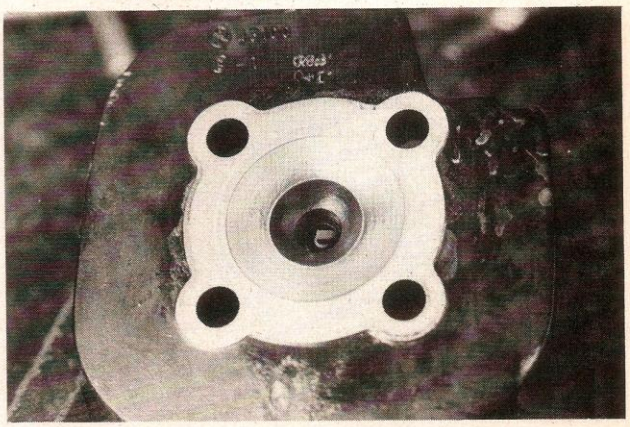
19) Expansion chamber part of standard exhaust tucks in out of the way and is very quiet but lends little to engine performance.



20) The short head pipe of the Turner exhaust slips over the standard threaded flange and is held in place by a spring.



21) Huge Turner pipe is bulky but effective. Heat shields offer some protection to the rider's leg. The long stinger-silencer helps tame roar.



22) Standard head is modified by milling and reshaping. Sport Time intends to replace it with a complete new head for better cooling.

Mini Bike Rider T-shirts are are now available at our website. You can order your shirt today by clicking……

"HERE!"

OR go here

http://www.allaboutminibikes.com/tshirt.html

VINTAGE JB RACING AD FROM 1974

Popular 1970's Ad From Magazine

This is a clean copy of the JB racers ad that was in the Aug/September 1974 MiniCycle magazine, NOT the origial, a copy. It was an ad that was two pages when you opened up the magazine. I had the center crease photo shopped color filled in because the original ad is on two pages. Suitable for framing. Would look great in your den or garage. Ad will be shipped in a tube so there will NOT be a fold. P.S. THE WATERMARK IS NOT ON THE COPY YOU WILL RECEIVE. Thank you, Dan.

Click "HERE" to order! OR go here

http://www.allaboutminibikes.com/jb-racer-ad.html

Copy of Flying Mike Brown Motorcycle Ad that is in my 1974 Minicycle Magazine. Copy is on heavy stock gloss paper that you can frame. Will look great in your garage, man-cave or den. If you have questions please ask. Thank you, Dan. Click "HERE" to order!

P.S. Watermark will NOT be on the copy you purchase (-:

http://www.allaboutminibikes.com/flying-mike-brown.html

Thank you and please share this with your mini bike, minicycle and dirt bike friends. You can also subscribe to our YouTube channel for video's we share of building, working on and riding our bikes.

You can subscribe by clicking "HERE" or going here...

https://www.youtube.com/channel/UCSfQbGyWgUKm9OTlUyzYvKQ?view_as=subscriber