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# **DIRT BIKE**

**YAMAHA YZ250J:  
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ISSN 0354-1546

# DIRT BIKE



ANAHEIM & SEATTLE SUPERCROSS



SUZUKI PE175Z



HONDA XL500R



HONDA CR125R

## TESTS

- 22 HONDA CR125R  
Leaner and meaner
- 32 HONDA XL500R  
Long live the King
- 42 YAMAHA YZ250J  
The adjustable MXer
- 50 SUZUKI PE175Z  
KDX Killer?
- 62 SUZUKI RM80Z  
Floaterized missile

## COMPETITION

- 30 FLORIDA/GOLDEN STATE MOTOCROSS SERIES  
Big-time warm-up for the pros
- 54 SUPERCROSS OPENERS  
Team Honda smokes

## FEATURES

- 41 FORK KIT PRODUCT EVALUATION  
Simons and White Power strut their stuff
- 64 C-12 RACING FUEL PRODUCT EVALUATION  
Only the serious should apply

## TECHNICAL

- 60 CARB REBUILDING  
Everything you *really* need to know

## DEPARTMENTS

- 6 FROM THE SADDLE  
A case of the munchies
- 9 LAST OVER  
Geared to the max
- 10 BITS AND PIECES  
Mac du Leak returns
- 14 MR. KNOW-IT-ALL  
Help for the needy
- 16 RIDERS WRITE  
Opinionated views from the masses
- 20 NEW PRODUCTS  
Just charge it
- 74 CRASH AND BURN  
Up, up, then down

**ON THE COVER:**— Caught in the act is the one and only Bob Hannah, shown here grabbing for air on the YZ250. Photo by Paul Clipper. Color separation by Valley Film.

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# TECHNICAL EXERCISE

## The rolling laboratory

By the Staff of Dirt Bike

**A**t the 1982 Yamaha new-model show, huge screens were blasted with blazing color shots of all the new bikes. One could tell from the reaction of the assembled Yamaha dealers just how they felt about a particular model. When a turbo street bike was flashed on the screen, ooohs and aaahs filled the auditorium. A mid-displacement street "special" drew yawns.

Then they showed the new YZ250J and the dealers broke out in cheers and stood up and applauded like lunatics. As the technical features were pointed out with crisp studio shots, the dealers buzzed with uncontrolled excitement.

Who could blame them?

Consider. A water-cooled 250 to match the marketing pressures exerted by Honda

and Suzuki... and a new rear suspension. And what's this? Yes, yes... a power valve on the exhaust, just like on the hyper YZ125. Wonder of wonders! The YZ250 was a veritable treasure house of trickery, from its new-generation saddle to its plumbing to its powerplant.

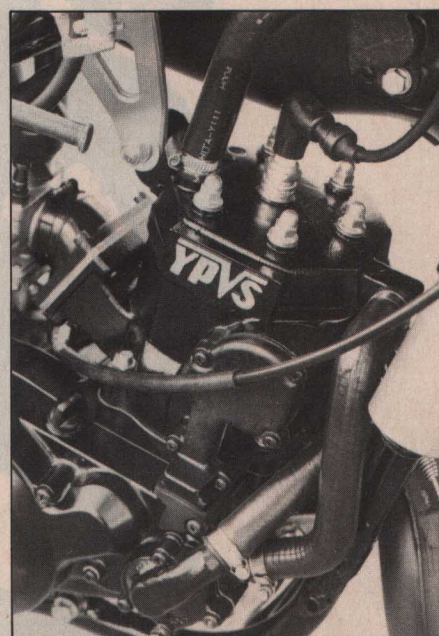
The press, too, was dazzled. All this? In one bike? What a change from the moderately altered 1981 bike.

Thus it was with a great deal of anticipation that we received and tested a YZ250J.

### FIRST IMPRESSIONS

A casual inspection and prodding session reveals that most of the 1982 YZ is new stuff. While it still looks like a Yamaha, everything from the frame on up has seemingly been changed. Most of our curiosity centered on the Mono-X rear suspension. We've seen plenty of water-cooled bikes before, and the technique Yamaha uses to get the water to and from the radiator on the YZ125 is carried through to the 250. That is, the radiator is mounted on the fork tubes, up high, and the water is routed through the steering head.

Now that the YZ mounting and routing method has been around for a period of time, it's proven relatively hassle-free—aside from a few irritating slow leaks that seem to go away with time. The radiator is vulnerable, the mounts will crack from vibration, and can be bent in a simple crash.

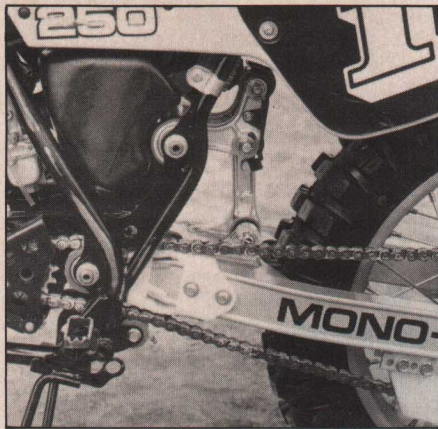


The one and only Power-Valved 250 on the market. Low-end power is impressive.



Note the typical Hannah stance on the YZ; he always rides with the balls of his feet on the pegs, body well forward and the arms loose.

# YAMAHA YZ250J



The new Yamaha link suspension is a distinct improvement of the old monoshock.

You can also feel the presence of the radiator; one has only to hop off a 1981 YZ250 and onto a new bike. That radiator is hanging out there and you *know* it. Still, after a half hour of riding, you forget about it and go about the business of going fast.

While the "J" is a typically tall, new-generation bike, it isn't hard to get aboard; the saddle is nicely shaped at the rear and has a slight depression right where the rider sits.

When you sit on the Yamaha, everything feels right—with the possible exception of the bars being a tad too wide and too tall. But, then, this falls under personal preference and the hacksaw cut of your choice.

You don't have to reach awkwardly for any controls. Everything is where it should be and is sensibly placed, shaped and con-

toured. It's obvious that a great deal of thought was given to making a YZ fit the greatest number of riders.

## ONCE UNDERWAY...

When cold, it takes three or four good kicks (usually) to get the YZ fired up, and almost always two kicks when hot. Don't ask us why. Bikes seem to have personalities, much like people.

As the bike is run hard through the gears, a very distinct sound barks out of the exhaust. Anyone who has ridden a Power-Valved engine will recognize it instantly; others will wonder what the rasping howl from the engine is.

Initially, one feels that the YZ is violently fast. And, in fact, it is, in the first two gears. When dragging the YZ250 against other 250s, it would invariably bolt out of the hole and get a length on the other bikes. However, when third gear was reached, it was like someone put up a big sail. Whuff! The YZ would fall on its face long enough to let all of the other 250s catch it. Getting fourth gear would let them pass.

This puzzled us a great deal, as we've seen dyno runs on the newest YZ and they're completely competitive. After a great deal of head-scratching and puzzlement, we decided the problem is caused by the power valve mechanism itself. All of that hardware has to move, and getting it moving takes more and more time as each higher gear is engaged. In the lower two gears, the mechanical advantage of the gearing overcomes the reluctance of the parts to increase in speed. This advantage does not exist in the upper gears.

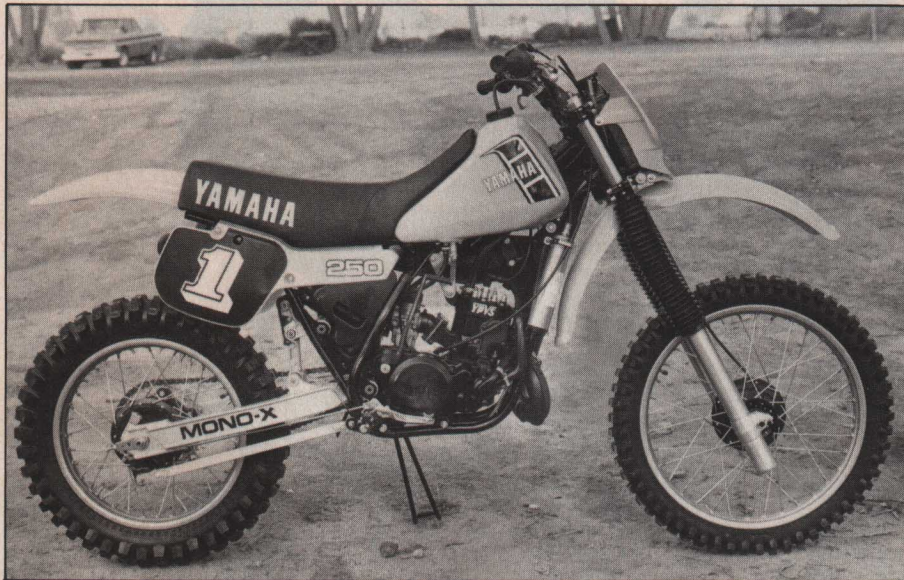
Seeking to cure the problem in the simplest way possible, we merely changed the gearing to tighten the gaps between the gears. Adding three teeth to the rear sprocket worked best. This is not quite equivalent to dropping one tooth on the countershaft sprocket.

With the gearing change, the YZ became a very fast, flexible bike, with only a hint of a lag between each shift—and then only on a grade or in deep sand. The trade-off, quite naturally, was a small loss in pure top speed—about five or six miles per hour. With the stock countershaft and normal, 45-tooth rear sprocket, the top speed of the YZ was higher than most riders would ever need on a motocross track. For desert, cross-country or Grand Prix racing, the YZ would have to be geared up and, thusly, would suffer a great deal against other bikes, especially the six-speeders that are able to pull tall gearing.

To give you an idea of how radically the gearing change affects the YZ, consider that with stock gearing, the new Honda would pull the YZ by two good lengths in a typical drag race. With the gearing change, the two bikes were just about dead even at the end of fifth gear.

## FEEL

By the end of a few hard laps, certain rock-solid impressions will sink in. First, the YZ steers better than any other bike we've ridden lately (with the possible exception of the 250 Maico). This year, the



## YAMAHA YZ250J

Name and model	Yamaha YZ250J
Engine type	Water-cooled, reed and power valve, single
Bore and stroke	70mm x 64mm
Displacement	246cc
Horsepower	31.2
Carburetion	Mikuni 38mm
Factory recommended jetting:	
Main jet	370
Needle jet	Q-0
Jet needle	6F16-2
Pilot jet	45
Slide number	3.0
Recommended gasoline	92+ octane, premium
Fuel tank capacity	2.4 gallons (9.0 liters)
Fuel tank material	Plastic
Lubrication	Oil in gas, premix, 24:1 ratio
Recommended oil	Yamalube "R"
Oil capacity, gearbox	900cc, SAE 10W30 motor oil
Air filtration	Oiled foam
Clutch type	Wet, multi-plate
Transmission	Five-speed
Gearbox ratios:	
1	30/14 (2.142)
2	29/16 (1.812)
3	24/17 (1.411)
4	24/21 (1.142)
5	22/23 (0.956)
Gearing, front/rear	13/45
Ignition	CDI pointless
Primary kick system?	Yes
Recommended spark plug	Champion N-86
Silencer/spark arrester/quality	Silencer only, average noise
Exhaust system	High-pipe, left side
Frame, type	Single down, semi-full cradle

Wheelbase	1490mm (58.7 inches)
Ground clearance	325mm (12.8 inches)
Seat height	950mm (37.4 inches)
Steering head angle (rake)	27.5 degrees
Trail	118mm (4.65 inches)
Weight, with one gallon gas	240.5 pounds
Rim material	Aluminum alloy
Tire size and type:	
Front	3.00 x 21 knobby, IRC, 4 pr
Rear	5.10 x 18 knobby, IRC, 4 pr
Suspension, type and travel:	
Front	Air/oil 43mm KYB forks, leading axle
Rear	Monocross, with reservoir, adj. comp and rebound
Intended use	Motocross
Country of origin	Japan
Retail price, approx.	\$2179

Distributor:	Yamaha Motor Corporation 6555 Katella Avenue Cypress, California 90630
Parts prices, high-wear items:	
Piston assembly, complete	\$45.70
Rings only	16.00
Cylinder	283.55
Shift lever	10.30
Brake pedal	20.60
Front sprocket	9.52
Overall rating, 0 to 100, various categories, keeping intended use of machine in mind:	
Handling	98
Suspension	Front—99, rear—93
Power	94
Cost	95
Attention to detail	98
Effectiveness, stone stock	92

Unmistakably new for 1982, the YZ250 sports numerous changes.



weight bias has been shifted and the rake considerably steepened. You can now plant that front wheel wherever you want without fear of washout. Even when taking the tight inside line you can still stuff it in tighter, if you so choose. Pure magic!

The new saddle, combined with the peg location and bar shape, tends to place the rider in the proper forward position for

maximum cornering efficiency.

One side effect of this is that the rear end of the bike really moves around a great deal under hard acceleration. To keep the rear end in line, the rider has to purposely shift his weight to the rear. Too much, and the bike will wheely out of the turn. Too little, and the rear end will slither wildly from side to side under power. Just right,

and the YZ will launch out of the corner, straight and true.

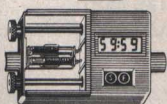
This means that the YZ rider will have to unlearn a few habits and traits he learned when riding other brands. It also means he'll have to move around a great deal to get the most effective use from the machine.

#### SUSPENSION

Obviously, the all-new Monocross rear

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# YAMAHA YZ250J

end is a departure from the old unit. Still, it's not a *total* departure, and many of the old shock components are used. Whether this was done for economic reasons, or as a halfway measure, is purely guesswork.

Yamaha has been working frantically trying to get a proper rising-rate rear end dialed in. The new Monocross is undeniably better than what they had in the past, but it is not state-of-the-art rising rate geometry. If you want to know exactly what the rear end is doing, here's a very comprehensive chart that yields all the facts:

REAR WHEEL TRAVEL	SHOCK TRAVEL	SUSPENSION LEVER RATIO
20.0mm	7.0mm	2.826
40.0mm	14.2mm	2.768
60.0mm	21.5mm	2.709
80.0mm	28.9mm	2.650
100.0mm	36.6mm	2.589
140.0mm	52.4mm	2.464
180.0mm	69.1mm	2.333
220.0mm	86.7mm	2.194
260.0mm	105.6mm	2.049
300.0mm	125.8mm	1.907
320.0mm	136.5mm	1.843

As you can see from studying the numbers, the rise of the rate is very mild, indeed. Compared to some bikes that start out at more than 5:1 and end up at 2.20:1, the Yamaha approach is extremely conservative. Because of the easy rise, they were

forced to use a rather long shock shaft travel to get the job done.

A few odd things result from this approach. It's extremely difficult to get a spring that won't bottom, yet will handle the small bumps smoothly. Much to the credit of Yamaha, the rear suspension is adjustable to the max. Not only is damping adjustable on the rebound, there's also a compression damping adjustment on the front of the shock, as well as a wide preload range. Too, the springs can be changed and the reservoir pressure altered.

What we have here, then, is a near-bewildering array of options that are beyond the tuning skills of the average rider. Said "average rider" is better off leaving everything at the delivered "average" settings and playing with the preload to get what he wants. Unless, that is, he has access to a savvy suspension tuner.

In stock trim, though, the Monocross will work much better than the 1981 rear end. All of the side-to-side hopping associated with the Yamaha rear end is a thing of the past. In fact, with the rear end properly set up to deal with bad bumps, and the preload set up for correct steering, the only real flaw in the Monocross rear end is the hammering it delivers to the rider under hard acceleration on light to medium bumps (the kind you find leading out of every corner).

Here, the YZ will shudder and pound under full-throttle conditions, even though the rear end will track fairly straight as long as the rider is placed correctly on the bike. Faster riders will need the optional heavier rear spring to keep from bottoming out, and this condition will be irritating. There are already several companies offering revised valving for the Monocross, among them, Keystone. So the problem,

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Forks are massive 43mm units. Front brake is same double-leading shoe item of the YZ465/490.

while not overwhelming, is there. Still, all things evaluated, the Monocross must be considered a big improvement over previous efforts.

Up front, it's hard to level criticism of any sort. Lately, YZ forks have gained an envious spot as state-of-the-art. Hefty 43mm tubes (the latest KYB two-piece lower legs) prove to be flex-free and easily tuneable. Most riders of above-average skill level will run 10mm more oil in each fork for a firmer second half of fork stroke... but that's just about all that's needed. No air is needed and most riders will be happy with either 7.5-weight oil, or 10-weight for cross-country charging.

In addition to levels, oils and such, the forks can be stretched out a bit for ultra

be found all over the bike. Yamaha, as always, appears to be very conscious about detailing.

The swingarm on the YZ is a stunner; strong and beefy-looking, it should prove troublefree.

Yamaha claims to have lighter and stronger rims this year. We had no trouble with our wheels once the initial bedding-in process was completed.

Keep an eye on the rear sprocket bolts. In fact, Loctite them suckers early in the game, for insurance.

An excellent throttle and superior hand controls are stock.

#### THROUGH THE LOOKING GLASS

While there are many solid improvements on the new YZ, it also appears that

the 1982 YZ250 is an interim step between the offerings of the last five years and what you'll see in the next five.

We welcome the super turning abilities and flexible power. We feel the bike is too heavy and that the rear end needs rethinking, even though it's far superior to the old monoshock hardware.

The YZ can be made faster and better with some basic tuning and tinkering. Gear changes are a must.

The bottom line? Well, it's almost as if the Yamaha engineers tried too many things all at once and simply ran out of time. It's now up to the rider to finish the job. It's a good bike, to be sure. But it misses being a great bike by trying too many innovations all at once. □



*Mr. Lightning at work. Bob tossed our test bike around like it was a 125.*

high-speed running, to stabilize the bike. With a 27.5-degree rake, the YZ turns quickly for motocross and should be stretched out to suit the rider for top-gear charging. A few minutes of fiddling will get what you need.

#### BITS AND PIECES

The shifting on our test bike was typically stiff and notchy at first, but as time was put on the bike and the gearbox oil changed a few times, it loosened up nicely.

The powerful double leading shoe brakes from the big YZs have found their way over to the 250. Not all riders will be capable of using the tremendous stopping power available, but it's nice to know it's there. The YZ is heavy for a 250, weighing in at 240.50 pounds, with one gallon of gas in the tank and all the regular fluids in place. Consider that the 1980 YZ250G weighed in at only 218 or so, dry.

The stock IRC tires worked well for the first three or four hours then lost much of their grip when the edges rounded off. Of interest is the fact that these tires appear to be extremely happy in rocks. Sand? No.

Zerk fittings are stock on the linkage; a welcome touch.

Nice guides, brackets and gadgets are to



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