

**SUZUKI
AMA400C TEST**

250 MX SHOOTOUT: RED, GREEN & YELLOW

DIRT BIKE

MAY 1978 • \$1.00 UK60p

**SUPER CROSSER
YAMAHA YZ250E**

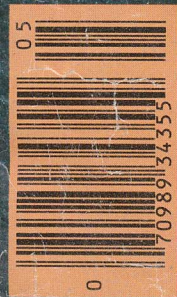
**BULTACO 350
SHERPA T**

**YAMAHA
XS400E**



Bob Hannah

**YAMAHA IT175 TIPS
GO FASTER WITH BRAKES**



DIRT BIKE

VOLUME EIGHT NUMBER FIVE
MAY 1978

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ON THE COVER:
Bob Hannah stylin' at Indian Dunes.
Can you tell if he's wearing underwear?
Photo by Len Weed

NEXT ISSUE ON SALE MAY 18

Great power,
great suspension,
great handling
. . . finally

By the staff of DIRT BIKE

□ It is the common consensus that today's top motocrossers are competing on the ultimate in finely tuned, precision-assembled, plushly set-up moto machinery each time the starting gate falls. Machines with all of their components working in precise harmony. Equipment that is cleaned, disassembled, completely scrutinized, lovingly fondled by the warm hands of devoted mechanics and reassembled before it ever heads for the line.

This is generally true, especially among the moto superstars who are backed by high-zoot, high-bucks, ono factory efforts. But this is not always the case.

Consider Bob Hannah. For the 1977 Winter-AMA Series in Florida Bob was given two production YZ250Ds, zero parts, and the help of a wizard of modern mechanical mastery, Keith McCarty (formerly Tony D.'s wrench). Not exactly what you'd call the ultimate works effort, but it proved to be sufficient, as Hannah won all ten motos to emerge as Florida Sand King.

His scooter was eventually raffled off at the Pontiac, Michigan, Supercross. Its new owner ended up with an expertly maintained, well-used YZD race machine, methodically prepared with accessories you can buy, and modified to suit Hannah's personal riding preferences, 30-inch bars and all.

Again in the Supercross Series, Bob's choice was a personalized YZD for the first eight events. In Los Angeles he decided to try the OW works bike, and in the final event at Anaheim, with the title already clinched, he rode a pre-production YZ250E. As Bob recalled the final round: "Everyone in the racing department laughed hard as hell when I told them I was going to race Anaheim on the E." It had been a test bike for the racing department for the past four months solid, and was not exactly what you would call "fresh."

It was, in a word, used. "They laughed even harder when I won on it. Keith went completely through it, but



YAMAHA



still it was wasted. The fork seals were so bad that the forks were pumping up with air, the shock was worn, and the piston was rattling so badly that I was sure I'd blow it up. One thing was for sure: When it did break, I was going to be running out front."

What's this all mean? It proves you can win a major motocross series aboard a production machine with just the addition of a few over-the-counter components and some simple do-it-yourself mods. (Details of the modifications to Hannah's current YZE Superseries bike, along with his personal preferences in machine set-up, are listed fully in the sidebar.)

Indeed, the introduction of the Es marks the point in the YZ's development when the machine is finally "there." Hardly any doubter would now argue that their single shock doesn't work as well as two shocks. And there's nary a trace of flex in the chassis. They have produced a motocrosser that we had hoped would have appeared over a year earlier. The YZE has great power, super suspension, and finally, it handles.

What they did

The same basic shock unit is used in the E that was in the D, but some changes were made internally to cut friction against the shock shaft and allow for a more conventional feel to the rear end. Changing to the Dr. DeCarbon-type shock unit, with its many adjusting possibilities for both compression and rebound dampening (adjusted in unison) and infinitely variable preload settings, was surely the most significant modification in the evolution of the monoshock. Dampening rates can be easily changed without removing the tank. Just rotate the slotted adjusting ring, which is located within the frame backbone ahead of the tank, with a flat-bladed screwdriver to one of its 13 settings. Spring preload is adjusted by moving a large nut to compress or expand the spring on the shock body. A second nut locks it in place.

Very nearly as important as the change in shock design is the switch to the heavily gusseted and triangulated, rectangular-tubed aluminum swingarm. In recent years swingarm flex has been noted. In the past you could grip the frame under the seat with one hand, the rear tire with the other, and move the

YZ250E



YAMAHA YZ250E

wheel from side to side with minimal effort. This was especially true with the 125. With the application of power to one side of the arm and the twisting forces incurred in turning, this flex was enough to push you off your intended line. This twisting was also very noticeable in the whoops. There is no longer even a hint of this problem with the new arm. Five millimeters has been added to its length to improve straight-line stability. This also results in an additional ten millimeters of rear axle travel, bringing the total to 250mm (9.8 inches). Hefty-sized needle bearings are found at its pivot point.

Improvement has come to the forks as well. They now have 20 millimeters more overlap to minimize flex and smooth out the action during initial compression. To accommodate this additional overlap, the lower legs now extend an equal amount farther below the axle. Fork tubes are a beefy 38mm in diameter. The now-conventional air over oil/spring design is used, offering a wide degree of adjustability. Front-wheel travel matches the rear at 250mm.

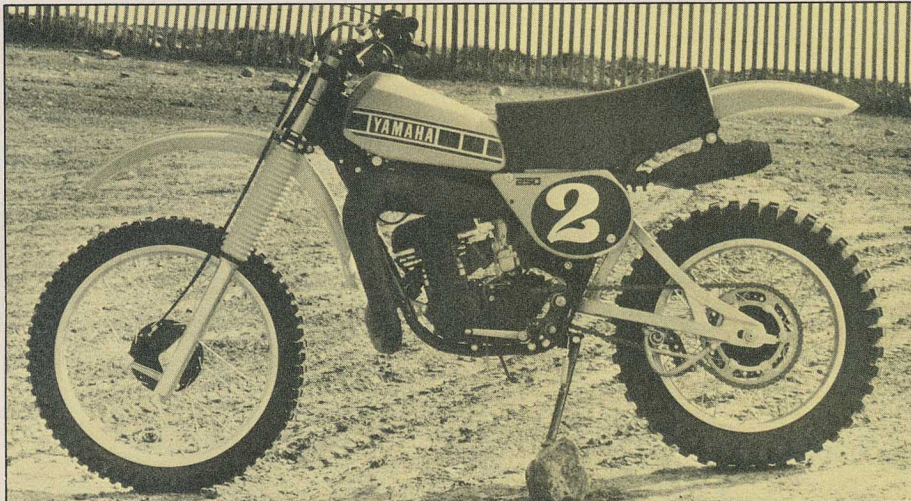
For '78, the split-downtube double-cradle chassis is made of chrome moly steel to help provide added lightness, rigidity and strength compared to last year's unit. Tapered roller bearings are used in the steering head, needle bearings at the swingarm pivot, and the shock pivots in the swingarm on steel bushings.

While most of the other top manufacturers have gone to full-floating rear brakes on their motocrossers, Yamaha has chosen to stick with their quick and simple slip-in lug arrangement for securing the rear backing plate. They obviously feel that the percentage of advantage gained by the full-floater is very slight. The brake is strong enough and has a good feel to it.

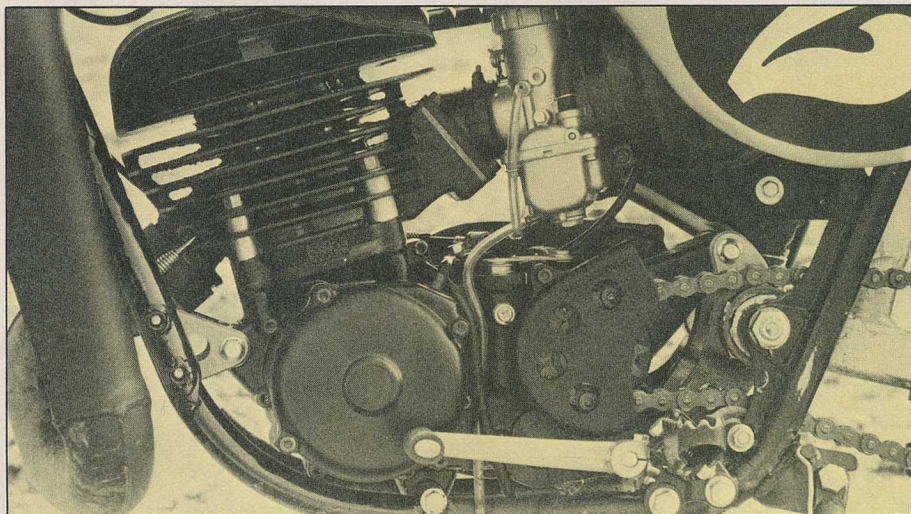
Both hubs are cast of aluminum alloy and are fitted with magnesium alloy backing plates. The front is conical in design and has an equally good feel and strength. These hubs have proven to be extremely durable over the past few years and are often chosen as replacement units on bikes with weaker hubs.

Another of the E's truly outstanding features is its new, shorter, narrower and more compact six-speed powerplant, which is patterned after the works OW racers.

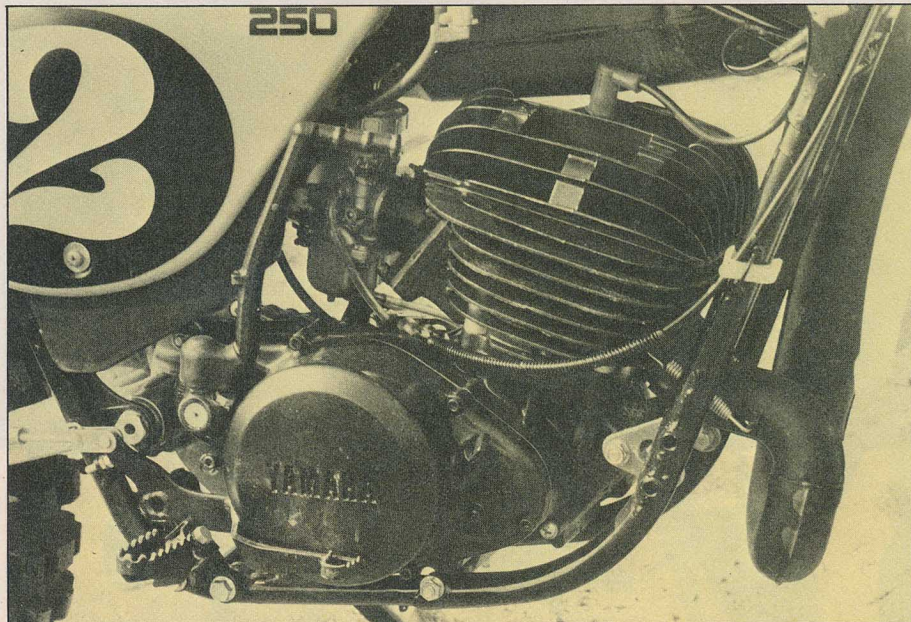
The cylinder is basically the same as the D, but with a 10mm-wider reed for better breathing. A 38 Mikuni takes the place of last year's 36 and a larger, more efficient air filter is now used. In



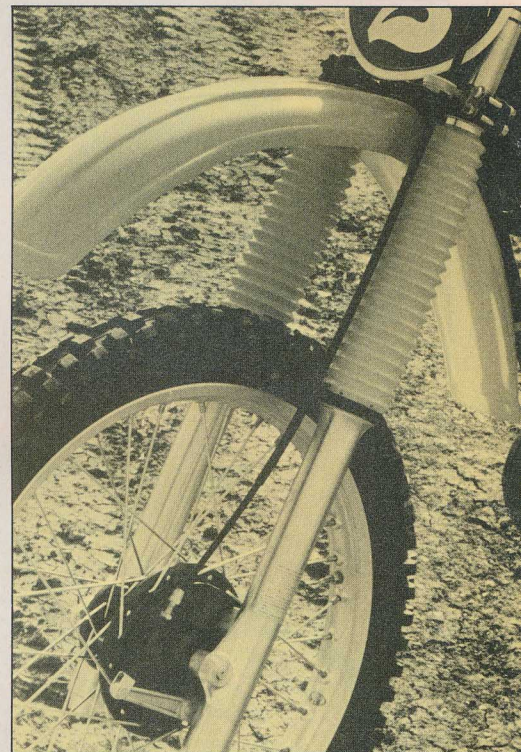
Lots of ground clearance, lots of suspension, lots of power, lots of yellow.



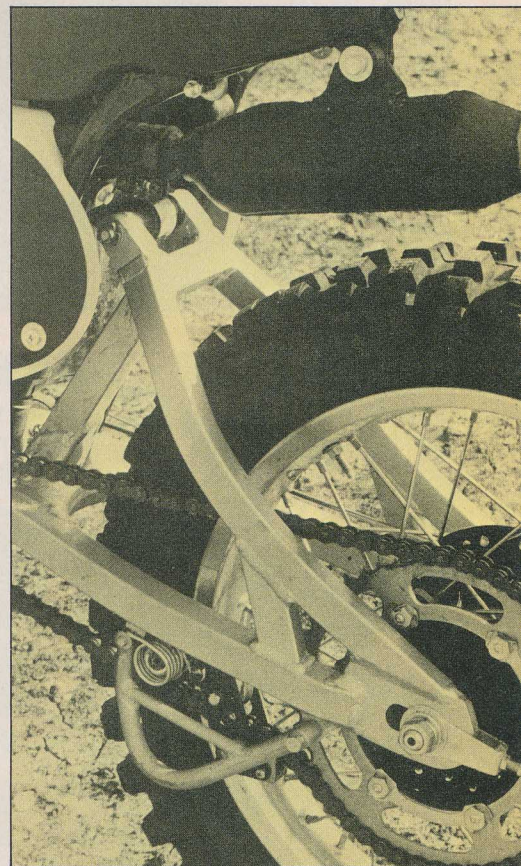
The E's new engine cases cling closely to the whirring internals. It's easier now to remove the carb for servicing.



Looks a lot like a Husky, doesn't it? Clutch actuating arm is up out of harm's way.



250 millimeters of super travel, good brake, sturdy rim and long and wide fender.



Super-trick new boxed aluminum alloy, works replica rear swinging fork unit. Note the tiny diameter of the pipe where it enters the silencer.

YAMAHA YZ250E



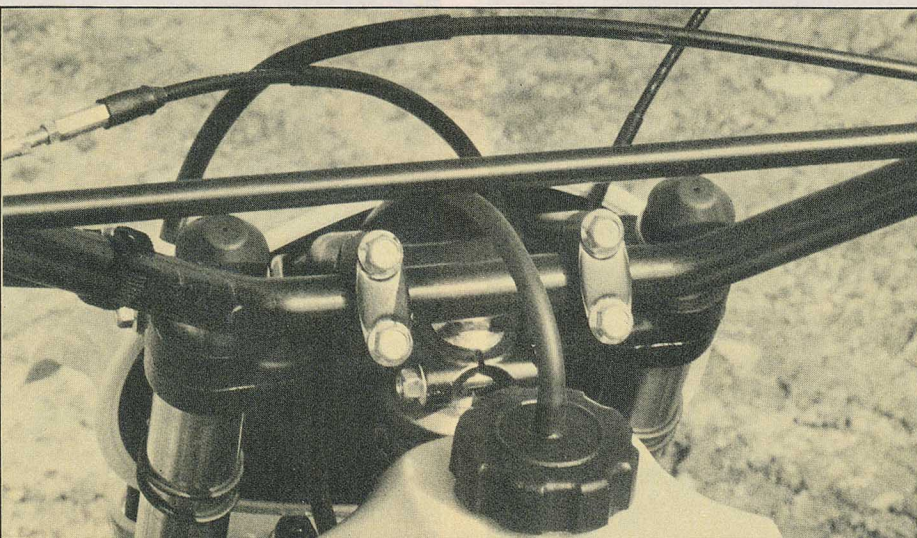
the head they've changed the angle of the combustion chamber dome for more efficient burning. Two rings replace the single-ring arrangement used in the D. To get the revs to build just a tad quicker they've gone to a lighter, 4mm-smaller in diameter CDI rotor on the crankshaft. The pipe is now shorter and fatter. The result of all these changes is a smoother, more healthy powerband all the way through.

Going from a five to a six-speed gearbox adds another dimension to the YZ's versatility. Motocrossers will find that the gearing will be better suited to a wider number of courses, while desert-lovers can gear up a bit to turn the passing sagebrush into a complete blur.

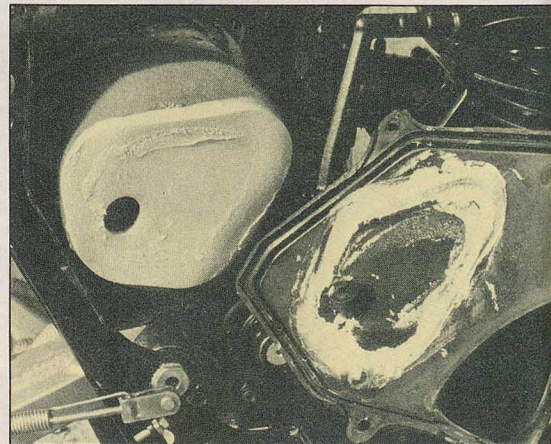
A ball bearing was added to the outer left sidecase around the shift shaft to make shifting action a bit smoother.

Smaller but worthwhile changes

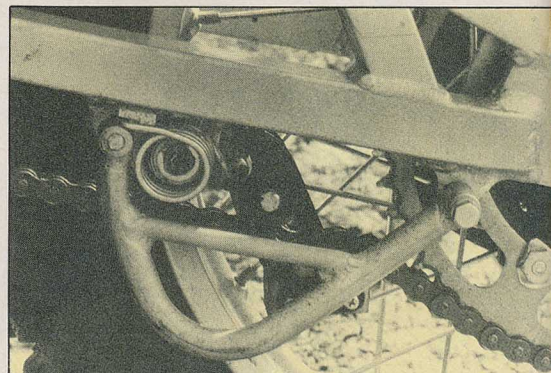
Yamaha's new finger-contoured, Magura-style levers are the absolute zenith of high zootness. Do yourself a favor. Jam down to your nearest Yamaha dealer and wrap your fingers around these honeys. You won't want to



Nice rear-set bar clamps and dime-store-style number plate. Come on, guys.



It is necessary to grease the filter on both sides for a good seal. Hole in filter and lug on cover secure number plate. It seems that they could have done it another way.



Aluminum bracket protects chain guide in the event of a fall.

let go. They're a perfect happy medium between regular levers and power levers.

Let's see, what else? Oh yes! Outside diameter of the handlebar crossbar is now up from 10mm to 12mm. O.D. on the front brake cable is up from seven to eight millimeters. You get new-style number plates, IRC tires instead of Bridgestones, new rollers to guide the chain and an improved chain tensioner, a main jet ring in the carb for more consistent fuel flow and, last but not least, a dynamite set of yammin' yellow fork boots.

Life in the fast lane

First rides aboard the E were a big surprise to everyone. "That thing really works." "It sure is a lot of fun to ride." "They've finally done it." "This thing's so fast. Sixth gear puts you into warp five." "Very nice." "Who's on the Yamaha now?" Someone was always out on it. You had to scheme to snatch it away from the others.

The YZ's engine has done a full 180, compared to the first YZs. It now has smooth, usable power from the bottom end on up. Dial it on and it builds smoothly and predictably with no sudden surprises.

On the motocross tracks everyone was very pleased with the way the YZ turned. You just sort of point it and go. You could even change your lines successfully partway through. Its newly acquired ability to turn was perhaps its most appreciated quality.

It doesn't take long at all to get the feel of how the E slides. The rear end now tracks very predictably.

The overall feel of the YZE is one of plushness. Both suspension systems were working very well, both individually and in their balance with each other.

At first the rear end felt a little on the slow side, so we clicked in one notch less dampening on the shock. Everyone preferred this position for the tracks we tested on, and felt that the rear end was both soft and very absorbent at the same time. We never bottomed it out.

We could not find fault with the forks. The only adjustment we made was to reduce the air pressure from 15 to 12 pounds. They absorbed all sizes of bumps well and were virtually flex-free. With the range of adjustability available with these forks you should be able to get them to perform well under most any conditions. It's very refreshing to see so many bikes these days coming with such fine-quality equipment right off of the assembly line.

At just over a hundred kilos (221 pounds), the YZ is fairly light and felt
(continued on page 76)

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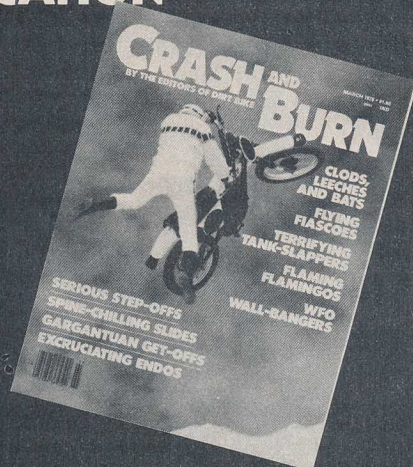


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YAMAHA YZ250E

(continued from page 41)

like it out on the track. Minor weight shifts and a burst of throttle were all that was needed to change your line.

Out in the sand, where many a YZ is bound to end up, the YZ has excellent high-speed stability. You can boogie along at a positively horrendous rate

YAMAHA YZ250E

PRICE: (approx. retail, West Coast) \$1568

ENGINE: Two-stroke, piston-port single with reed valve

DISPLACEMENT: 246cc

BORE & STROKE: 70mm x 64mm

COMPRESSION RATIO: 7.3:1 corrected

CARBURETION: Mikuni VM38SS

HORSEPOWER: NA

CLUTCH: Wet, multi-plate type

PRIMARY DRIVE: Helical gear, 2.608:1

TRANSMISSION RATIOS:

- 1) 2.384
- 2) 1.812
- 3) 1.444
- 4) 1.222
- 5) 1.045
- 6) 0.923

FINAL DRIVE: D.I.D 520 TR, 3.846:1

13-tooth countershaft

50-tooth rear sprocket

AIR FILTRATION: Oiled foam

ELECTRICS: CDI

LUBRICATION: Pre-mix, 20:1

RECOMMENDED OIL: Yamalube R

FUEL TANK CAPACITY: 7.6 liters

(2.0 gallons)

FRAME: Double loop, double cradle, chrome moly

SUSPENSION:

Front: Kayaba telescopic air/spring forks with 250mm (9.8 inches) travel measured

Rear: Yamaha DeCarbon monoshock offering 250mm (9.8 inches) axle travel

STARTING: Primary kick

WHEELS & SPOKES:

Front: D.I.D with cross-3 shouldered spokes

Rear: D.I.D with cross-2 and -3 shouldered spokes

TIRES:

Front: IRC 3.00x21 Motocross GS-45F

Rear: IRC 4.50x18 Motocross GS-56F

DIMENSIONS:

Wheelbase: 145.0cm (57.1 inches)

Swingarm length: 44.8cm (17.6 inches)

Ground clearance: 31.8cm (12.5 inches)

Bars, height: 118.0cm (46.5 inches)

width: 87.8cm (34.5 inches)

Pegs, height: 39.4cm (15.5 inches)

width: 47.3cm (18.6 inches)

Seat height: 96.7cm (38.0 inches)

Fork angle: 30.5 degrees

Weight: 100.4 kilos (221.0 pounds)

without fuel; 45 percent on front, 55 percent on rear

BRAKES:

Front: Conical cable-operated

Rear: Rod-operated

PARTS PRICES:

Piston: \$17.92

Rings: \$9.90

Clutch cable: \$5.74

Brake pedal: \$10.26

Shift lever: \$5.90

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HANNAH SUPERCROSSER

□ In a few minutes on the telecommunicator with Hannah's ace mechanic Keith McCarty we absorbed the following modifications that he has made to Bob's Supercross Series bike.

The engine is stock with the exception of some cleanup work on the ports to make sure everything is flowing smoothly.

For an ultimately dependable set of wheels he has switched to Sun rims front and rear with heavy-duty spokes up front. The stock spokes work well enough in the rear. Metzeler's are the hot setup for stadium events.

Additional changes include installing a JT Racing air filter, raising the footpegs, beefing up the chain guide and installing a set of bars suitable to Hannah's narrow (30 to 30.5-inch width) needs.

Just as an experiment Keith has lowered the pressure in the shock unit and installed a softer spring with less preload. He's also welded up the dampening holes in the forks and redrilled them smaller to test the effects of more rebound dampening. Aside from these changes and some testing, this is the machine he will ride.

Bob told us that the primary advantage of his works bike, compared to the stocker, is its lightness. He mentioned that he probably preferred the YZE engine at that point in time because of its meatier, less radical power, although he really hadn't had enough time to get fully adjusted to his new factory special.

and still maintain control. The bike plays no funny tricks or surprises on you, even in deep whoops. A twist at the throttle to lift the front wheel and road crossings go by almost unnoticed.

Because of the cushy suspension and very comfortable seat, it is the kind of bike you can sit down on occasionally for a breather. This will no doubt make it very popular for long-distance events. No one felt that the bar/peg/seat relationship was uncomfortable, and the bike was not tiring to ride for long periods of time.

This and that

It shifted great, the brakes worked fine, and nothing broke or fell off. That's saying a lot.

Sometimes it took 10 to 12 kicks to light it off. And when it did fire up, it did so in a way that made you wonder why it hadn't started before. There seemed to be no pattern, hot or cold. Strange!

Our YZ died on the dyno. An autopsy revealed that a faulty air filter seal allowed dirt to enter the cylinder, grinding the very life out of its heart. The inner lip where the filter cage presses it against the housing should have been at least a centimeter or two wider to ensure the proper seal. We strongly recommend that you replace the filter with a better accessory unit such as a JT Phase 2.

So what are we trying to say, you might ask

The YZ has at last evolved into one very fine motorcycle. It has great power and enough of it, it turns well, it has great suspension, everything on it works together, and it's not outrageously expensive to own or operate. ■

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