YAMAHA YZ250H

More Torque, More Suspension

CYCLE WORLD TEST

■ Yamaha's 1980 motocrossers were impressive machines. After years of development on motocross tracks around the world, the production bikes became close replicas of the works bikes. The 125 and 465 won bike of the year awards from *CW* and the 250 came oh so close.

Visually, the '81 YZ250H doesn't seem different. Refinement rather than complete change is the theme for the '81 YZs.

Suspension is the biggest news for the H model. Forks are KYBs with 43mm stanchion tubes and 11.8 in. of travel. The bottom of the stanchions and the top of the sliders use bushings to reduce friction and ensure smooth operation under any condition. The increased size means oil volume has jumped to 20.4 oz. More oil means less heat and less change in action during long motos. Like last year, softer and heavier springs are available and oil levels and weights are adjustable for fine tuning to different rider weights, styles and track conditions. Additionally, the stanchion tubes can be moved up and down to alter steering quickness.

The rear suspension is also improved for '81. The easily reached damping adjuster ring, at the rear of the shock, now has 30 settings, up from 22 last year. The ring mostly changes rebound damping, but compression damping is affected some. Internally, the aluminum-bodied shock has had the compression damping lowered a little so the rear wheel can respond more easily to square edged holes and such. The spring is made of tapered wire and wound for a variable rate. Like the forks, softer and heavier springs are available. The external reservoir is carried over from the G with the size increased and color changed to gold. Nitrogen pressure can also be altered but has less effect on performance than spring and damping adjustments.

The H frame is mostly like the G frame; chrome-moly steel, massive single front downtube, etc. But to speed up the steering a bit, the steering head angle has been changed, from 29.5° to 28.5°. The aluminum swing arm is about one inch longer than it was last year and the extra length gives a small increase in rear wheel travel, from 11.8 in. to 12.2.

Wheels are a combination of old and new; the front hub is the same, with the single leading shoe front brake that many racers put on their 465s, feeling the 250 brake is as strong as they want. The rear, smaller on last year's 250, has been replaced with one the same size as the 465's drum. The G hub was lighter but some racers had a problem with breakage and wanted a stronger unit with more powerful braking characteristics. Thus, the change back to the large hub. Although the rear hub looks like previous units, it has been strengthened with more ribbing in crucial places. A full-floating backing plate is used and the front has a heim type joint to ensure freedom of movement. Rims are D.I.D. aluminum, gold anodized. Spokes are the same as last year and strong enough for most racing conditions, although they should be checked for tightness often. Tires are new-design IRCs and work fairly well. The rear is better than the front. Pros will want to replace the front with a Metzeler as the IRC washes some when pushed on hard, slippery ground. After the rear is worn, another Metzeler is in order.

The YZ250 engine looks unchanged but inside the cases there are fewer, and larger, gears. This may be a trend, reversing what didn't quite become a trend. The rival 250-class motocrossers have five speeds, so last year Yamaha thought to give something extra, with six. But for 1981, Yamaha has moved back from six to five on the 250. The internal ratios for 1st through 5th are unchanged. Sixth is simply removed. Because that meant added room inside the gearbox, the gears themselves have been widened and beefed up. Few racers actually got to use 6th, the remaining ratios are right and shifting is smooth and positive, so the removal of the extra speed is an improvement.

Power output has been raised, with some porting changes and a fatter exhaust pipe, to give more mid-range torque and thus demand fewer shifts per lap.

Also adding mid-range is a Yamaha innovation called Yamaha Energy Induction System. The components of the YEIS amount to an empty plastic chamber and length of hose. The hose connects the intake tube between the carb and reeds to the plastic chamber. When the reeds close, the pressure behind them goes into the chamber, not back through the carburetor. When the reeds reopen, the trapped mixture is drawn into the engine. The added boost from the fuel in the box and lack of gas flowing the wrong way through the carb increases power and torque from idle to half throttle. Above half throttle everything happens too fast for the device to be of value. These engine changes have added total horsepower as well. Power is up 3 bhp at the countershaft sprocket. Ignition is still CDI but a new, larger black box changes the advance curve.

Other changes to the H engine are in the clutch and primary drive. The primary drive ratio is altered and the clutch has one more fiber plate and one more metal plate. The clutch actuating cam is redesigned and the clutch pull is once again a one or two finger proposition. When it's>

Photos by Ron Hussey


BELL MOTO III
56
SCOTT
JOKO
YAMAHA
50

in, it doesn't drag. When it's out, it doesn't slip.

Controls on the H are mostly new and better. The shift lever folds, the pegs are wider, the straight-pull throttle has a see-through top, the levers are dog-legged and slightly shorter than normal and the grips are a new pattern that's not half bad. Bars are shaped properly, with the right rise, and fit most of the people who rode the bike. The rear brake pedal, a hold-over from '80, is one of the best on any bike. It's forged aluminum with a steel claw riveted to the front so it can be sharpened when the teeth get dull.

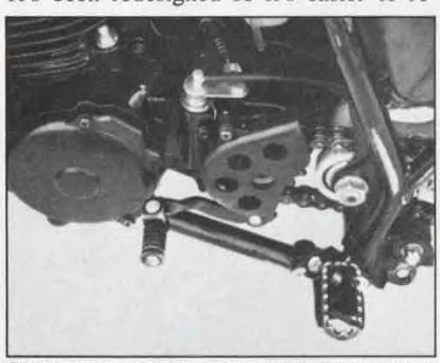
Plastic components are the same as on the G except for the front number plate. It's been redesigned so it's easier to remove and it's made of thicker plastic. Unfortunately, it's the same size as the G, not the new 12 by 12 in. size required for '81 AMA events.

Fenders, tank, side plates and seat are the same as on the G. No complaint here, as the parts worked fine before.

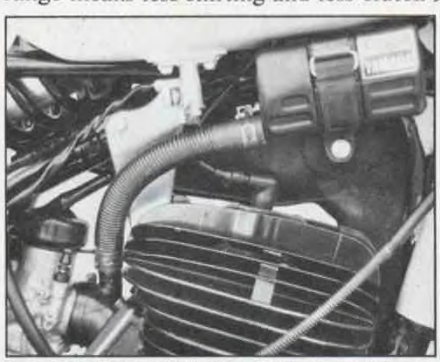
Yamaha stresses the adjustability of the YZs and usually sends the Yamaha Competition Support Team along with the first test of each year's motocrossers. The team makes sure the bike is adjusted for each test rider, is properly jetted and generally plays mechanic. They have added a video tape camera and playback screen for '81 test sessions. After riding the bike stock, the team adjusts the suspension, then purposely misadjusts it. Each step is video taped and played back for the rider to see. Then the tester selects the set-up he feels is right and the camera rolls again. It's a great way to dial in a dirt bike and really shows the difference between a dialed-in suspension and one that's not. All spring changes are made using parts available from any Yamaha dealer. Our 160-lb. pro liked the 250 H best with the soft fork and shock springs installed. The tape confirmed the choice.

The H starts easily, usually first or second kick, hot or cold. The added torque is noticed immediately. The increased mid-range means less shifting and less clutch->

Pipe has fatter mid-section for increased torque and low end. Transmission is now a 5-speed.

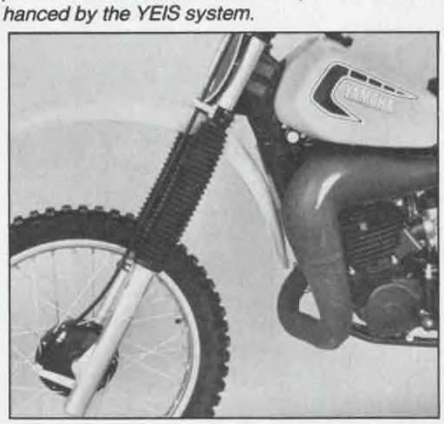


Shift lever folds back and slightly up to prevent transmission damage during crashes etc. New footpegs are wider and higher. They still fill up with mud, but don't stick in the up position.



Yamaha's Energy Induction System amounts to an empty plastic box and length of hose. Both pieces are the result of extensive testing, the length and diameter of the hose, and the volume of the plastic box change the effects on engine performance. Mid and low end power are enhanced by the YEIS system.

Aluminum swing arm is slightly longer for '81, increasing rear wheel travel to 12.2 in. Airbox shell is larger, allowing room to check filter sealing. Additionally, filter doesn't have to seat against an uneven surface like before.



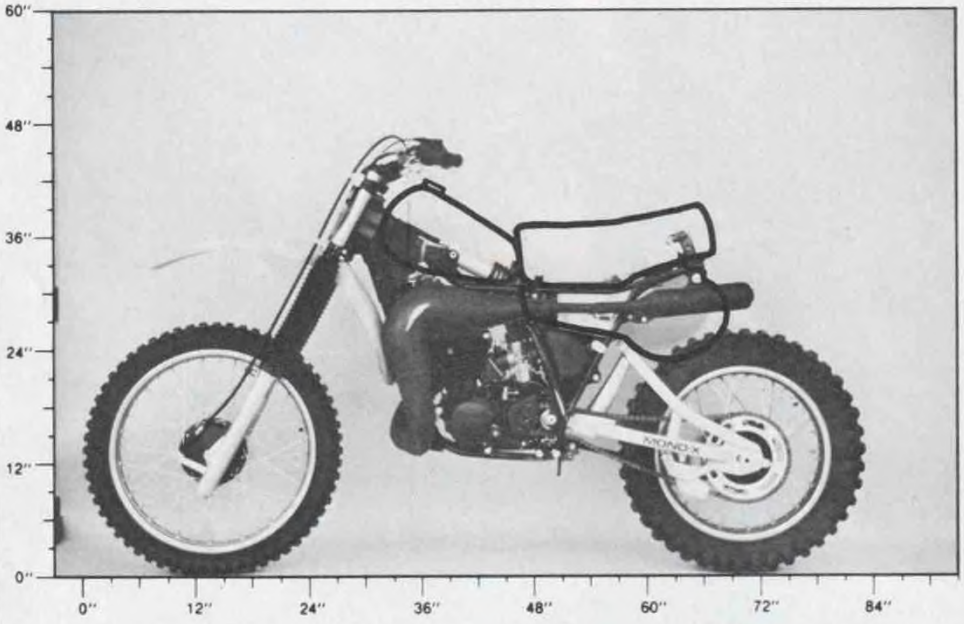
New forks have giant 43 mm stanchion tubes and 11.8 in. of travel. Front brake is strong and progressive. Front brake cable has an extra housing cover to protect cable and prevent whipping.

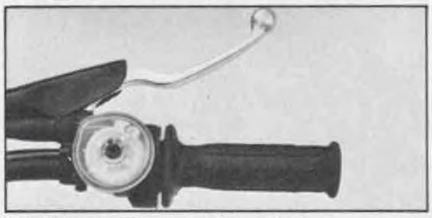
Detail photos by Ron Griewe

YAMAHA YZ250H

SPECIFICATIONS

List price	$1998
Fork travel	11.8 in.
Fork stanchion tube diameter	43mm
Rear wheel travel	11.2 in.
Front tire	3.00-21 IRC Mark II
Rear tire	5.10-18 IRC Mark II
Engine	two-stroke Single
Bore x stroke	70 x 64mm
Piston displacement	246cc
Compression ratio	9.9:1
Claimed power	na
Claimed torque	na
Carburetion	38mm Mikuni
Ignition	CDI
Lubrication system	premix
Primary drive	helical-cut gear
Gear ratios, overall:1	
5th	8.60
4th	10.27
3rd	12.70
2nd	16.31
1st	19.28
Oil capacity	1.7 pt.
Fuel capacity	2.4 gal.
Fuel tank material	plastic
Swing arm material	aluminum
Starter	primary kick
Air filtration	oiled foam
Frame material	chrome-moly steel
Wheelbase	58.4 in.
Seat height	36.9 in.
Seat width	4.8 in.
Seat length	20.5 in.
Seat front to steering stem center	14.5 in.
Handlebar width	33.8 in.
Footpeg height	15.1 in.
Footpeg to seat top	21.7 in.
Footpeg to shift lever center	6.0 in.
Footpeg to brake pedal center	5.0 in.
Swing arm length	21.8 in.
Swing arm pivot to drive sprocket center	2.9 in.
Gas tank filler hole size	2.0 in.
Ground clearance	12.0 in.
Fork rake angle	28.5°
Trail	4.72 in.
Test weight w/half tank fuel	233 lb.
Weight bias, front/rear percent	48/52





New ¼ turn straight-pull throttle features a see-through top for instant throttle cable inspection. Unit turns easily and is made from aluminum. Dog-leg hand levers are shorter than '80 parts. New grips are much better.

ing to keep the engine in the strongest part of the powerband. The softer clutch pull is nice and less tiring. Shifting is perfect. . . . smooth, easy and positive. Ratios are also perfect, no jumps, no bogs, no overly close ratios.

Riding the H like the G is a mistake. The G worked best when revved, the H is tuned for mid-range. Winding the H to what *feels* like peak power results in much slower times. Ride the H like an open motocrosser and everything's fine. It'll beat almost any production bike in a drag if the rider remembers to shift early in the powerband; it'll lose to almost anything if wound fully through the gears. The increased low end has eliminated most of the suddeness of the G and makes the transition of power from low to mid-range more gentle and controlled, thus exiting corners is smoother; the bike doesn't explode into a stronger area of the power range like before. A real good rider could use the explosive power the G made, lesser riders will be more comfortable with the power of the H.

The huge fork tubes and steeper rake make the H even quicker and more precise through corners. Hit the berm, ride through or slide, the H doesn't care, it's the rider's choice.

The dialed-in suspension also aides cornering. When the wheels follow the ground's irregularities, the bike is easier to control coming in, going through, and exiting corners. When braking on rough downhills, an observer will hear a lot of chattering, usually interpreted as rear wheel chatter. No so, the chattering noise is the chain hitting the hard plastic rub block on the top of the swing arm. Braking is smooth, strong and precise. Like past Monos, the H will kick slightly when braking hard into a downhill corner. Not much, but it's noticeable. The rider can feel the back of the bike getting busy as the weight transfers to the front wheel and the rear dances slightly. If a lip or hole is encountered during these conditions, the back wheel will leave the ground for a short distance. The annoyance can be almost eliminated by not closing the throttle. With the gas on slightly, the rear wheel follows the ground better and the busyness disappears. Nothing new, good riders regularly do it regardless of brand, when stopping on whooped or uneven ground.

The 1981 Yamaha 250G is an excellent machine. The larger forks, improved rear suspension, added mid-range horsepower, new transmission, and better tires make the H an impressive racer for any class rider. Most Yamaha dealers ran out of Gs early in the year. The H will probably be just as hard to get if you don't buy early.■