125 MOTOCROSS COMPARISON
Yamaha vs. Kawasaki vs. Suzuki

The Umpteenth Annual Pocket Rocket Shootout Has Produced a Winner...

For most riders the initial toe dab into the motocross pool is a ride on a buddy's 125cc berm fiddle. If the pool seems inviting it's just a short dive into magazines, brochures and fellow rider's opinions to help decide which of the 125 MXers is most suitable. Making the decision is about as simple as picking which of Charlie's Angels to drool over on Wednesday night.

The staff here has been through that dilemma ourselves, so we jumped at the idea of getting three of the best 125s together for an extensive test period. The three machines pitted against each other are the Yamaha 125 YZ-E, the Suzuki RM 125-C and the Kawasaki KX125 A-4. The Honda? Apathy at the design level, an outdated package, and rumors of new things coming in winter all reduced the Elsinore from Prince of the 125s to a spectating peasant. It was best to leave well enough alone for now. The currently available Honda would be fried alive when pitted against our assembled screaming trio.

Motorcyclist TEST

These three entrants didn't make it easy to pick a winner. The bikes are either brand new or have been seriously re-modeled. Nobody sits on their laurels in the 125 class. It moves and advances too quickly for even a momentary breather at the design tables in Japan.

CHANGES

Here's the latest motocross recipe updates. Starting with the Yamaha, the factory has closely paralleled the redesign found on the larger YZ series. The new 125 now has a chrome moly frame, lighter than last year's steel frame, and many times stronger. An aluminum swingarm (25mm longer) pivots on needle bearings and comes complete with the same chain tensioner and guide system as found on the YZ250 and 400 models. A full 10mm increase in rear wheel travel is achieved, and the shock spring has been shortened from 294mm to 287. The monoshock retains its '77 damping and internal piston components. Front suspension travel remains unchanged and is still air assisted with 14 psi of pressure in each leg. The front forks, like the Kawasaki, are supported on tapered roller bearings. Rear brake squeak is eliminated due to new webbing designs on the non-floating backing plate. The overall machine tipped the scales one kilo (or 2.2 pounds) lighter than last year's at 206 pounds.

The engine has been tinkered with, particularly in the combustion chamber. Internal head design has changed from the offset dome configuration to a better burning hemispherical design. One more fin has

PHOTOGRAPHY: DALE BOLLER RICH COX PAT BROLLIER

125 MX Comparison

been added to the cylinder, bringing the total to seven fins. Port timing has been altered and the exhaust port was raised half a millimeter. The single-ring piston is replaced with a two ring set-up for better sealing properties and more consistent performance at high operating temps.

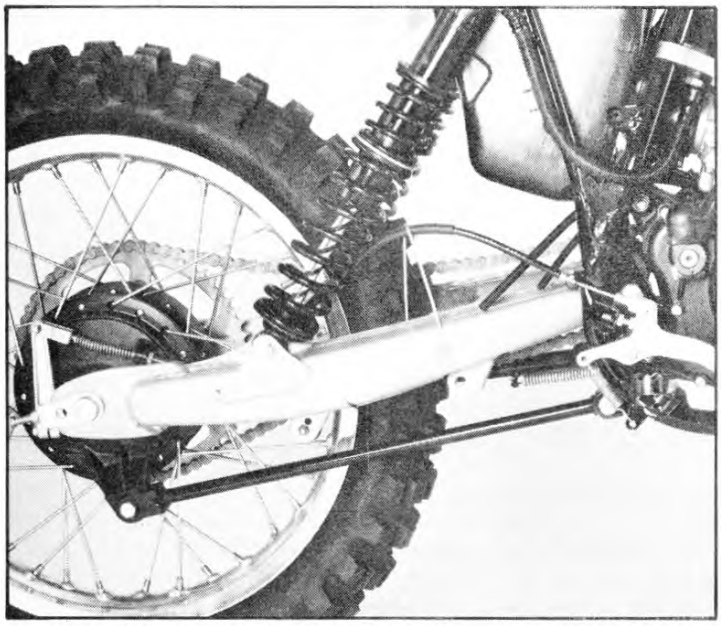
In their after sales research Yamaha found some pitted crank pins they didn't like, so the new machines have shot peened pins. The kickstarter crank boss has been beefed due to a few failures last year, and to round out the package, new pipe cone dimensions are matched to the altered powerband for better low-end. For the second year in a row, the YZ comes with a No. 520 chain.

The Suzuki camp has also been extremely busy. The 125 is one of their favorite engineering pieces, so it enjoys special attention. It also claims a new aluminum swingarm and chain adjuster. The Kayaba shocks have adjustable damping just like the bigger RM models. Spring rate has changed slightly by using a split rate, two springs per shock, the first being softer and the second being stiffer than the B model. This results in the same amount of force required to bottom the shocks, but better response over small stutter bumps. Rebound damping is a little softer overall. In comparison to the B model which was rated at 90 kilograms per .3 meters (a method used to measure rebound speed and force) the C model gives you a choice between 82 (stock) and 74 kilograms per .3 meters if you adjust to the soft click of the damper rod (explained in owner's manual).

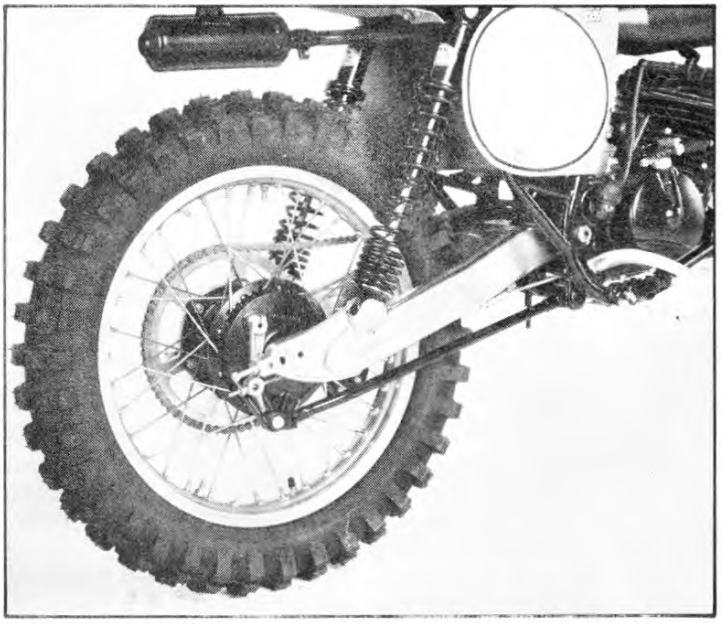
The rear brake backing plate is fully floating with double ball bearings sealed for long life. Sprocket mounts are beefier, a rubber band keeps the cable operated brake away from the rotating knobby and the whole swingarm moves on needle bearings.

Front-fork travel has increased from 200mm to 230mm. More oil to help reduce foaming (286.5cc) along with decreased pressure in each fork leg (18 psi) and a heavier spring (14.4 ppi) hint at the Suzuki's new habits in front bump absorbing qualities. Due to a new triple clamp offset the rake has changed from 129 to 126mm. There's less trail now (a 3mm decrease) since the forks are moved slightly forward. This also ex-

A quick change rear wheel adorns the YZ, eliminating the possibility of a floating rear brake system.



Suzuki's RM sports an aluminum swingarm, full floating rear brake and gas Kayaba reservoir shocks.



The Kawasaki comes with a gold anodized swingarm, full floating rear brake and Kayaba suspension.

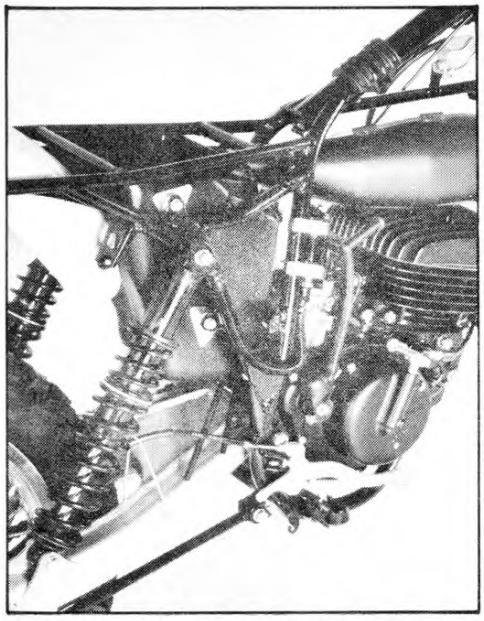
tends the wheelbase by 10mm. Potential Suzuki buyers will be happy to know that the handlebar clamps are now pulled back and rubber mounted, allowing up and down fork adjustment and reducing vibration.

Enginewise the RM-C model enjoys some minor changes. The Keystone ring has been replaced with a single flat ring for quicker break-in and less drag. All the transfer ports have been raised 1mm, the intake has less duration due to a raise of 1.3mm and the timing has been advanced by .5mm, all in an effort to extract more low-end power while retaining Suzuki's custom of having the fastest revving powerplant. Low-end power seems to be the objective at both the Y and S camps this year. Minor jetting changes and a new set of ribbed plastic fenders in addition to a plastic tank round out the new offering, which is the heaviest at 213 pounds.

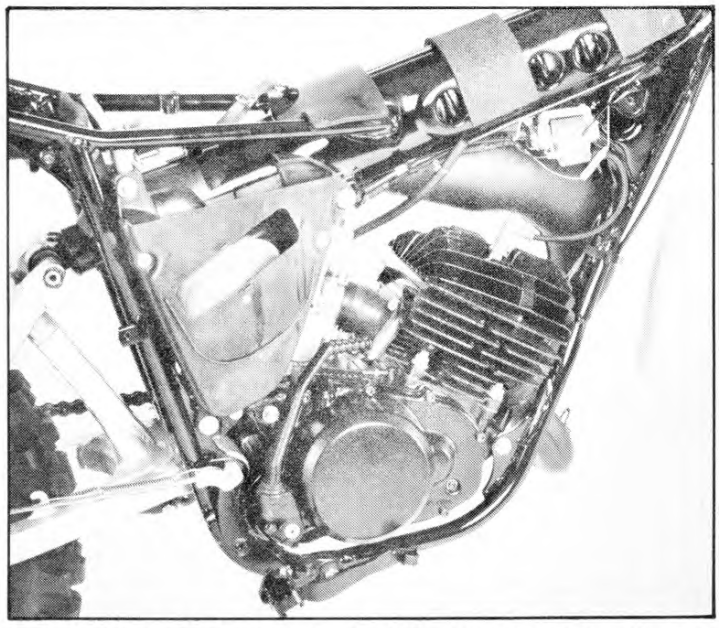
The final member of our trio is the Kawasaki. Folks down at the Big K don't like to compare it to what they've had in the past. They'd rather give some background on the all new 125, which parallels the KX250 in design, R&D and marketing. The KX125 was a combined effort of both the U.S. and Japan. In the 1977 season Jim Weinert and Steve Johnson ran the little 125 in four National events, making suggestions to the Japanese parent company about changes. Since "The Jammer" raced last year, the machine has seen these changes. It's got a better powerband than his prototype, the countershaft has been moved back to eliminate chain problems and cosmetic parts have been polished.

The Kaw is very similar to its competitors in many ways. It has a six-speed gearbox, reed valve, 32mm carb, CDI ignition and Kayaba suspension. Plastic fenders and gas tank come with the price of admission, along with the honor of being the lightest of all—200 pounds exactly. Internal cylinder configuration is very similar to the Suzuki. Variations are found in the design of the single ring piston, and the utilization of patented Boyesen reed valves. It also comes with a double down tube frame.

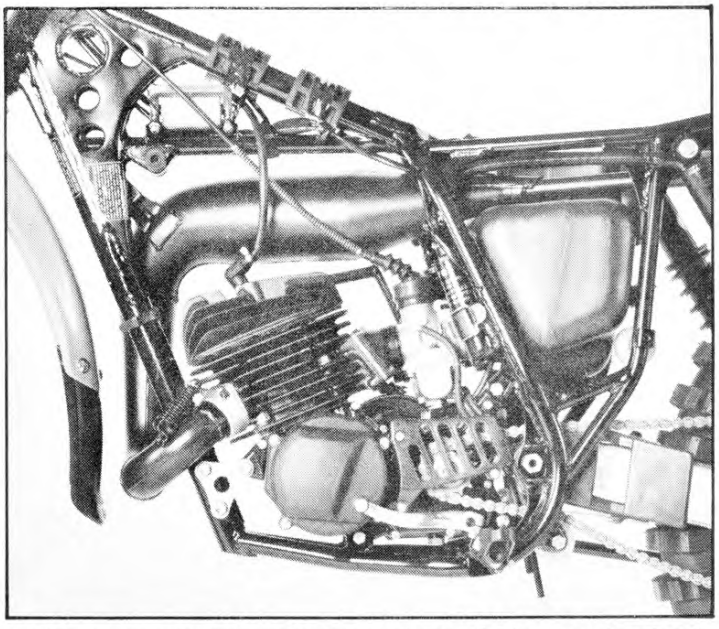
We'll break the news to you right now. The chances are excellent that the Kawasaki is going to cost you a lot more than the other two machines, if you can buy one. Only 2000 were made and sold to dealers through Kawasaki for a rather high price. The dealer has the option of selling to a privateer, or putting his hottest sponsored rider aboard. If he decides to sell, he sets the price him-



The RM's shock lines snake past the airbox to the reservoir, mounted to the frame aft of the kickstarter.



Of the three bikes, Yamaha had the best powerband and gearbox ratios. Motor is compact and very bulletproof.



KX's powerplant is potent and light. CDI cover is plastic while clutch cover is magnesium. Carb is 32mm.

125 MX Comparison

self, and it is likely to range between $1100 and $1500. This limited availability situation will reportedly change next year. Expect to see boatloads of KX125 and KX250 models in the 1979 buying season.

If you can lay your hands on a KX125, you will get much more for the extra money. The green and gold color scheme looks identical to the works bike, of which the KX125 is a direct descendant. The rear swingarm is aluminum and gold anodized, mounted up to Kayaba's best remote reservoir shocks. Both DID wheel rims are also gold anodized, as are the motor mount plates. Heavy duty spokes lace to the beefy magnesium hubs, and a full-floating rear brake with needle bearings and bushings keeps rear hop to a minimum. Full length fork guards and a mud flap are up front, along with tapered Timken roller bearings in the steering head. The lower fork legs are equipped with finned oil reservoirs similar to those found on the KX250. Magnesium is used extensively, part of the reason the KX was the lightest lightweight at our pre-bash weigh-in ceremonies. Included in the mag package are wheel hubs, backing plates and clutch cover. The plastic CDI cover is even lighter than magnesium. The rear brake pedal routes above the footpeg and is aluminum.

PROCEDURE

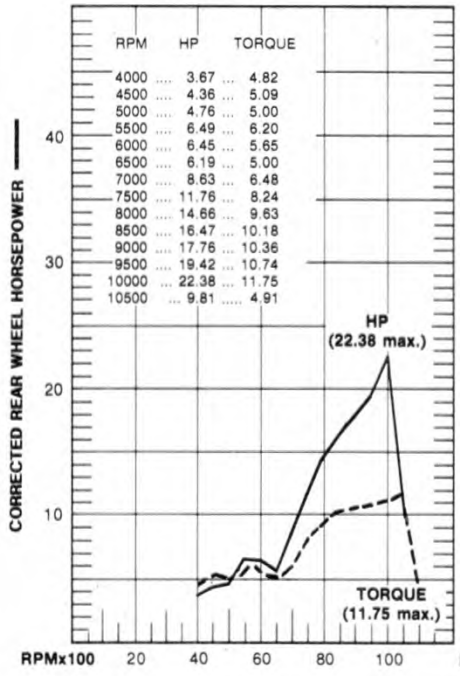
We found out through our testing that although the three appear almost identical technically, their suitability to particular classes of riders varies greatly. Our testing procedures included repeated drag races with riders of identical weight (165 pounds), swapping bikes after every three drag runs. Then motos were run with riders of varying abilities from novice to expert, and in weight from 165 to 210 pounds. Each rider ran each bike in a moto, gave his impressions, and then jumped-on another machine. When all the results were tabulated, definite winners for related caliber riders were found.

IMPRESSIONS

All of the riders felt that ground clearance on the Yamaha was hampering. In stock trim, the YZ sits very low. This can be changed by merely moving the suspension up (dropping the forks), tuning the monoshock and varying spring preload and air pressures. At stock settings the footpegs will drag on the ground, catch berms, and the lower frame cradle hits when coming off fast, high jumps. With the bike in this state, it still was undoubtedly the easiest to ride in the corners. The YZ turned better and was able to ace out the other machines when it came to tight twisty sections of track. The IRC rear tire was excellent and complimented the low center of gravity in cornering. Complaints about the bar/seat/peg relationship were numerous. The

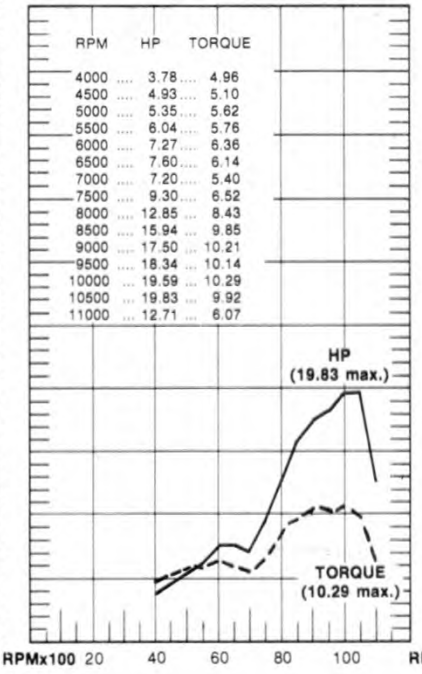
KAWASAKI KX125-A4

RPM	HP	TORQUE
4000	3.67	4.82
4500	4.36	5.09
5000	4.76	5.00
5500	6.49	6.20
6000	6.45	5.65
6500	6.19	5.00
7000	8.63	6.48
7500	11.76	8.24
8000	14.66	9.63
8500	16.47	10.18
9000	17.76	10.36
9500	19.42	10.74
10000	22.38	11.75
10500	9.81	4.91



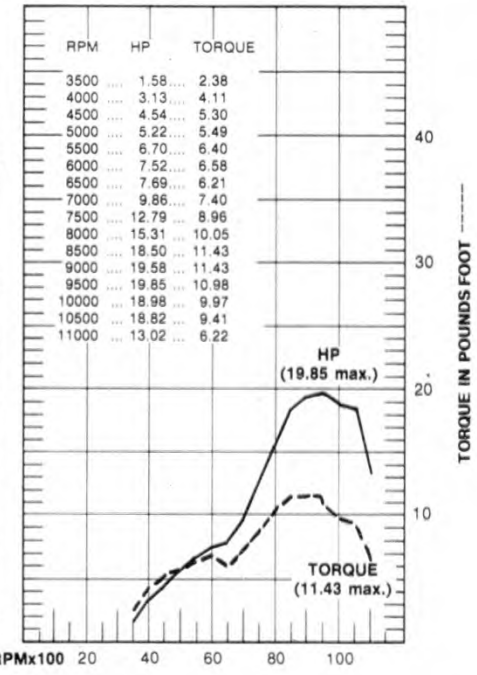
YAMAHA YZ125E

RPM	HP	TORQUE
4000	3.78	4.96
4500	4.93	5.10
5000	5.35	5.62
5500	6.04	5.76
6000	7.27	6.36
6500	7.60	6.14
7000	7.20	5.40
7500	9.30	6.52
8000	12.85	8.43
8500	15.94	9.85
9000	17.50	10.21
9500	18.34	10.14
10000	19.59	10.29
10500	19.83	9.92
11000	12.71	6.07



SUZUKI RM125C

RPM	HP	TORQUE
3500	1.58	2.38
4000	3.13	4.11
4500	4.54	5.30
5000	5.22	5.49
5500	6.70	6.40
6000	7.52	6.58
6500	7.69	6.21
7000	9.86	7.40
7500	12.79	8.96
8000	15.31	10.05
8500	18.50	11.43
9000	19.58	11.43
9500	19.85	10.98
10000	18.98	9.97
10500	18.82	9.41
11000	13.02	6.22



bars were low, the pegs were too far back, and the seat has very soft padding which allowed the frame rails to put distinct marks on the rider's rear end. Yamaha's new dog-leg power levers got the nod as the nicest controls, although riders complained that the levers, along with the side panels and kick starter, vibrated around while the bike was running. It was also the loudest of the three.

The Yamaha had the best powerband and most cooperative gearbox ratios. Even though you couldn't shift under full power, despite assistance from the clutch, the Yamaha almost always had available power when you needed acceleration. A smooth, well-matched powerband made riding the bike simple. In top end power, there wasn't much happening, or so it seemed, because the transition from mid-range to peak revs is so smooth, and because the power really goes flat immediately past its peak.

Suspension was extremely soft out of the crate and sagged more than the other two machines. However it is infinitely adjustable and can be tuned for any caliber of rider, or any type of track, something that its competitors would rather not talk about. Although it's maneuverable and very accurate in corners, confidence when you're traveling over rough sections at a fast pace is lacking unless the suspension is stiffened up to owner's manual instructions.

Of the three machines you could get on the Yamaha and immediately go fast due to the nice powerband, gearbox and good low-speed maneuverability. However race winning speeds require suspension tuning and new handlebars that don't feel like they're sitting in your lap. A real firm seat couldn't hurt either.

The Suzuki RM got favorable feedback in many areas. Everyone liked the powerband, mainly because of its ability to pull fairly well from the bottom end, yet still have its customary banchee cry at high revs. The powerband was good, but didn't cooperate as well on bottom end as the Yamaha. The Suzuki was more at home flying down straightaways, shifting gears as quickly as you could turn the throttle.

Our major complaint was about the front forks. When traveling over stutter bumps the forks had a tendency to "pump down" or remain in a compressed condition instead of instantly rebounding. This resulted in jolts through the handlebars when a series of bumps were encountered. Better fork oil and some spring tuning should alleviate the problem. In stock trim it's noticeable and can be a deterrent to winning. All the riders felt that the RM was comfortable to ride. The bar/peg/seat relationship was nice, very reminiscent of a PE model. The RM sits taller than the Yamaha and thus makes serious berm stuffing or inside lines a little harder to achieve. Everyone liked the new full-floating rear brake which diminished the back-end hop found on previous models.

In acceleration tests, the Suzuki was at its fastest when speed shifted with the clutch, leaving the throttle

	KAWASAKI KX125-A4	YAMAHA YZ125E	SUZUKI RM125C
Suggested retail price	Set by dealer	$1068	$1089
Warranty	None	None	None
Number of U.S. dealers	1200	1600	1300
Cost of shop manual	$6	N.A.	N.A.
ENGINE			
Type	Two-stroke reed-valve single	Two-stroke reed-valve single	Two-stroke case-reed single
Displacement	124cc	123cc	123cc
Bore x stroke	56.0 x 56.6mm	56 x 50mm	54 x 54mm
Compression	7.5:1	7.4:1	8.0:1
Carburetion	1, 32mm, Mikuni	1, 32mm, Mikuni	1, 32mm, Mikuni
Ignition	CDI.	CDI	CDI
Lubrication	Premix; Bel-Ray 50:1	Premix; Yamalube R, 20:1	Premix; Suzuki CCI Oil 20:1
Lighting output	No provision for optional lighting	No provision for optional lighting	No provision for optional lighting
DRIVETRAIN			
Primary transmission	Spur gear 3.6:1	Helical gear 3.2:1	Spur gear 3.4:1
Clutch	11 plates wet	11 plates wet	13 plates wet
Secondary transmission	½ x 5/16 Daido chain, 14/63	⅝ x ¼ Daido chain, 12/51	½ x 5/16 Daido chain, 14/59
CHASSIS			
Fork	Kayaba air/oil, 9.3-inch travel	Kayaba, 9.3-inch travel	Kayaba air/oil, 9.2-inch travel
Shocks	Kayaba gas, 7.5-inch travel	Kayaba, 9.3-inch travel	Kayaba gas, 8.9-inch travel
Front tire	3.00-21 Dunlop	3.00-21 IRC GS45F	3.00-21 IRC GS45F
Rear tire	4.00-18 Dunlop K88	4.00-18 IRC GS45F	4.10-18 IRC GS45F
Rake/trail	30°/5.1 in. (130mm)	30°/5.5 in. (133mm)	30°/5.0 in. (126mm)
Wheelbase	55.0 in (1395mm)	56.0 in. (1422mm)	55.3 in. (1405mm)
Seat height	36.5 in. (927mm)	35.5 in. (902mm)	35.5 in. (902mm)
Ground clearance	12.5 in. (317.5mm)	11.5 in. (292mm)	11.8 in. (300mm)
Fuel capacity	1.77 gal. (6.7 liters)	1.5 gal. (5.7 liters)	1.6 gal. (6.0 liters)
Wet weight	200.5 lbs. (90.95 kg.)	206 lbs. (93.4 kg)	213 lbs. (96.7 kg)
Colors	Green	Yellow	Yellow
PERFORMANCE			
Power to weight ratio, unladen	8.95 lbs./hp	10.38 lbs./hp	10.77 lbs./hp
Speed in gears @ redline	1st 21.52 mph; 2nd 28.32 mph; 3rd 35.10 mph; 4th 42.10 mph; 5th 48.43 mph; 6th 53.22 mph	1st 25.3 mph; 2nd 33.2 mph; 3rd 41.5 mph; 4th 49.8 mph; 5th 57.1 mph; 6th 62.3 mph	1st 25.8 mph; 2nd 34.4 mph; 3rd 42.7 mph; 4th 50.6 mph; 5th 57.6 mph; 6th 63.0 mph

125 MX Comparison

wide open at all times. Shifts were easy to make, required little pressure and rarely did we find a false neutral. The powerband on the RM didn't peter out like that on the other two machines.

All our riders had trouble with the rear brake pedal. Since it's tucked under the clutch housing, it's rather elusive to anything larger than a size 9 boot. It also has a tendency to get hung up on the boot soles, resulting in the brake coming on when hard bumps were hit. The RM was the most predictable slider, and actually slid around a tad more than we liked. It also had the highest rate of wheelspin under acceleration, putting itself at a slight disadvantage. If the wheelspin had been eliminated through the use of a different tire or possibly a heavier flywheel, the Suzuki *could have* been the fastest in the drag races every time.

It was easy to recover from mistakes on the RM. Quite often our riders found themselves a little too sideways in corners with the powerband falling off. But a stab of the clutch resulted in quick power and hard acceleration out of a corner. When push came to shove, the Yamaha could scoot out of a corner faster than either the RM or KX if either wasn't on top of the powerband.

Side panel bulge bothered some of our riders who position themselves farther back over the seat than the masses. The RM was also noticeably longer than the other bikes and thus required more thought and work in the corners. The complaints about front end wash also came up in post-race sessions.

Impressions about the Kawasaki always seemed to include the statement that "it's not for a novice—this bike is obviously built by serious racers." The KX requires more talent and experience than the novice can put out to reach its full potential. Of the three machines the Kawasaki was pipey, lacked the bottom end power of the other two, and initially required more thought and attention to make it go fast. The gear ratios are beautifully coordinated when the machine is in high-rpm ranges, yet a miscalculation in gear selection results in a serious power bog.

The KX was considered the most stable and solid feeling of the three machines. The faster you went, the better and easier it worked. Nothing jiggled or rattled over bumps. It's the only test bike that was admittedly

LAP TIME BREAKDOWN

Lap times ranged from 1:07 to 1:13

The chart below records how often each machine turned specific lap times out of 20 lap runs in traffic.

XZLAG	1:07	1:08	1:09	1:10	1:11	1:12	1:13
KX125	2	4	2	7	4	1	0
RM125	0	2	4	7	1	3	3
YZ125	0	1	5	7	5	1	1

AVERAGE LAP TIMES

KX125	1:09.50
RM125	1:10.04
YZ125	1:10.15

DRAG RACE WINS (15 races)

KX125	6
RM125	4
YZ125	5

Suzuki won the award for the best pipe placement and thinnest package. Everything is very compact.

Only the pipe, footpegs and shocks are wider than the forks on the KX, making it narrow for a MXer.

In this stripped shot you can see that the YZ's mid-section has a slight bulge for the air box.

superior to our riders: "This bike can go faster than I can." To make it work you had to go fast. All the controls were so well laid out that you never bothered to make note of where they were. When needed, they were always in the proper spot. The whole bike was very responsive to body english, and was the most precise. At high speeds it took less effort and gave better results, provided you could approach its potential. It won the award as the most confidence-inspiring machine because it let you go faster than you thought the terrain would allow. Very little wheelspin, less rider fatigue, and no mechanical engine noises were repeated comments. A-1 riders mentioned how fast the power went soft on the top end and the lack of bottom-end cooperation. Shifting was the best of the bunch due to the fact that you merely had to back-off the throttle a hair, ignore the clutch and snap the shifter into the next gear. It won more drag races than the other machines, yet when it lost due to a rider mistake, it lost by a larger margin. If you understand its needs, it's the fastest, but if it falls off power in a turn, you're out of the hunt.

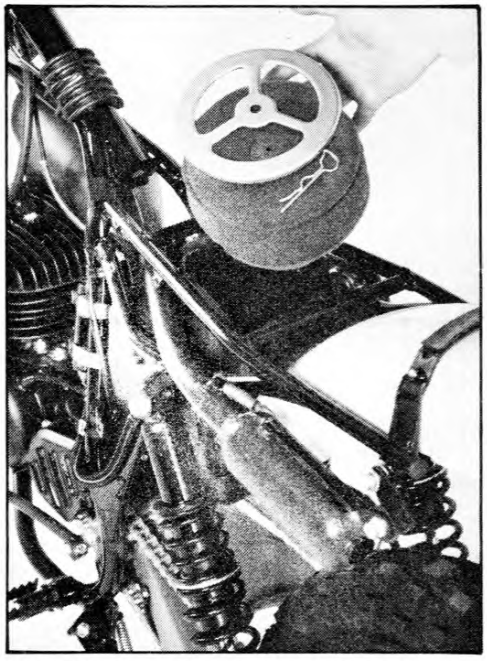
CONCLUSIONS

While all of this might sound confusing, and still hard to pick the bike for you, we found that by breaking the bikes down into novice, intermediate and expert categories, we cleared up much of the mystery.

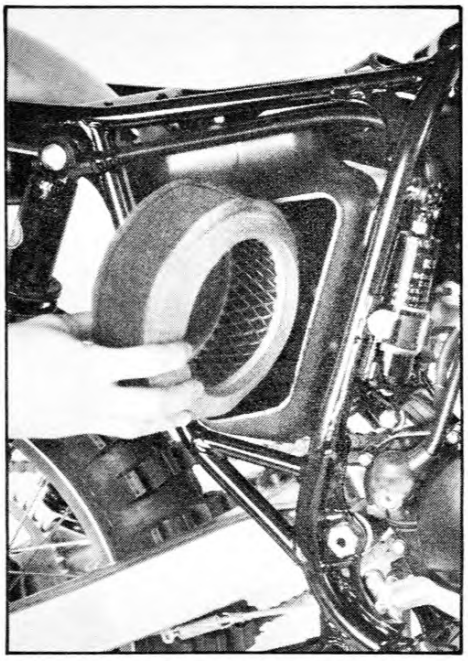
For instance we feel that the Yamaha is the best candidate for the novice or beginning rider. It's happy in the corners, has a good powerband that put minimal demands on the rider, turns well in the corners and doesn't do unexpected tricks in the blink of an eye. It's an excellent bike to start with, get the fundamentals down to a science and put experience under the kidney belt. With suspension tinkering you can advance to intermediate status, knowing that you've got corners, berms and good lines mastered.

The Suzuki overlapped a couple of categories. It is an excellent intermediate's machine. It will tax the rider a bit by forcing him to be more in tune with the powerband. It's great for learning how to take straightaways at a quick clip, yet is forgiving in corners and very consistent in its actions. With the RM a rider could ride the intermediate class box stock and advance into expert divisions. The front forks need attention when you start racing for the bucks.

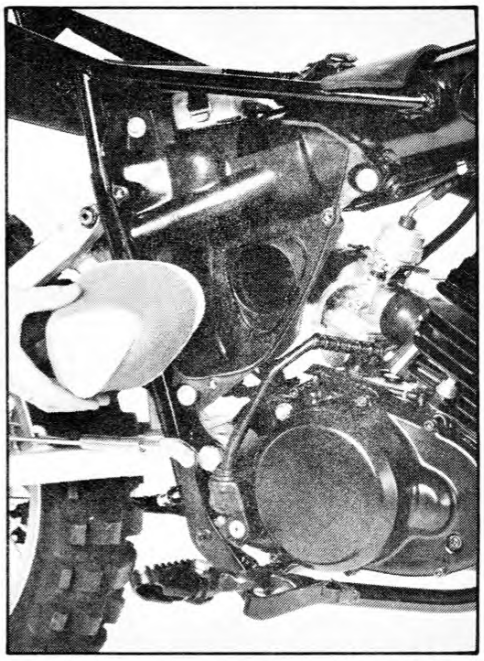
We would not suggest the Kawasaki for either the novice or recently advanced intermediate rider. It's too precise a machine for a rider with middle-of-the-road experience. But in



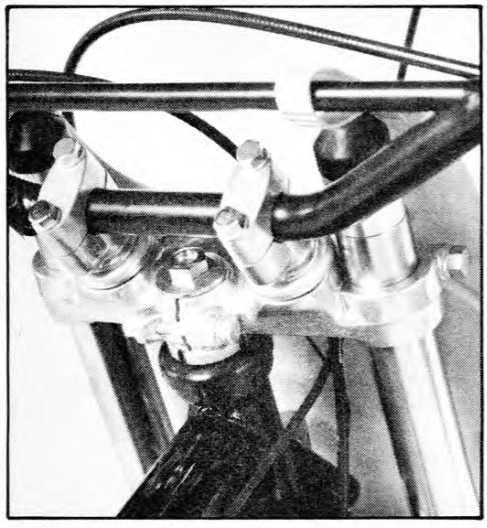
The hardest filter to remove was on the RM. It also should be replaced with a Phase 2 unit for longevity.



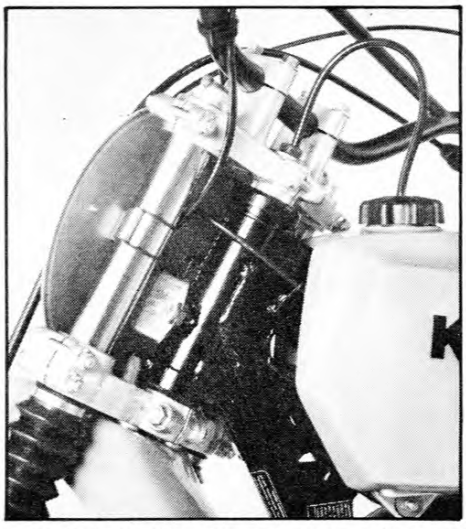
Kawasaki's large round element was the only one which didn't destroy itself during the test period.



The YZ's air box works well, but filter will rip after repeated cleanings. Put in a two element unit and grease.



Suzuki modified the handlebar clamp this year so you could adjust the air forks up or down for each track.



Handlebar clamps on the KX are identical to the works bikes. Air assist forks were rated excellent.

Of all our test bikes, the YZ had the best control levers and grips, with good feel and placement.

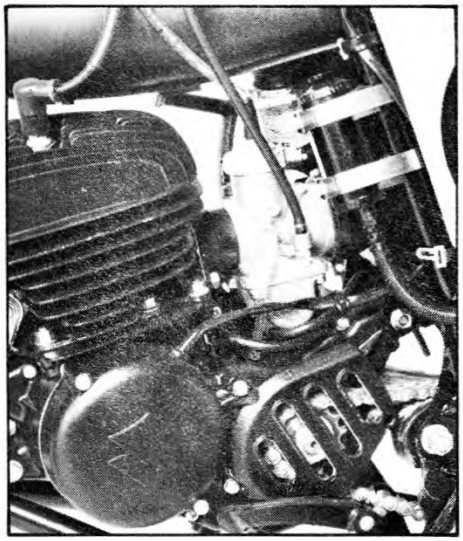
125 MX Comparison

the hands of a seasoned intermediate, or an expert who plans on making his living by racing, it's the best choice. You can go faster on the KX than the other two bikes as our lap-times show, but rider qualifications are higher. When understood, a rider can take the Kawasaki, go faster, and exert less energy than if he was riding the RM or YZ. A novice would be constantly fighting the Kaw's pipey powerband and exactness of its handling demands. The Kaw and Yamaha are farthest apart. The Suzuki fills the void between the two, and overlaps into each of its competitor's territories.

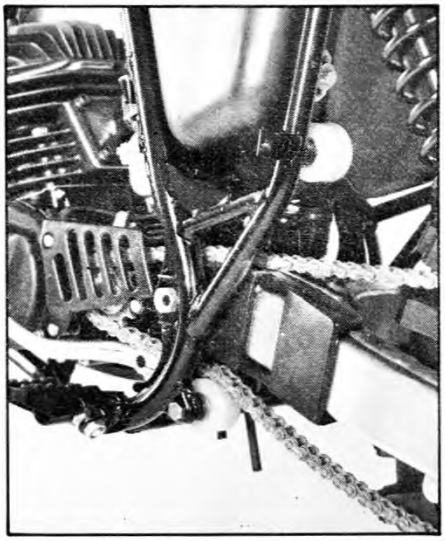
Which bike to buy is a question of your present riding ability, an understanding of that ability and an honest choice of machines. The worse thing you can do is buy a bike that's over your head. If you're an intermediate that just jumped from novice ranks and expect the Kawasaki to work well, don't be surprised when you find your lap times are slower and you're working harder. By the same token, don't expect the stock Yamaha that won the novice race to repeat in the expert bash. The Suzuki can cover both ends, yet is happiest in the middle, or intermediate, place.

THE WINNER

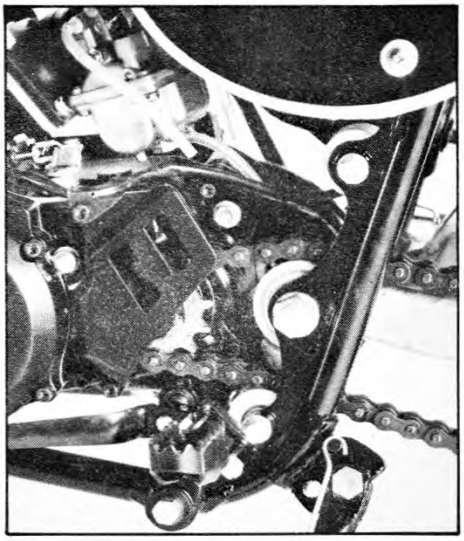
Putting rider ability aside, however, produces a single clear-cut winner: It's the lightest, makes the most dyno horsepower, won the most drag races, has the edge in trick features and, most importantly, averaged half-a-second quicker per lap. For one bike to be better amidst a field as good as these is truly phenomenal. Kawasaki did a lot of homework in the two years they were also-rans in 125 motocross. Now they've got the best bermer going. *M*



RM's countershaft sprocket cover broke on second day of test. Shifter was lightest and best feel of all.



A replaceable rubber guard keeps the chain from sawing through the swingarm on the KX.



Yamaha has used #520 chain for two years now. New guide system is same as found on YZ 250 and 400.