cycle guide

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MX SHOOTOUT! 20 PAGES ON THE HOT NEW 125s

RACING IN THE STREETS: LONG BEACH G.P. FOR MOTORCYCLES

HONDA CR125M2
SUZUKI RM125A
YAMAHA YZ125X

EIGHT-VALVE 500 TWIN

Which one is best? Which is fastest?
Which has the best suspension?
It took a while, but a heap of shattered
wheel parts later, we finally figured out the answers

HAVING IT OUT:

The Reworked Honda CR125M2; The Resuspended Yamaha YZ125X; and The Redesigned Suzuki RM125A

PHOTOGRAPHY: ART FRIEDMAN AND LARRY GRIFFIN

HAVING IT OUT:

Pretend, for a moment, that *you've just ridden a new 125 motocrosser into a time machine.* You set the controls for "1971," and seconds later venture out onto a motocross track . . . *five years ago.*

The spectators and riders there are flabbergasted when they see you—astride an odd-looking motorcycle that sits way up in the air on incredibly long fork tubes and an unusual rear suspension. They're incredulous when you tell them that five years hence *all* motocross bikes will have shocks mounted so far forward they can barely be seen, and one brand of bike will use no visible rear shocks *at all.* They listen in disbelief as you explain that most rear suspension systems in the future use pressurized-nitrogen gas shocks; that some forks use pressurized air as a means of suspension; that chromoly frames and reed valves and case-reed intakes and huge carburetors and six gearbox speeds are commonplace on 125s; that 20-crankshaft horsepower isn't enough to be competitive

in 125 motocross, which, in 1976, is one of the most popular and hotly-contested classes.

These enthusiasts of the past, amazed at the way your motorcycle looks, are literally dumbfounded when they see how fast it goes on a race course. The bike soaks up punishing terrain like nothing they've ever seen, allowing the throttle to be held open nearly everywhere. The engine's high pitched screech is punctuated only by frequent upshifts and downshifts as you zip around the track at fantastic speeds.

It's inevitable: They ask you to race. But there is no such thing as a 125 class at this event, so you race in the 250 and Open classes—and blow everyone into the weeds with your "little" 125.

Sound far-fetched? Maybe it is. But only because a time machine doesn't exist. If there was such a machine and you could take a trick new 125 back several years, you'd probably win *everything*, regardless of the class you raced. Even today, good 125s cut faster lap times than bigger bikes at many racetracks. And the new 125 MX bikes are precisely that good.

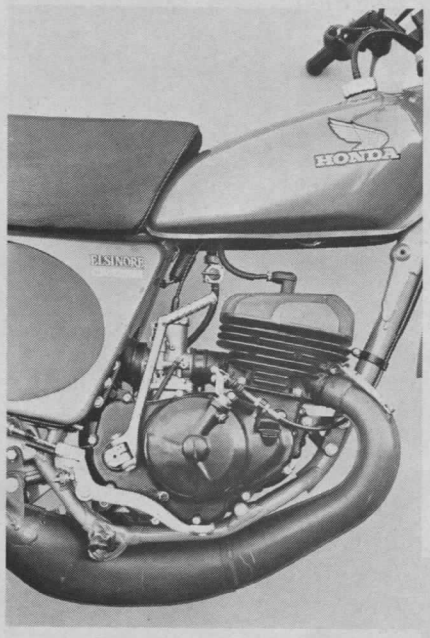
Motocross technology obviously has been running flat-out in the last few years. MX bikes now improve so quickly that one season's batch of machinery is drastically different from that of the previous year.

For example, we compared four Japanese 125 motocrossers last August and voted the Yamaha YZ125C to be the best box-stock racer of that group. Know what? That motorcycle would probably have finished *last* in this year's three-way-competition between the '76 models.

When the factories announced their new 125s, our situation quickly became apparent: We should compare the 1976 Japanese 125 motocrossers, not only to find out which one is the best out-of-the-crate racer, but to determine how far the state of the art has come in the past year. Thus, the Second Annual *Cycle Guide* 125 MX Shootout was born.

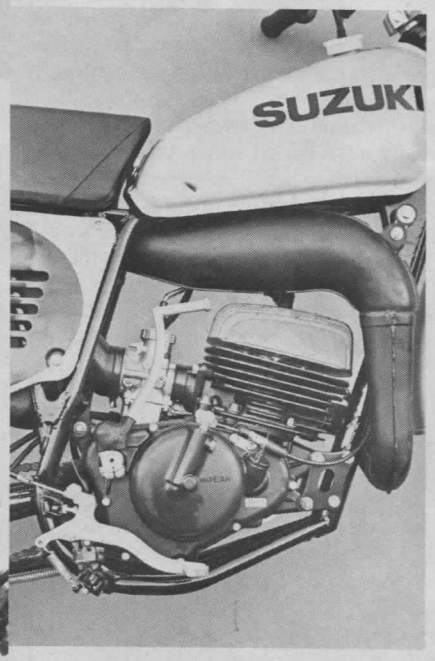
THE CONTESTANTS: Last year we compared four motorcycles: The Honda CR125M1, the Kawasaki KX125A, the Suzuki RM125, and the Yamaha YZ125C. The Yamaha won the comparison, with the Suzuki a close second, the Honda third, and the Kawasaki a distant fourth.

This year, we decided to delete the Kawasaki. It was barely competitive last year, and is still the same basic machine in '76. It's a nice little bike but not in the same league with the latest motocross stuff from Japan. Our lineup this year consisted of the redesigned red-frame Honda CR125M2, the all-new high-pipe, six-speed Suzuki RM125A, and the air-forked Yamaha YZ125X.



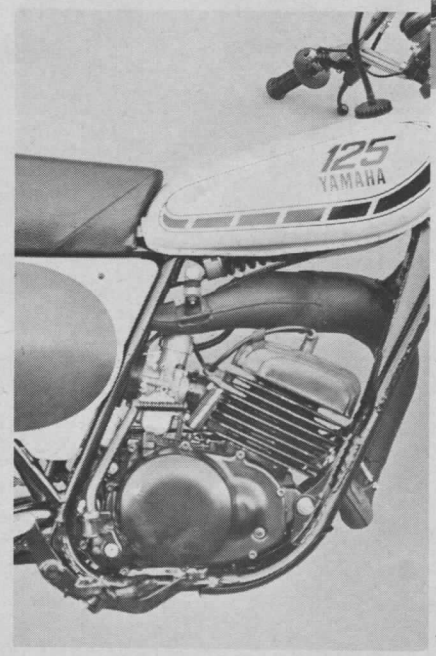
HONDA

The CR125 has the narrowest powerband, the lowest horsepower output, and the most abrupt power delivery.



SUZUKI

The RM125A engine gives the sound and feel of a larger bike. It is the torquiest and produces the most horsepower.



YAMAHA

The YZ125X is very clean-running due to the reed-valve induction, and is just about equal to the Suzuki in power.

HAVING IT OUT:

There are, of course, other 125 makes available; but for various reasons (ranging from non-availability to non-competitive ability) we didn't include them. Besides, one look at the race results around the country will tell you that the majority of 125 motocross events are won by one of these three brands.

THE RULES: Our goal was simple. We wanted to find out which motorcycle would allow a rider of average motocross ability to consistently cut the fastest laps for the longest period of time. No complicated point-scoring systems, no special bonuses for toolkits, owner's manuals, gas caps, paint jobs, or other things not directly related to lap times. Even cost has no bearing on the results, since the suggested retail prices of all three bikes are within $130 of one another. The idea of motocross is to win, and the idea of this Shootout is to determine which bike of the three is most likely to win. That's all.

Last year we changed absolutely nothing on the bikes and tested them right out of the crate. This year, realizing that a race machine needs some fine tuning to better suit a particular rider or racetrack, we made numerous small changes to the motorcycles so they all would have an equal chance to show what they could do.

We used the same tires on all three bikes—3.00 x 21 Bridgestone Motocross-7 knobbies on the front, and 4.10 x 18 Bridgestone Motocross-10 "variable pitch" knobbies on the rear. We changed gearing on some bikes and suspension springs on others. We fiddled with fork oils and air pressures and carb jetting. But in every case, we used only those parts or pieces that were listed as optional equipment.

The one exception, however, was the tires: The Honda and the Suzuki come with Bridgestones, but the Yamaha uses Dunlops. Yamaha installed a Bridgestone MX-7 on the front of its bike before delivering the motorcycle to our offices, explaining that the last two-thirds of the 1976 run of YZ125X models would be equipped with this tire. We later obtained an MX-10 for the rear. The Bridgestones are not listed as optional equipment for the Yamaha, so you may not be able to buy them from a Yamaha dealer. Otherwise, no trick parts or other high-performance

HAVING IT OUT:

modifications were made to the test bikes, so they can still rightfully be called "stock."

THE BIKES: The Honda and the Yamaha are essentially the same basic motorcycles they were last year, but with minor engine changes and fairly extensive suspension refinements. The Suzuki, on the other hand, is considerably different, and almost qualifies as an entirely new motorcycle. The RM125A incorporates so many changes that the factory published a 28-page technical bulletin/booklet that describes those refinements and even tells which new parts are interchangeable with last year's RM125.

All three bikes have 56mm bores and 50mm strokes, giving them 123.1cc of displacement. The Yamaha has a 7.4:1 compression ratio, the Honda's is 7.5:1, and the Suzuki's is set at 7.6:1.

The major engine difference between these bikes is in their induction and porting systems. The CR125 uses a conventional piston-timed intake port, with four main transfers and one exhaust port. There's also a small booster transfer port at the rear of the cylinder, just above the intake. The port timing is more radical this year and the combustion chamber has been slightly redesigned. Both modifications are meant to provide the CR with more top-end horsepower.

The YZ125X retains its four-petal reed valve induction system, with four main transfers and one exhaust port, plus a booster transfer port that juts upward from the top of the intake port opening. Like the Honda, the YZX has slightly longer port timing this year for more horsepower.

The RM125A now uses case-reed induction just like its RM250 and 370 counterparts. This system combines a standard piston-port arrangement with a two-petal reed valve that sits in a separate port leading directly into the crankcase. When the mixture going through the comparatively-mild piston-port intake nears its maximum flow rate, excess suction in the crankcase can draw in additional fuel through the case reed. Once in the crankcase, the fuel gets to the combustion chamber through six transfer ports, and the burned exhaust exits through a large exhaust port.

The RM's cylinder head and stud pattern have been redesigned for better cooling and improved sealing, and the combustion chamber has been reshaped for more power. Also, the number of partitions in each transfer port tunnel has been reduced from two to one for better transfer mixture flow.

All of the bikes now have larger carburetors. The Honda's Keihin is a 30 millimeter, two millimeters larger than last year, and the Mikunis on the other two bikes are four millimeters larger: A 32 millimeter is on the RM, and a 34 on the YZ.

The RM125A now has six speeds with a gear-type gearchange mechanism replacing the pin-and-arm setup used on last year's machine. The "A" model also uses one more drive plate (totaling seven) and one more driven plate (totaling six) in the clutch assembly.

The CR and YZ use the same basic six-speed gearboxes as before, with a few minor refinements that are claimed to help the shifting. The Honda is geared slightly lower overall by virtue of having two more teeth on the rear sprocket, but the internal ratios are the same as before.

The YZ is geared slightly taller than last year's model because the '76 uses higher primary gearing. The final drive ratio was lowered to help compensate for this, but the end result was still a bit taller than before, and definitely the tallest of our three bikes. The YZ125X now uses a spring-loaded chain tensioner and a No. 520 chain, while the others have no tensioners and use smaller No. 428 chains. The Yamaha also grew an additional set of clutch discs, giving it six drive and five driven plates.

All three bikes now use the same basic magneto CDI system on the left end of their respective crankshafts. The 1975 YZ125C Yamaha had a slightly different ignition that featured a pulser coil on the outside of the stator that proved to be the cause of some CDI failures. The pulser is no longer used, as evidenced by the ab-

sence of the familiar bulge on the YZ's magneto cover. The only differences in the three ignition systems are in the "little black boxes" which control spark advance. Each company uses an advance curve that, in its estimation, gives the best combination of power and reliability for its particular engine design.

Chassis-wise, all three bikes received considerable attention. Most radically different is the Suzuki, which has an all-new chromoly frame replacing its former mild steel unit. The single-downtube tubular affair accommodates a new through-the-frame high pipe, and has the steering head set at 30 degrees, one more than the '75 RM125. The front wheel trail is 5.1 inches, .3-inch longer than before, and the bike has a dry weight of 187 pounds, two pounds lighter than last year's RM.

A longer, box-type swingarm is used on the RM125A, and it increases rear wheel travel by about half an inch and adds an inch-and-a-quarter to the wheelbase. With 8.1 inches of rear wheel travel and 7.5 inches up front, the RM is the first production motorcycle we know of to have more travel at the rear than at the front.

The RM's rear shocks are ten millimeters heftier than last year's, with an increase in body diameter for greater oil capacity. A cam-ring spring preload adjuster is no longer used, and in its place is a spring seat adjustable to any one of three positions by relocating a thin wire ring beneath the seat. It's the same system used on bigger RMs.

The '76 Suzuki's front fork has more travel than the '75 model's, and features a unique two-way spring preload adjustment. A stepped spacer sits atop each fork spring, and installing it one way provides ten millimeters more preload than installing it the other way.

The YZ125X incorporates less-dramatic, but still quite significant, changes. The steering head angle on the mild steel, double-downtube frame is now 31 degrees, a half-degree less than before, but the front wheel trail remains the same at 5.5 inches. The monoshock swingarm is longer on the X, giving it almost one-and-a-half inches of additional wheelbase. The monoshock itself has been reworked to provide about an inch of extra wheel travel, totaling 6.4 inches as measured at the rear axle.

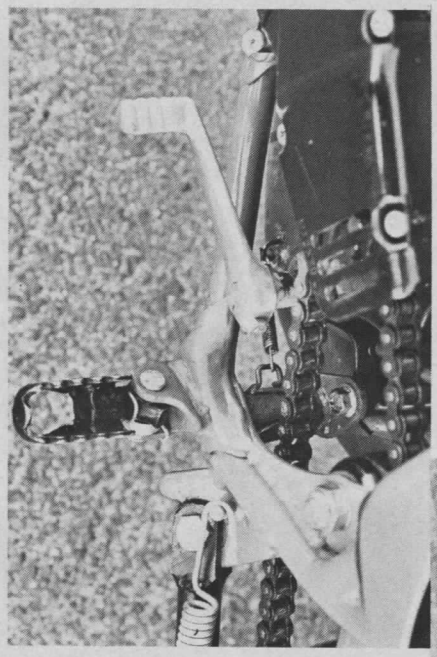
HAVING IT OUT:

The most extensive development on the new YZ was done on the dual-chambered Kayaba air fork that gives a whopping 8.4 inches of front wheel travel. Other nice touches include vented accordion fork gaiters and fore-and-aft reinforcing ribs on the slider legs, but the most important aspect of this suspension is the near-total adjustability it provides. The "spring" rate in the first half of the travel can be altered by varying the air pressure in the fork tubes or by changing the level of the damping oil. Varying the air pressure in the top of the air canisters regulates the suspension rate in the last half of the fork stroke, and changing the oil viscosity alters the damping rates. With an air tank, a proper air gauge, a selection of fork oil, and a little trial-and-error, you can get the YZ's front fork to behave damn near any way you wish. However, the additional weight of the heavy-walled air forks, the longer monoshock swingarm, the No. 520 chain and sprockets, and some extra frame gusseting to deter cracking in some critical areas, have added 12 pounds to the YZ, giving it a dry weight of 199 pounds.

The CR125M is also about one-and-a-half inches longer this year, and the chromoly single-downtube frame has an additional half-degree of steering head angle to make it an even 31 degrees. The front wheel trail is 5.4 inches, .1-inch shorter than last year's CR.

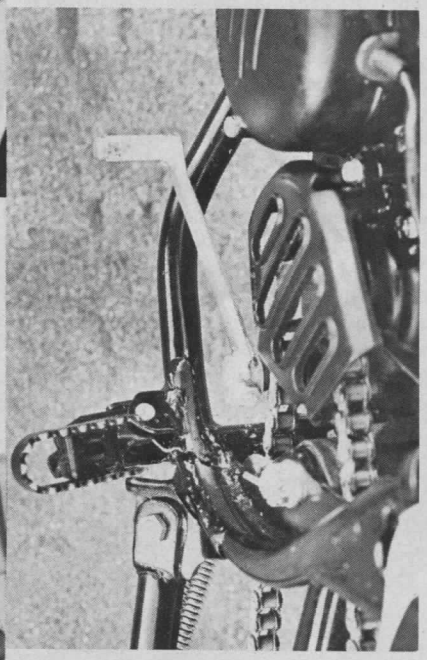
The front fork has more travel (7.7 inches) and improved damping, and forward-mount Showa gas shocks provide 5.9 inches of rear wheel travel. A unique feature is the steel swingarm that has its one-piece legs stamped with reinforcing ribs on the top and bottom instead of welded-on gussets. Whether or not this approach provides a stronger swingarm is questionable, but it undoubtedly cuts down the manufacturing cost. And like the Yamaha, the Honda is heavier this year. The additional frame gusseting and wall thickness necessary for the forward-mount shocks, plus the heavier swingarm and added bracing around the steering head have boosted the CR from 179.5 to 196 pounds.

Cosmetically, the Yamaha is about the same as last year's model; only the new front fork and slightly-higher chassis identify it as a '76 YZ. The factory claims an additional .5 liters of fuel capacity in the alloy tank, bringing the total from 1.3 to 1.45 U.S. gallons. The yellow-and-black bumblebee paint scheme has been retained, along with the narrow plastic



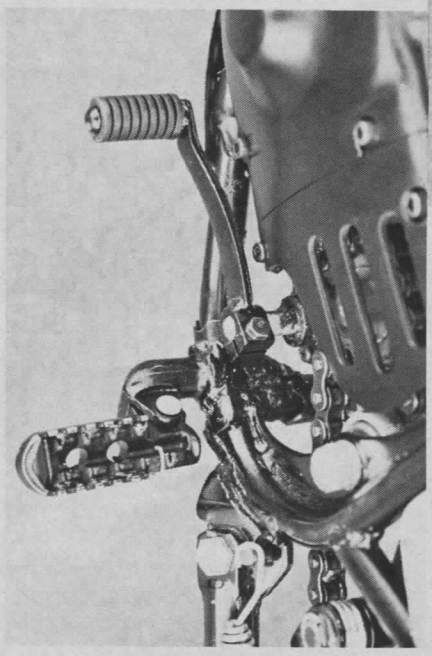
HONDA

The CR was the slickest-shifting, and had the least obtrusive (and most expensive) shift lever.



SUZUKI

The Suzuki's lever stuck out a little too much until we bent it inward, and its shifting was almost as good as the Honda's.



YAMAHA

The Yamaha's lever seemed to get in the way most often, and the gearbox had the least-liked operative characteristics.

HAVING IT OUT:

yellow fenders, and yellow-and-black plastic number plates.

The CR125M has new wide plastic fenders, plastic number plates that bulge at the rear shocks, and a new super-thick seat. The steel gas tank has a 1.8-gallon capacity, .2 gallons more than on the '75 CR. The frame, shocks, and all the body pieces are painted bright red, apparently to make the CR resemble the Team Honda racer ridden by National 125 Champion Marty Smith.

The RM125A also has a new look to go along with its new engineering. The 1.6-gallon gas tank is .2-gallon larger than the one on last year's bike, and the tank styling and wide plastic fenders combine with the high pipe to make the 125 a dead ringer for an RM250 or 370. The only giveaway is the size of the engine. All the body parts are yellow, including the bulging vented number plates that allow air to reach the rear shocks.

The approximate retail prices range from $895 for the CR125M to $1027 for the YZ, with the RM125A in the middle at $995. These are just *suggested* figures, however, and dealers are at liberty to raise or lower selling prices as they see fit.

ENGINE AND GEARBOX: Each of these three engines has its own distinct personality and each delivers its power somewhat differently; but in the end, the results are almost identical. We had to log many long hours on each bike before we sorted out the engine characteristics because, on a lap-to-lap basis on the average motocross course, the acceleration and lap times of the three were incredibly similar.

We ultimately found the Honda's power to be the hardest to use, since it has a

HONDA

Even with its 7.7 inches of usable travel, the Honda's front fork was the least-liked.

SUZUKI

After much experimenting with fork oil, the Suzuki's front suspension delivered 7.5 inches of wheel travel and excellent damping.

YAMAHA

The Yamaha's air fork is superb, allowing 8.4 inches of travel and near-total adjustability.

narrow, comparatively-unforgiving powerband and a squirty, all-or-nothing type of power delivery. You have to concentrate more while riding the Honda and that tires you a little faster. It also makes it difficult for an average rider to maintain his pace near the end of a long, tiring moto.

The Suzuki's power is probably the easiest to deal with, at least for most non-pro riders. The powerband is wider than the Honda's, but the peak torque rpm is closer to the bottom of the usable power range. This makes the RM feel more like a 250 than the others, especially because it likes to be "short-shifted" like a big bike. By upshifting a little sooner than on the average 125, you catch the RM's torque right at its peak after the shift and consequently have more usable rear wheel torque at work for you.

The Yamaha fits somewhere between the Honda and Suzuki as far as power delivery is concerned. It, too, has a wide powerband, perhaps even wider than the Suzuki's, but the torque peak is closer to the top end of the rpm range, and its power is more sudden than the RM's, although not as squirty as the Honda's. You can short-shift the Yamaha, too, but the result-

ing acceleration is not quite as forceful as with the RM.

The Yamaha is the cleanest-running of the three when the revs get below the bottom limits of the powerband. You have to get the YZ's engine turning very slowly with the throttle wide open before it will bog even slightly. The Honda will bog if you drop the revs just a little below the powerband, and the Suzuki will pull weakly below the bottom of its usable rpm range. However, if you let the RM's revs drop *too* far, the engine will bog and load up badly—enough to require a couple of clutch-in throttle blips and a downshift to get it going cleanly. Despite this tendency, though, the Suzuki is easy to ride because of its smooth transition into the powerband and early-peaking torque output.

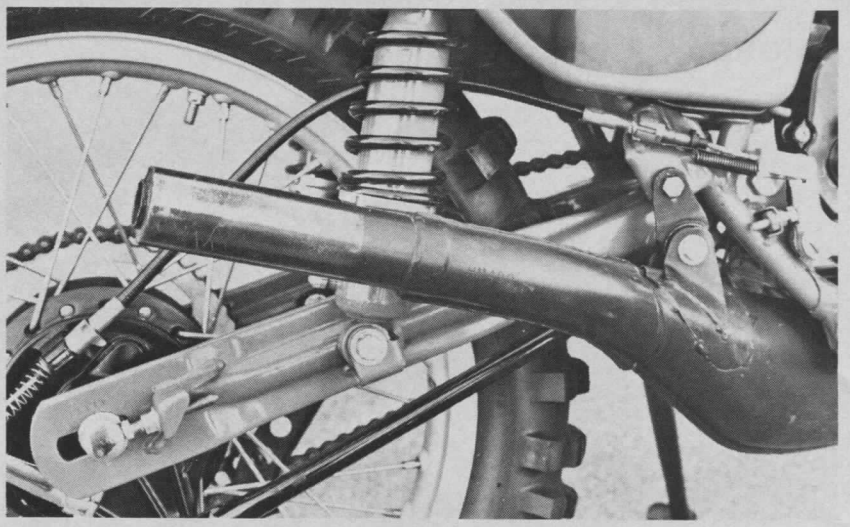
From a seat-of-the-pants standpoint, it's nearly impossible to tell which of the three bikes is the fastest just by riding them around a racetrack. They *feel* equally fast, even though each one requires a slightly different riding style. Even after an intense session of standing-start drag races on the long starting area at the Indian Dunes International Course, we were not able to determine any noticeable power advantages with one particular bike. Whoever got the best start would win the race to the first corner, regardless of what he was riding. No bike ever caught or passed another from behind; in fact, no bike gained or lost any ground after the first few feet of each race.

The starting areas at Indian Dunes are dead-level for the most part, so we went to Saddleback Park to use its long, long uphill start area—"the dyno," as some call it. There, for the first time, we were able to discern some noticeable differences in the performance of these bikes.

After a few hours of drag racing at Saddleback, we concluded that the Suzuki was the fastest and most consistent up the hill, with the Yamaha a very close second and the Honda an equally-close third. The Suzuki won more of those drags than the other two bikes, and even caught and passed the others from behind on occasion.

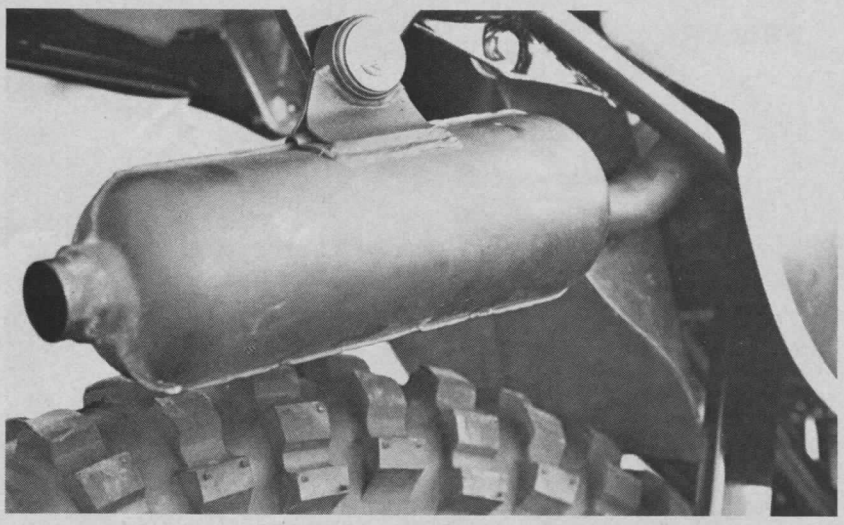
We attributed much of the RM's success to the meaty mid-range torque of the engine, but we also realized that the Suzy was geared lower than the rest, and the Yammie was geared the highest. So we installed a one-tooth larger countershaft sprocket on the RM and subtracted one tooth from the Yamaha's, and went back to Saddleback to try again.

With the altered gearing, the Suzuki still



HONDA *The Honda's low pipe emits a 103.7 decibel snarl without the auxiliary muffler, and a 92.8 with it.*

SUZUKI *The Suzuki's little muffler can only hold the racket down to 101.6 decibels.*



YAMAHA *The Yamaha's muffler is larger than the one on last year's bike and, at 99.4 decibels, quieter.*

HONDA

SUZUKI

YAMAHA

HAVING IT OUT:

held a slight advantage over the Yamaha, although the YZ seemed to be a better match for the RM than it did with stock gearing. It almost seemed that the 15-toother on the Suzuki was a bit *too* tall, though. We guessed that with the standard 14-tooth transmission sprocket and a 55-tooth rear sprocket (two teeth smaller than stock), the RM would have been geared perfectly for most racetracks.

We played around with other gearing combinations (stock gearing on the Suzuki and the lower gearing on the Yamaha; stock gearing on the Yamaha and the higher gearing on the Suzuki, etc.), but in every case, the Suzuki seemed to make just a teeny bit more of the right kind of power and generally got to the top of the hill first.

This implies, and correctly so, that the RM should hold a slight edge on tracks that have some very steep uphills. And because of the consistency with which it gets off the line, the Suzuki stands a better-than-average chance of getting into the first turn near the front of the pack.

The Honda, on the other hand, was very inconsistent in its starts up the Saddleback hill. It wanted to wheelie or go sideways or bog out about half of the time, which made getting to the top first an infrequent occurrence.

The CR125M got our vote for having the slickest-shifting gearbox, with the Suzuki second in that category and the Yamaha third. The Honda shifted so easily and precisely that we made most of our upshifts without the clutch and without backing off full throttle in the least. And once we got used to the tucked-in location of the Honda's shift lever, it, too, became our favorite. We never accidentally bumped it out of gear when bouncing around on the footpegs.

The Suzuki's gearbox worked almost as well, usually requiring a bit more effort and a momentary backing off of the throttle to upshift. Once in a great while, one of our testers would inadvertently knock the transmission out of gear, but the lever placement was otherwise perfect.

The Yamaha has the shortest shift lever throw, but the lever seems to get in the way more frequently, and the shifting isn't as positive as the others. Our testers complained of numerous missed shifts, and said they also frequently bumped the lever into a false neutral. As they became more

familiar with the bikes, however, this occurred less often. The riders also complained that finding neutral was very difficult on the YZ.

The Honda is geared so you'll use all six gears on many tracks. First gear is needed for starting 99 percent of the time, and you might even use it on some super-tight corners.

The Yamaha will probably never see sixth on a motocross course with stock gearing, but first is a must for most starts and very slow corners. The Suzuki is just the opposite. First is only used for chugging around in the pits, otherwise it's second gear for most starts and all slow corners. And with stock final gearing, fast straights will have you looking for a seventh gear. Dropping one countershaft tooth (from 12 to 11) on the YZ and going up one on the RM (from 14 to 15) or down two on the rear (from 57 to 55) provides much more useful gear ratios for most tracks. The Honda is pretty versatile with the standard gearing.

HANDLING: The geometry numbers of these three machines are rather similar; but like the engines, their handling properties are somewhat dissimilar, even though the end result is about the same on all three.

The Yamaha has the longest wheelbase and the greatest amount of front wheel trail, hence, by a small degree its steering is the slowest and it shows the most reluctance to steer around a slow, flat corner. When topped out in fifth or sixth, however, that geometry works as an asset instead of a liability, and the YZ has a strong inclination to go in a straight line without requiring a white-knuckle grip on the handlebars.

The Suzuki is the shortest and has the least front wheel trail, and is generally the quickest and easiest to snap around a hairpin turn. But unlike some short bikes, proper weight distribution and a rigid frame/swingarm combination keep the RM from being twitchy when it's going fast.

The Honda fits somewhere between these two, with its best trait being its ability to skate around smooth, flat corners better than the others. It's longer than the RM by a fraction of an inch, heavier by more than eight pounds, has more front wheel trail and a higher engine placement, all of

which indicate the CR should not navigate those flat-track corners better. Our only explanation for this phenomenon is that the CR's suspension is more rigid than the RM's, and makes the bike stable and predictable in these smooth corners.

On bermed corners, the YZ and RM are equally competent, but the CR has a bit of a problem. The compliance of the Yamaha and Suzuki suspension systems absorbs the impact of hitting the berm more efficiently, while the Honda delivers quite a thump to a rider if he slams into the berm hard, often jarring him up off the seat. If the corners are carved through deep sand or mud, the predictable, responsive steering characteristics of the Suzuki or the Honda seem to be better than those of the YZ, but not by much.

By the time the test was over, the Yamaha air fork had been unanimously voted the best front suspension, and the Suzuki's rear end was picked as the best rear suspension. But the opposite ends of

Continued on page 73

HONDA CR125M2

SPECIFICATIONS

Engine type	two-stroke
Cylinder arrangement	vertical single
Port arrangement	one piston-controlled intake, four transfers, one booster, one exhaust
Bore and stroke	56mm x 50mm
Displacement	123.1cc
Compression ratio (corrected)	7.5:1
Ignition	internal-rotor magneto CDI
Charging system	none
Carburetion	one 30mm Keihin slide/needle
Air filter	washable oiled foam element
Lubrication	pre-mixed fuel and oil
Primary drive	straight-cut gears, 4:1 ratio
Clutch	wet, 6 drive plates, 5 driven plates
Starting system	primary kick
Transmission	6-speed, left-foot shift
Overall drive ratios	(1) 32.30; (2) 24.39; (3) 19.68; (4) 16.52; (5) 14.50; (6) 13.32
Transmission sprocket	14-tooth
Rear wheel sprocket	53-tooth
Drive chain	½-in. pitch, 5/16-in. width (#428)
Front fork	7.7 in. (195.5mm) travel
Rear shocks	5-way adjustable, 5.9 in. (150mm) rear wheel travel
Front brake	drum, single-leading shoe
Rear brake	drum, single-leading shoe, cable-operated
Front tire	3.00 x 21 Bridgestone Motocross-7 knobby
Rear tire	4.10 x 18 Bridgestone Motocross-10 knobby
Frame	tubular chromoly steel, single front downtube
Steering head angle	31 degrees from vertical
Front wheel trail	5.4 in. (137mm)
Wheelbase	54.9 to 55.9 in. (139.5 to 142cm)
Length	82.4 in. (209.5cm)
Weight	196 lb. (88.9 kg)
Weight distribution	44.4% front, 55.6% rear
Ground clearance	8.5 in. (216mm) at expansion chamber
Seat height	34.8 in. (881.5mm), unladen
Handlebar width	33.5 in. (851mm)
Handlebar grip height	43.3 in. (110cm)
Footpeg height	12.3 in. (312.5mm)
Instrumentation	none
Gas tank	steel, 1.8 gal. (6.8L)
Sound level per SAE XJ 331a	103.7 db(A)
Suggested retail price	$895 East and West Coasts

SUZUKI RM125A

SPECIFICATIONS

Engine type	two-stroke
Cylinder arrangement	vertical single
Port arrangement	one piston-controlled intake, one reed-valve-controlled intake, six transfers, one exhaust
Bore and stroke	56mm x 50mm
Displacement	123.1cc
Compression ratio (corrected)	7.6:1
Ignition	internal-rotor magneto CDI
Charging system	none
Carburetion	one 32mm Mikuni slide/needle
Air filter	washable oiled foam element
Lubrication	pre-mixed fuel and oil
Primary drive	straight-cut gears, 3.705:1 ratio
Clutch	wet, 7 drive plates, 6 driven plates
Starting system	primary kick
Transmission	6-speed, left-foot shift
Overall drive ratios	(1) 35.19; (2) 26.39; (3) 21.28; (4) 17.94; (5) 15.76; (6) 14.42
Transmission sprocket	14-tooth
Rear wheel sprocket	57-tooth
Drive chain	1/2-in. pitch, 5/16-in. width (#428)
Front fork	7.5 in. (190.5mm) travel
Rear shocks	3-way adjustable, 8.1 in. (206mm) rear wheel travel
Front brake	drum, single-leading shoe
Rear brake	drum, single-leading shoe, cable-operated
Front tire	3.00 x 21 Bridgestone Motocross-7 knobby
Rear tire	4.10 x 18 Bridgestone Motocross-10 knobby
Frame	tubular chromoly steel, single front downtube
Steering head angle	30 degrees from vertical
Front wheel trail	5.1 in. (130mm)
Wheelbase	54.7 to 55.7 in. (139 to 141.5cm)
Length	82.3 in. (209cm)
Weight	187 lb. (84.8kg)
Weight distribution	47.1% front, 52.9% rear
Ground clearance	10.3 in. (261.5mm), at frame
Seat height	34.7 in. (881mm), unladen
Handlebar width	33 in. (838mm)
Handlebar grip height	44.3 in. (112.5cm)
Footpeg height	13 in. (330mm)
Instrumentation	none
Gas tank	aluminum, 1.6 gal. (6L)
Sound level per SAE XJ 331a	101.6 db(A)
Suggested retail price	$995 East and West Coasts

YAMAHA YZ125X

SPECIFICATIONS

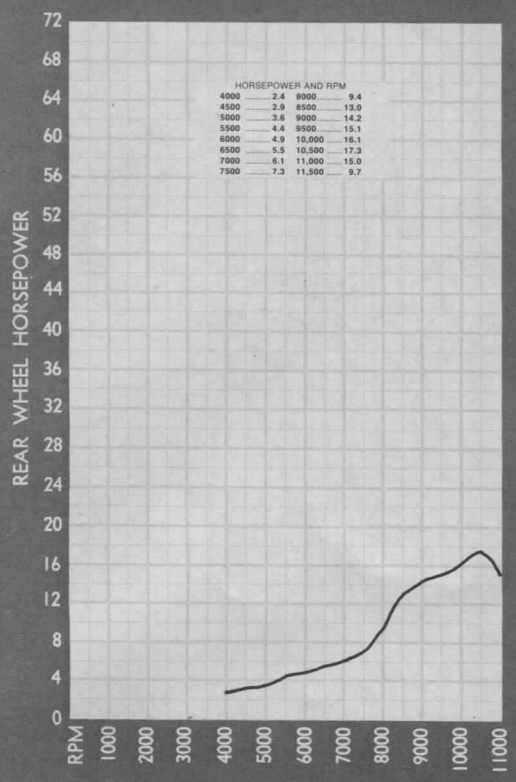
Engine type	two-stroke
Cylinder arrangement	vertical single
Port arrangement	one reed-valve-controlled intake, four transfers, one booster, one exhaust
Bore and stroke	56mm x 50mm
Displacement	123.1cc
Compression ratio (corrected)	7.4:1
Ignition	internal-rotor magneto CDI
Charging system	none
Carburetion	one 34mm Mikuni slide/needle
Air filter	two bristle-covered washable oiled foam elements
Lubrication	pre-mixed fuel and oil
Primary drive	helical-cut gears, 3.227:1 ratio
Clutch	wet, 6 drive plates, 5 driven plates
Starting system	primary kick
Transmission	6-speed, left-foot shift
Overall drive ratios	(1) 31.39; (2) 23.90; (3) 19.23; (4) 16.08; (5) 14.12; (6) 12.92
Transmission sprocket	12-tooth
Rear wheel sprocket	46-tooth
Drive chain	⅝-in. pitch, ¼-in. width (#520)
Front fork	8.4 in. (213.5mm) travel
Rear shocks	non-adjustable spring preload, 6.4 in. (162.5mm) rear wheel travel
Front brake	drum, single-leading shoe
Rear brake	drum, single-leading shoe, rod-operated
Front tire	3.00 x 21 Bridgestone Motocross-7 knobby
Rear tire	4.10 x 18 Dunlop Sports Senior knobby
Frame	tubular mild steel, double front downtubes
Steering head angle	31 degrees from vertical
Front wheel trail	5.5 in. (139.7mm)
Wheelbase	55.4 to 56.3 in. (140.7 to 143cm)
Length	83 in. (210.8cm)
Weight	199 lb. (90.3kg)
Weight distribution	46.5% front, 53.5% rear
Ground clearance	11.3 (287mm), at brake pedal
Seat height	34.8 in. (882mm), unladen
Handlebar width	36 in. (914.5mm)
Handlebar grip height	43.7 in. (111cm)
Footpeg height	13.5 in. (343mm)
Instrumentation	none
Gas tank	aluminum, 1.45 gal. (5.5L)
Sound level per SAE XJ 331a	99.4 db(A)
Suggested retail price	$1027 East Coast, $1019 West Coast

HONDA

SUZUKI

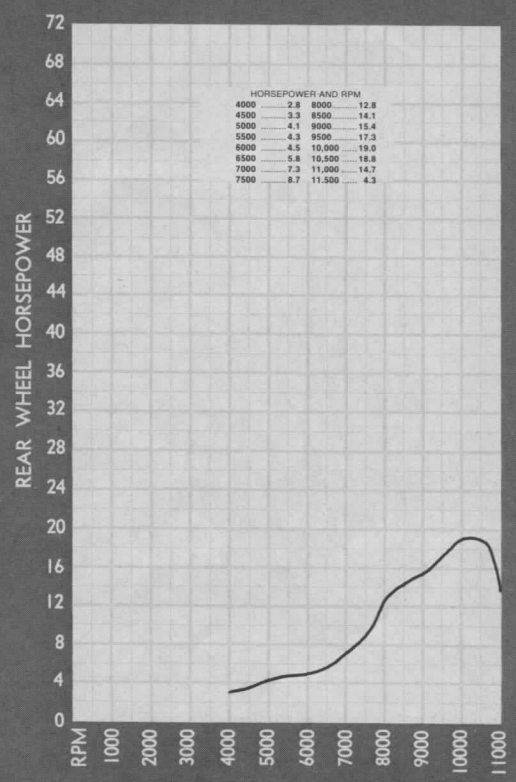
YAMAHA

HONDA CR125M2



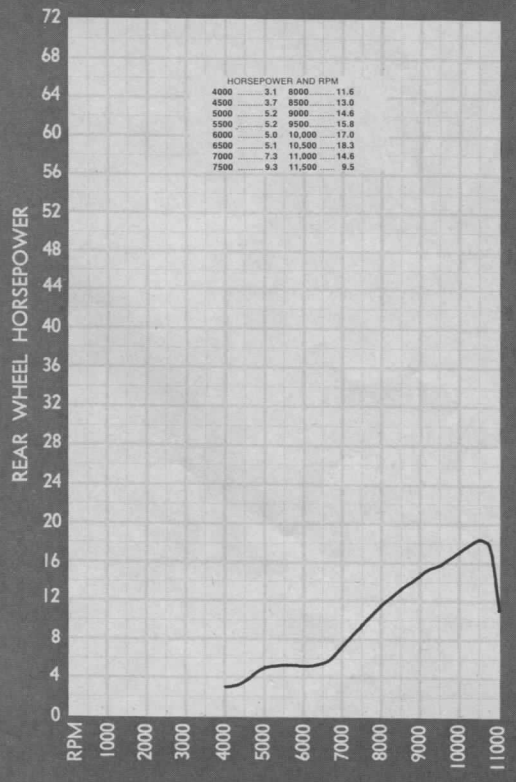
This graph shows the amount of horsepower delivered to the ground as measured by a Patraco MKIII rear wheel dynamometer. These figures may vary from the manufacturer's claims, or from those obtained on a different dynamometer.

SUZUKI RM125A



This graph shows the amount of horsepower delivered to the ground as measured by a Patraco MKIII rear wheel dynamometer. These figures may vary from the manufacturer's claims, or from those obtained on a different dynamometer.

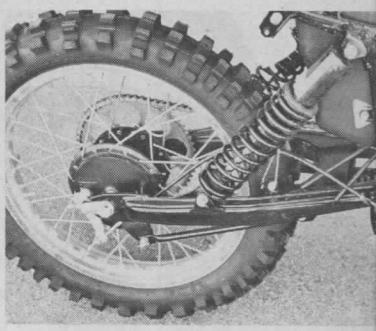
YAMAHA YZ125X



This graph shows the amount of horsepower delivered to the ground as measured by a Patraco MKIII rear wheel dynamometer. These figures may vary from the manufacturer's claims, or from those obtained on a different dynamometer.

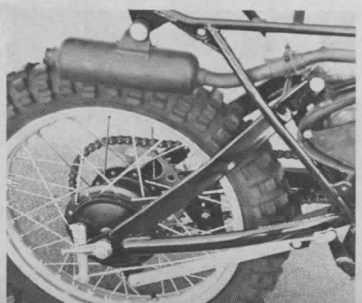
HONDA

The forward-mount Showa gas shocks allow 5.9 inches of rear wheel travel on the Honda.



SUZUKI

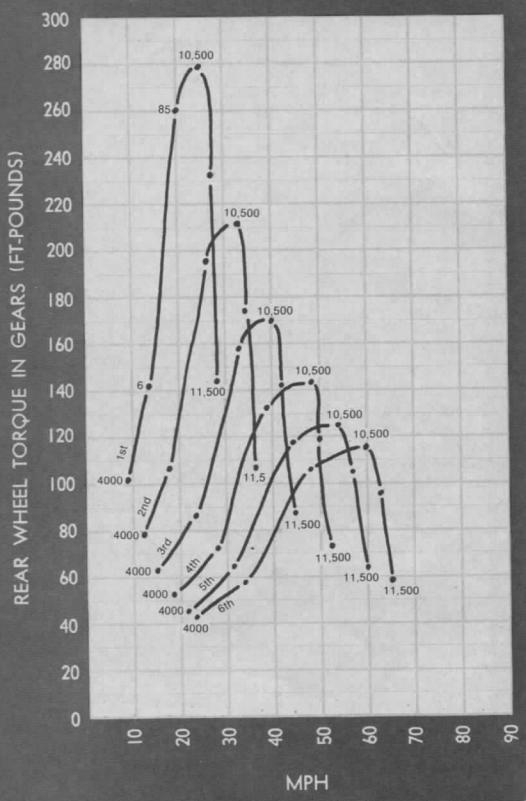
Forward-mount, laid-down Kayaba gas shocks permit a whopping 8.1 inches of rear wheel travel on the Suzuki.



YAMAHA

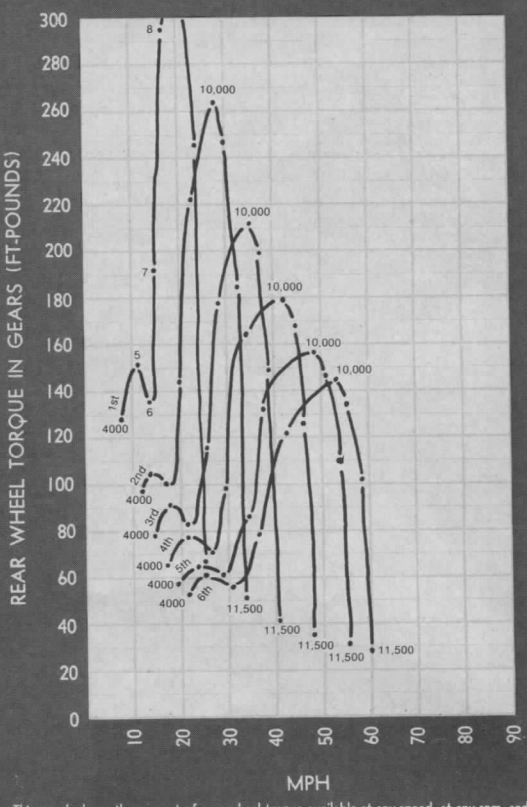
The nitrogen-charged monoshock unit on the Yamaha provides 6.4 inches of rear wheel travel.

HONDA CR125M2



This graph shows the amount of rear wheel torque available at any speed, at any rpm, and in any gear. Maximum acceleration will be obtained by shifting gears at the points where the consecutive lines intersect.

SUZUKI RM125A



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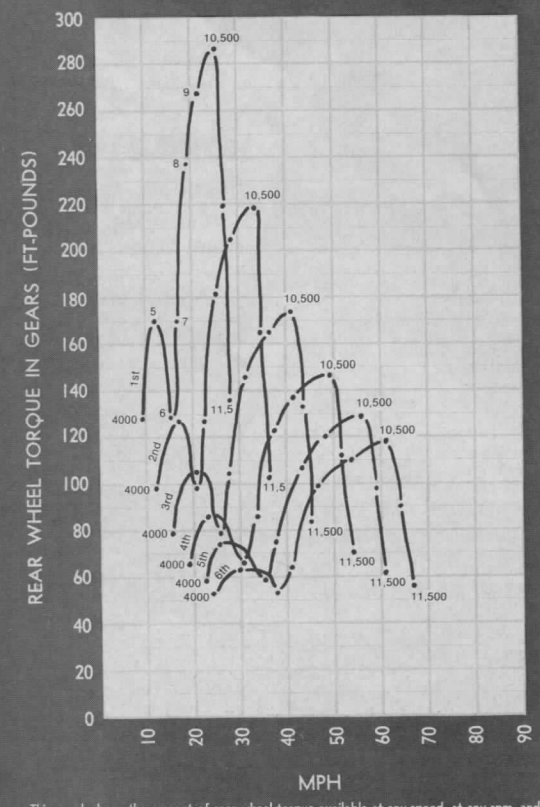
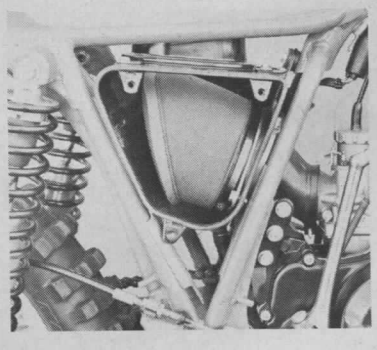
YAMAHA YZ125X

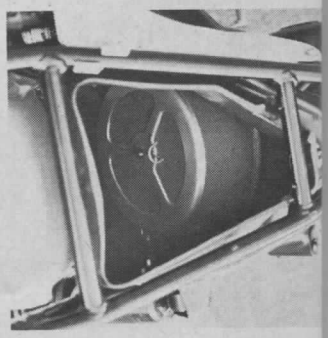


This graph shows the amount of rear wheel torque available at any speed, at any rpm, and in any gear. Maximum acceleration will be obtained by shifting gears at the points where the consecutive lines intersect.



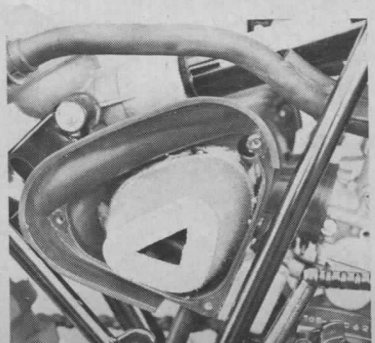
HONDA

The CR's air cleaner filte quite efficiently, but the sealing gasket between t metal element frame and the airbox kept swelling and coming loose.



SUZUKI

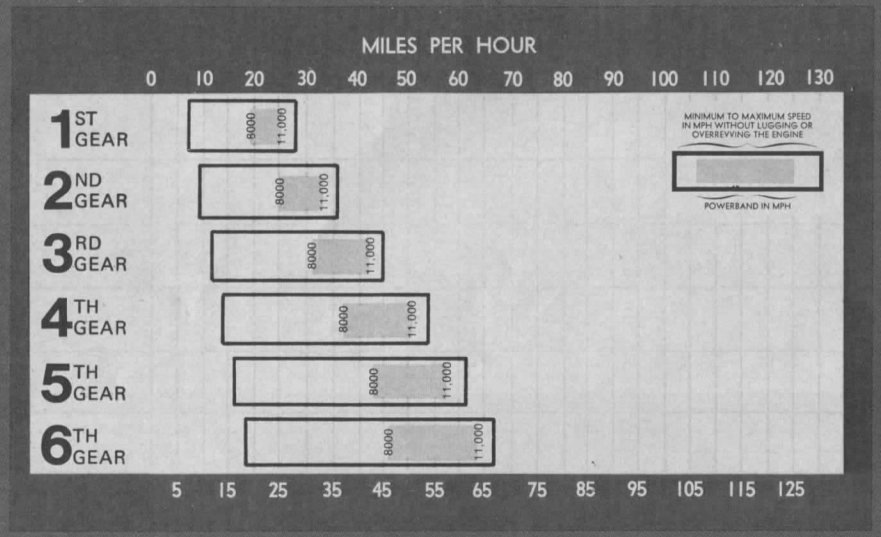
The Suzuki's air cleaner was our favorite. It was the easiest to reach, it filtered very well, and it never did anything wrong.



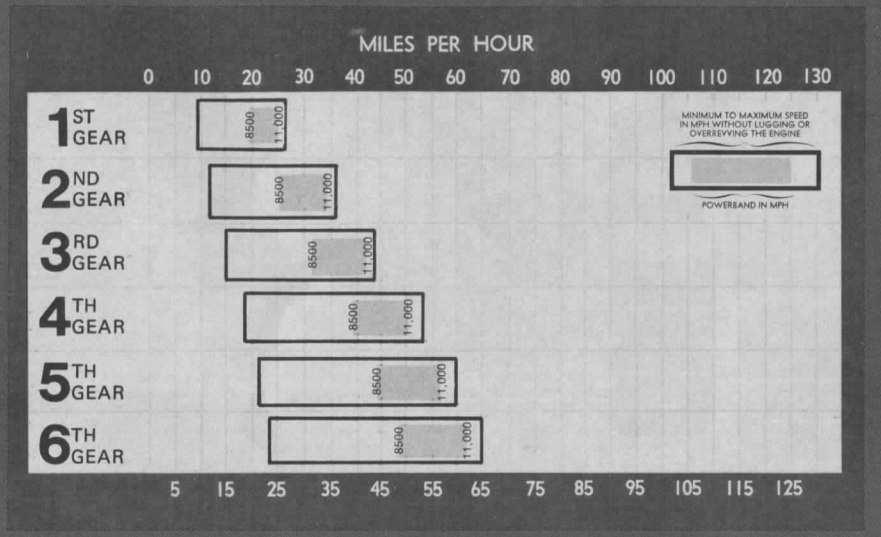
YAMAHA

The Yamaha uses two elements (one per side) so it requires the most t to service. The plastic airbox broke during our

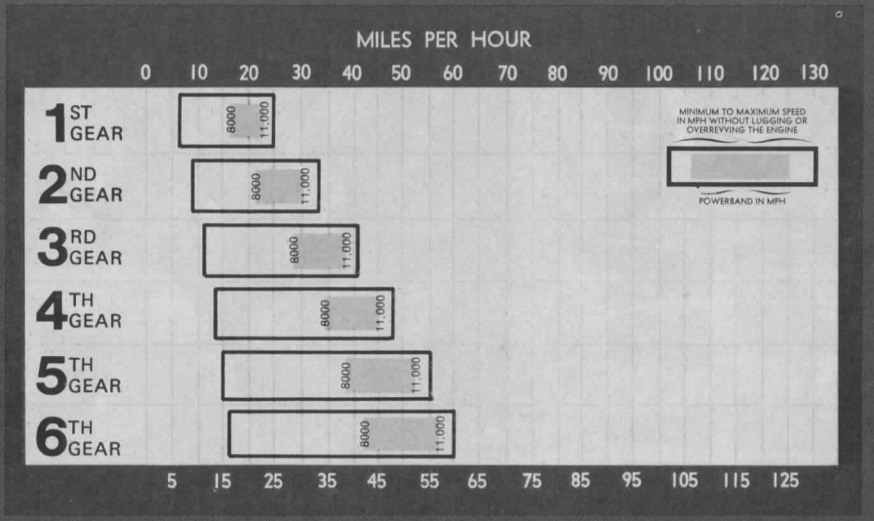
YAMAHA YZ125X



HONDA CR125M2

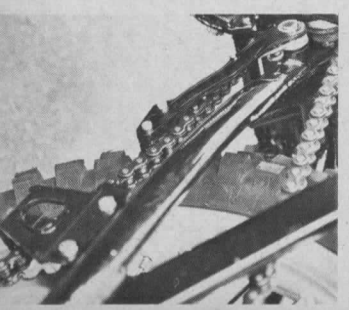


SUZUKI RM125A



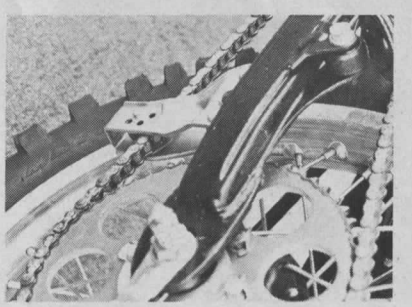
YAMAHA

The Yamaha has the best final drive arrangement, using the sturdier No. 520 chain and a plain guide, but with a nifty spring-loaded tensioner.



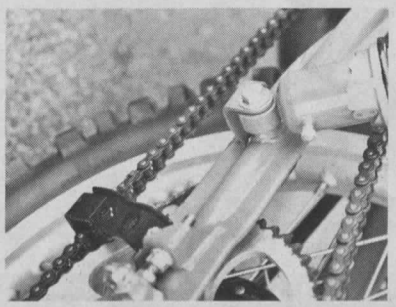
SUZUKI

The Suzuki also uses No. 428 chain, but with an adjustable, roller-type guide.



HONDA

The Honda uses a No. 428 chain and a plain chain guide.



HAVING

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those two bikes required some attention, and both ends of the Honda needed more help than we could give them with optional parts or oil changes.

We set up the YZ's air fork with ten-weight, using an oil level of 245mm, measured from the top of the tube with the fork fully extended. For riders weighing 150 pounds or less, we put 27 pounds per square inch of air in the bottom air chambers, and 47 psi in the top. For heavier riders, the hot tip was 28 psi in the bottom and 50 psi in the top.

At those settings, the fork delivered 8.4 inches of travel and a fantastic ride at the front. The wheel was able to bob up and down freely over the choppiest ground, yet hitting big, abrupt bumps caused no perceptible bottoming. Unquestionably, the YZ's fork was the best of the lot.

As delivered, the monoshock was sprung a bit stiffly in relation to the front fork. The rear end would dance around on choppy straights, the seat would frequently spank the rider on bumpy ground, and the front end would often nosedive when leaving lipped jumps. After the first few days of riding, we exchanged the stock 212-pound monoshock spring for the optional 201-pounder, and the change made quite a bit of difference.

The softer spring pleased all our riders, since the rear end was then much better behaved. The rear wheel spent more time on the ground, the rear end didn't skitter around or get airborne nearly as much, and nosediving over jumps became a less-frequent problem.

The Suzuki front fork also was rather harsh when delivered to us, so we changed the oil from the standard 20-weight to ten-weight, and set the stepped spring preload washers in their softest position. And one of our testers also reported that he had drained only 180cc of oil from each fork leg instead of the prescribed 223cc. Oddly enough, the fork action was worse after the oil change. We only got about 6.5 inches of wheel movement and the fork felt like it was bottoming, even though we had previously obtained almost 7.5 inches of travel.

We then drained the fork legs and tried using less oil. Finally, at 180cc, we got a full 7.5 inches of wheel travel with beautiful damping and no topping or harsh bottoming. The people at U.S. Suzuki had no immediate explanation for this condition, but we conducted nearly all of the test using 180cc of ten-weight Bel-Ray fork oil in each leg. At those settings, the fork worked better than on three or four other privately-owned RM125As we tried. In fact, the owners of those machines reported a dramatic improvement in their

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HAVING

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forks when they used our recommended oil level.

Once we got it working, the Suzuki fork was almost as good as the YZ fork, but didn't have quite as much travel to work with. Still, the front wheel was very responsive to bumps of all sizes and stayed on the ground nearly as well as the YZ front wheel. The only time the Yamaha fork was noticeably superior was when we'd bash into a big square-edged bump or while braking hard on choppy ground. The RM fork was very good under these circumstances, but the YZ fork was outstanding.

The RM's rear suspension was sheer delight. Except for a very slight decrease in damping after 20 or 25 minutes of hard riding, we couldn't get it to do anything wrong. Even after the shocks faded, the damping and wheel control were well within the range of acceptability.

Otherwise, all the testers praised the RM's rear suspension highly. They all said that the rear wheel spent more time on the ground than any other 125's suspension they had tried previously. The RM also seemed to get the best traction out of slick or bumpy corners.

The Honda's suspension was too stiff at both ends. The fork action was pretty fair, but not as good as the Yamaha's or the Suzuki's. Choppy terrain jarred the handlebars sharply and often caused the front wheel to chatter off its intended line. The rear suspension was even worse, making the back of the bike hop and dance on washboard surfaces, and fading after only a short period of hard use.

Nevertheless, the Honda could cut competitive lap times. Evidently the wheels were following the terrain fairly well, but the rider was being punished more than on the other bikes. This is most noticeable at the tail end of a long moto, because the hammering of the wheels makes the rider tire prematurely.

There wasn't much we could do to help the Honda's suspension system. There are no springs available as a factory option, the shocks were set on their softest preload, and the front fork oil (automatic transmission fluid) was already about as thin as any oil could be. Better shocks, softer springs, and improved front fork damping are necessary to put the Honda's suspension on a par with the others.

Two important factors for a non-professional, intermediate-level rider are predictability and forgivability, and the RM125A is tops on both counts. It never does anything unexpected—and even when the rider screws up, the bike does everything in its power to bail him out of trouble.

The Yamaha is not so predictable or forgiving, at least not for the average guy. The monoshock system still has its share of handling quirks, and the fickle character of the steering requires the rider to be on his toes at all times.

Considering how much the CR125M skitters around in comparison to the other two bikes, it is still reasonably predictable and quite forgiving by nature. With a more supple suspension, the Honda would probably be almost as friendly as the Suzuki.

COMFORT AND RIDE: Every bike has something nice in this department—and something not-so-nice. The Suzuki had the best overall seating position and control layout for our riders, and its sit-down ride was the best; but the grips were the least-liked of the three. The Yamaha had the best grips and the forks cushioned a rider's arms the best, but the handlebars seemed a bit low and rearward in relation to the footpegs and its vibration level was the highest. The Honda definitely had the best seat but the most bruising ride. The CR's handgrips, vibration level, seating position, and control layout were rated somewhere between those of the Suzuki and Yamaha.

If you hack about one-and-a-half inches off both ends of the Yamaha's super-wide handlebars, all the stock bars feel about the same. The Suzuki gets a few demerits for the shock bulges in the side number

plates because they try to push your feet off the pegs when you stretch back while jumping. You eventually get used to them but you never grow to like them. The Honda has bulges, but they're too far rearward to be a hindrance. The YZ is super-skinny, with no bulges anywhere.

The Yamaha is the quietest of the trio, registering 99.4 decibels in our California-Highway-Patrol-type sound level test. That's not *really* quiet, but better than the screechy 103.7 decibels of the CR, or the healthy 101.6-decibel, big-bike snarl of the RM. The CR comes with a humongous auxiliary muffler and airbox intake silencer that trim the noise level down to 92.8 decibels, but they also seem to cut the performance by an equivalent amount.

Our testers claimed they could ride the RM longer than the other bikes without getting as tired, which is the true test of comfort. Although the YZ had the best fork action, the RM's rear suspension allowed more sit-down riding, and the bike's predictable steering and handling kept the riders from being as tense. The YZ was rated a fairly close second, with the CR third.

BRAKING: All three bikes use conical hubs at the rear, and only the YZ has a conical front hub. The RM and CR use full-width hubs on the front. The Yamaha's rear brake is rod-operated, while cables do the trick on the other two.

Although we liked the RM's sawtoothed steel brake pedal better than the CR's cast aluminum pedal, the normal rear brake action of both bikes was practically identical. The brakes were a little more sensitive than what we would consider ideal, but we generally didn't lock the rear wheel unless we wanted to do so.

The Yamaha's rear brake was far too touchy, however, making it quite difficult *not* to lock the wheel when stuffing the bike into a tight corner. We tried the old put-a-CZ-bend-in-the-brake-rod trick, which helped a little, and filed down the leading edge of the leading shoe brake lining, which helped a lot. But the Yammie's rear brake was still more of a toggle-switch affair than those on the other two bikes.

The front brakes on all three bikes were about equal, providing progressive, consistent, powerful stopping without ever skidding the wheel unexpectedly. And all three bikes exhibited some rear wheel chatter when braking hard on soft or loose surfaces.

RELIABILITY DURING TEST: Now that the motorcycle companies have developed trick frames, long-travel suspensions, and super-powerful engines, they desperately need to get their wheel act together. All three of our 125s plagued us with wheel hassles throughout the test, despite our efforts to avoid such problems by giving the spokes all the attention we possibly could. Nevertheless, the wheels on all three bikes were as wobbly as a room full of winos by the time we finished our comparison.

During the test, the Suzuki broke a total of 16 front wheel spokes on a half-dozen different occasions, and the rim was severely tweaked twice. The Honda broke six front spokes—two the first time and four the second—and after the second incident the rim was so deformed we had to replace it. The Yamaha never broke any spokes, but the rear hub came apart on the fourth day of testing when the spoke flanges on both sides of the hub disintegrated.

In almost every case of spoke, rim, or hub breakage, the spokes had been checked about 15 or 20 minutes of riding time prior to the failure. And we continually found loose spokes just eight or ten hard laps after checking them for tightness. Which means that with the stock wheels, there's a pretty good chance of a spoke failure in the course of a moto, regardless of the kind of maintenance you perform beforehand. With the exception of the rear hub breakage, the back wheels of the bikes were fairly sturdy. But the YZ's front wheel was only acceptable, the Honda's front wheel was frail, and the RM's front spokes were a pain in the neck. Better wheels are the only answer.

Otherwise, the reliability problems we encountered were of a less disastrous na-

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ture. The Suzuki was the most dependable, its biggest non-wheel-related ailment being a tendency to stretch the drive chain more rapidly than the others. And the stamped steel chain guide hit the ground and bent when we stuffed the RM into the bermed, sandy left-hand corners on one of our test tracks.

The Honda lost one of its head pipe springs once, and shed the spring on the bottom of the pipe three times. The left fork seal blew on the second day of riding, one of the seat bolts disappeared, and the rear brake started sticking during a session on a muddy track. Also, the sealing gasket on the air filter element cage continually came unglued and was a genuine hassle to get back in place.

The Yamaha provided us with the greatest number of niggling little aggravations, starting with a disconcerting vibration-induced noise in the exhaust system that sounded like the engine was falling out. We never found a way to cure the noise completely, but at least it didn't create any further problems. The engine vibration also caused the upper rear motor mount bolt to break, and the lower rear motor mount bolt to fall out. The clevis pin that connects the clutch cable to the actuating arm on the engine fell out, and the front brake cable adjuster broke where it screws into the brake backing plate. The steering head bearings loosened considerably, and we once tweaked the front fork out of alignment without falling down or running into anything. At the conclusion of the test, we also found that the vertically-split, two-piece plastic airbox had broken at the bosses for the three screws which hold it together. This allowed the two halves to part and mud and dirt to enter the intake system.

The lesson here is clear and simple: Motocross—especially 125 motocross—is by no means a maintenance-free activity. If you ride competitively on a stock motorcycle, you'll spend as much time fiddling with the bike as you will riding it. And you'll be an expert wheel truer before long. Stronger rims and spokes will help immensely, though, and Loc-tite and safety wire will prevent a lot of other things from parting company.

CONCLUSION: Last year, we had no trouble deciding which bike was the best in our first 125 Shootout. But this time it wasn't so easy. These motorcycles are so good and so evenly matched that coming up with a cut-and-dried, hands-down winner was impossible. Nevertheless, our staff unanimously concluded that for an average rider on an average motocross track, the Suzuki RM125A is the best choice. Its predictable nature, versatile handling, and tractable power keep the rider out of trou-

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ble, yet it is quick enough to run with any box-stock 125—and equal to quite a few modified ones.

But this was no runaway victory for the RM125A: The Yamaha was favored by several pro-class riders who tried all three bikes, and the Suzuki was liked best by most of the Novice, Intermediate, and Junior riders who participated in our test. Very few riders liked the Honda best, although it proved very effective on some tracks, like the reasonably smooth Shadow Glen course at Indian Dunes.

What this apparently means is that if you have the experience and ability to deal with the YZ's slowish steering and semi-squirty power, you may be able to go faster on the Yamaha. Or if you ride on smooth tracks with lots of flat, sweeping corners, the Honda may be your 125-class cup of tea.

But if you're just an average rider competing on an average rough motocross course, we think you'll do better on the Suzuki. And since there are more average riders than there are pro riders, and since it is the average rider—not the pro—who relies on magazine tests to help him select a bike, the Suzuki is our choice as Best 125.

There are no bad motorcycles here, so you'll get a competent motocrosser regardless of which one you choose. The wheels leave a lot to be desired, but one way or another, you'll have to cope with that problem on all three bikes. And with all the hop-up stuff available, most of the handling or power deficiencies of all three bikes can be overcome fairly easily. With those considerations in mind, then, the best bike for you could be determined by some other consideration, like which brand has the best dealer in your area, or which dealer will give you the best break on parts and accessories. In the long run, those factors could prove to be more important than the actual choice of the bike itself.

The 125 motocrossers have come a long, long way in a very short time. If you want to find out just *how* far they've come, go look up a few of your buddies . . . you know, the guys who own several-year-old 250s and 360s, and talk them into a race—say, a 20- or 30-minute moto. If you're as good a rider as they are and want to save them some embarrassment, be compassionate. Give them a head start.