

■ **NEW BREED** 360 Yamaha motocrossers are no longer stripped down enduro versions with factory-produced G.Y.T. kit parts to up performance. Specialization has crept in. With this specialization, Yamaha has moved one step closer to that elusive victory circle.

What has Yamaha done to make its bike a threat? For one thing, it's analyzed Europe's top motocrossers and has incorporated several popular dimensions into its own design.

The 360's wheelbase, for example, has been stretched out to that of a radially finned 400 Maico. Weight distribution and ground clearance are virtually identical to a 400 Husky CR. The all-new engine is smoother than any of the competition, thanks to an omni-phase balancer. And, in the interest of rideability, the big Single has been made slightly more tractable.

The result of all this is a pretty good all-around racer. On motocross courses, it is capable of charging up hills and through sweeping turns with the best of them. Straight line stability through cobby sections is good. For the first time, the stock shock absorbers do a better than average job of keeping the rear wheel on the ground where it must remain for ultimate acceleration and braking. However, the units still have a dead spot at the beginning of travel, which results in severe wheel chatter when the back brake is applied hard.

There are only two complaints. One has to do with tight turns, especially if there is no berm to aid the rider. A machine with a long wheelbase, combined with 60 degrees of caster and 5.1 in. of trail, exhibits a strong tendency to go straight. Consequently, the Yamaha 360 must be forced into a bend. And power application must be delayed until the turn is near completion because over-use of the loud handle straightens the machine up.

While we're on the subject of the loud handle, the best technique is to keep the revs up. Although the usable powerband is considerably improved over previous Yamaha 360s, midrange pulling power is still below the norm for European big bores. What's more, if the unit does come on the pipe with the rider on the ragged edge of traction, said rider will be on the ground before he can do anything about it. Once you get used to buzzing the engine, however, there is absolutely no problem with power delivery.

The other major problem concerns brakes. The front stopper is fine, but the rear is overly sensitive. Just touch the brake pedal and the rear wheel locks up easily. That's when the dead spot chatter begins, in spite of the full floating backing plate.

Decreasing the brake lever arm leverage would probably help cure the problem. For racers, this modification is a must as poor brakes slow lap times drastically.

Because of this reluctance to perform well in tight turns, the 360 probably isn't the best choice for those racers who are interested only in motocross. But, for the guy who wants to combine motocross exploits with some dashes across the desert, the big Yamaha is ideal.

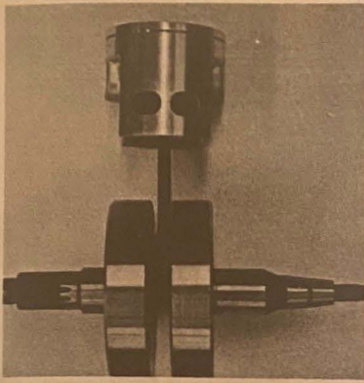
Wide carving turns in soft soil are a snap and there is good control over whoop-de-doo (whoop-de-chews if you fall a lot). Plenty of power is on tap for those long sand hills and if you do get stuck, there is enough torque right above idle to keep the wheel spinning with the clutch out. This is a really great aid for pushing over the top of a sand dune or for easing over rock ledges that are too rough to be taken at speed.

Cycle World Road Test



YAMAHA 360 MX

A Fitting Replacement
For The Streetable
Endurocrosser Of Yesteryear



Comfort is as important as performance in the desert and in this area the 360 scores very high. The front forks have excellent action and in combination with the all-new rear shocks they provide a soft, yet controllable ride.

The rear shocks, incidentally, are identical in design and damping characteristics to the sought after but unattainable YZ units. Both these and the production items are noteworthy because they have an external oil reservoir/cooler which minimizes heat build-up for more constant damping action.

Weight is the only difference between YZ and production shocks. The YZ components were made from expensive lightweight alloys that are just too costly and hard to obtain for mass production.

The seat and footpegs complement the ride. Although the seat is almost too narrow, padding is perfect. Cross country types, who for the most part sit down whenever it's possible, will love it. The seat/footpeg relationship is not overly cramped, either, so the transition from sitting to standing isn't too difficult after fatigue has set in. Footpegs fold at a 45-degree angle for safety and have a serrated edge to prevent wet boots from slipping off.

Only the handlebars are open for criticism. They are fine when the rider is seated, but most adults will find them too low for comfort in the standing position.

Comfort is important, but above all else, a good dirt bike must be sturdy. Here, the new 360 passes with ease. Breaking the double cradle frame is almost unheard of. And if this isn't testimony enough, most hot shoes don't bother to modify it. They just leave it alone.

Likewise, the swinging arm is robust. It will not bend easily and does not flex at all. There is a penalty for all this strength, however. Weight. Because the swinging arm is heavy, some racers install lighter replacements.

If you're not that concerned with weight, though, leave it alone. About the only easy handling modification that is worthwhile is to install shock absorbers that are an inch shorter than stock. This lowers the bike slightly and makes the swinging arm parallel with the ground. Both benefits are desirable.

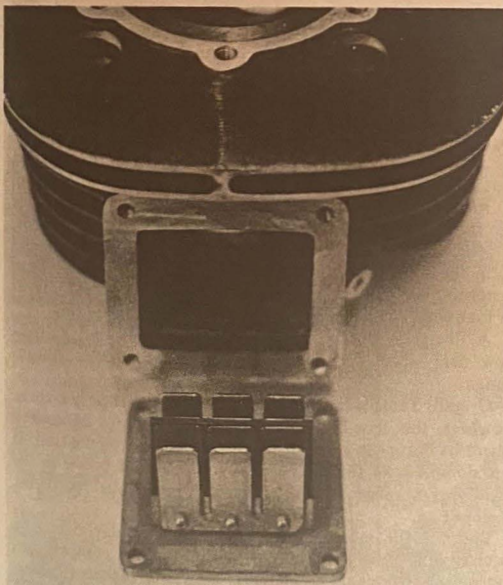
So far, the 360 sounds a lot like every other motocrosser in production. And it is, until you get to the engine. Here there are several interesting departures.

The most unusual of these is an "omni-phase" balancer which takes the shake out of the big Single right up to near maximum revs. When peaked out, the engine does vibrate slightly, but nowhere near the degree one expects from a 360cc two-stroke Single.

That balancer is a chain driven eccentric weight which rotates in the opposite direction from the crankshaft in order to produce a negative oscillation wave. This negative wave dampens the inherent vibration of the single-cylinder powerplant and thus makes the 360 much smoother and more pleasant to ride.

A secondary benefit of the balancer is that it increases flywheel effect slightly. This is a good thing as the new crankcases necessitated by the balancer have made it impossible to substitute an enduro barrel and head to obtain a gentler power delivery and wider powerband. At present the only model in Yamaha's lineup to share the 360 crankcase design is the SC500 scrambler.

The next trick item on the 360 is reed valve induction. Besides allowing an early intake of the fuel charge through the specially windowed piston, the reed prevents the fuel from backing up into the intake tract when crankcase pressure changes from negative to positive. Consequently, monstrous ports and radical port timing can be incorporated into the



design without sacrificing as much low to medium rpm performance as would be necessary in a piston-port engine.

Then, there's a Capacitor Discharge Ignition system that isn't really all that new, but remains interesting nonetheless. In the CDI unit, solid-state electronic trigger is substituted for the conventional mechanical contact breaker.

CDI has several advantages. First, the unit is sealed in a polyurethane resin to protect it from water, corrosion, and to a certain extent vibration. A less obvious advantage is that the unit regulates the charging voltage to the ignition condenser which prevents the ignition coil insulation from being damaged. Finally, spark intensity and duration are relatively independent of engine rpm; thus CDI helps to reduce plug fouling at low rpm, and misfire at high rpm, both critical points in two-stroke ignition.

YAMAHA 360 MX

SPECIFICATIONS

List price	\$1125
Suspension, front	telescopic fork
Suspension, rear	swinging arm
Tire, front	3.00-21
Tire, rear	4.00-18
Engine, type	two-stroke Single
Bore x stroke, in., mm	3.15 x 2.76, 80 x 70
Piston displacement, cu. in., cc	21.42, 351
Compression ratio	7.43:1 (corrected)
Claimed bhp @ rpm	39 @ 7500
Claimed torque @ rpm lb.-ft.	28 @ 7000
Piston speed @ rpm ft./min.	3450 @ 7500
Carburetion	Mikuni VM34SC
Ignition	CDI
Oil system	oil injection
Oil capacity, pt.	1.4
Fuel capacity, U.S. gal.	2.4
Recommended fuel	premium
Starting system	kick, folding crank
Air filtration	oil-wetted foam

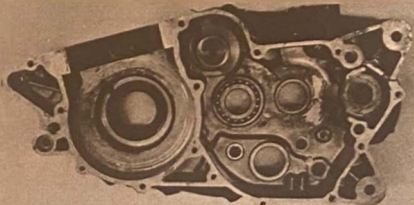
POWER TRANSMISSION

Clutch	multi-disc, wet
Primary drive	helical gear
Final drive	single-row chain
Gear ratios, overall:1	
5th	7.70
4th	9.71
3rd	12.25
2nd	16.02
1st	21.85

DIMENSIONS

Wheelbase, in.	55.7
Seat height, in.	32.7
Seat width, in.	9.0
Handlebar width, in.	34.5
Footpeg height, in.	11.6
Ground clearance, in.	9.2
Curb weight (w/half-tank fuel), lb.	256
Weight bias, front/rear, percent	43.4/56.6

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Omni-phase balancer is located at top center in the crankcase half shown.

The 360's final trick item is a partial decompression mechanism that is interlocked with the kick crank. As the crank is kicked through, a cam/connecting wire system activates the decompressor. The decompressor, located in the front portion of the cylinder, lessens compression, and thus reduces kick lever pressure drastically. This makes starting the 360 MX as easy as any mild 250 on the market. And, it's automatic.

From here on, the 360's design reverts to tried and true, plain and simple Yamaha. The wristpin rides on needle bearings, as does the big end of the connecting rod. The crankshaft sports full circle flywheels and runs on ball bearings, as is common Japanese practice.

In the interest of keeping engine noise to a minimum, primary drive is by helical gear. No doubt several accessory manufacturers will shortly offer straight cut gears as replacements for those desiring the ultimate. Finishing up the package is a robust multi-disc clutch and five-speed transmission featuring primary kick starting.

All that remains are the extraneous cycle parts, which for the most part are as trick as the engine. Fenders, for example, are flexible. Side covers, which conceal the autolube tank and form the sides of a still air box, are held on by single Dzus fasteners. The wet, foam air cleaner element has an outer layer of fuzz which increases the surface area to lessen clogging.

A fiberglass seat base aids weight reduction and Yamaha now uses wheel rims quite similar to the popular Akront design.

Overall, Yamaha has come a long way from its early efforts. However, this new 360 still leaves something to be desired where its European competition has already blazed the trail: It just doesn't have that manageable transition of power in the middle rpm range which is so vital in serious motocross competition.

But, for the more casual competition or play rider, the machine will prove applicable to several types of competition, and quite manageable as a Sunday-bike-park rocket. It's fast, nicely balanced and won't break you at the parts counter. ☐