



CYCLE DIRT TEST

KAWASAKI KLX250

When you think about four-stroke dirt bikes, do the words "overweight," "under-suspended" and "torquey" spring to mind?

If they do, Kawasaki's new KLX250 will change your idea of what a thumper is. It's among the lightest 250s available, it has the latest in long-travel suspension design, and it sure is slow.

● KAWASAKI HAS DONE IT. THEY'VE BECOME the first manufacturer to build a four-stroke off-road bike that takes advantage of the technological advances made in long-travel suspension design over the last decade. On two points, the KLX stands in complete contrast to the dirt thumpers which have appeared before it: the green machine has a superb chassis and suspension system, and it has a pro-saic engine. The KLX forces a prospective buyer to decide whether he wants a bike with good handling or appealing power. Right now, he can't have both, no matter what he buys.

When Yamaha introduced the TT500 in 1976, they exposed a whole generation of dirt bikers raised on screaming two-strokes to the beauty of four-stroke power. For example, just off idle—at 2500 rpm—the TT produced just as much torque as the IT400 did at maximum output—7500 rpm. The TT's powerplant was sensational, but the bike weighed over 300 pounds and handled like a World War II half-track. The bike created a booming aftermarket for suspension components and swing arms; at night TT owners dreamed about whole new chassis.

Suzuki came along with the DR370. It was light and nimble compared to the Yamaha 500, and the 281-pound Suzuki could actually be taken up a tight forest trail with some hope of getting up the mountain. But in the real world, a 281-pound dirt bike is heavy; the Suzuki didn't handle well, and with 21 horsepower it was a slow 370cc bike.

Early in 1979 Honda introduced some "enduro-ready" four-strokes. The XR250 and 500 had excellent engines—and in regard to the 500 you can emphasize *excellent*—and reasonably good suspension. But they were both heavy, which made the suspension seem marginal.

For the past three years Yamaha, Suzuki and Honda have shared a single approach to four-stroke dirt bikes—call them enduro racers or play bikes. Concentrating on the engine side of the play bike formula, these companies have apparently believed that thumper-lovers don't appreciate good suspension and light weight. In fact, though, there's a very good reason behind the use of pedestrian suspension components: money. Generally, four-stroke engines have more parts and therefore cost more to produce than

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two-strokes. Spend the money on the engine and you can't spend it on the chassis, unless you want to produce a very expensive machine.

Though Kawasaki is not willing to market an expensive machine, neither have they taken the now-standard approach to building a four-stroke. They've employed an alternative and practical plan to produce a high-quality and inexpensive machine, and it's the most promising method used so far in designing and building an off-road thumper. Kawasaki has taken the chassis and suspension from the KX125 motocrosser—a proven winner with state-of-the-art components—installed a KL250 engine and dubbed the hybrid the KLX. Nowhere is it written that such a mix-and-match necessarily works, so don't expect to see XR250 engines turning up in CR125R frames next year. But the Kawasaki KLX does work. In 1979 *all* of the available off-road thumpers need work to be superior dirt bikes, and it happens that hopping up an engine is less expensive than trimming weight and fitting better suspension units.



Since Kawasaki could use existing tooling, the company could manufacture the KLX pretty economically and pass along those savings. The KLX costs \$1649; that compares well with the \$1548 Honda

XR250, the \$1699 Suzuki PE250 and the \$1698 Yamaha IT250, even though the latter two are two-strokes.

Assembling a hybrid, even for a factory, is not without its hazards. Problems can



appear when an engine or chassis intended to perform in one way is given a new assignment. The KLX has one major problem: it's slow. The 250 is not mildly, timidly slow; it's excruciatingly, triumphantly, prodigiously and blatantly *s/ow*. Consequently, thumper-fanatics have a choice: handling (the KLX) or you can have power (most notably the XR500).

The KLX's no-surprises engine arrives nearly part for part from the KL250, Kawasaki's work-horse dual-purpose bike introduced in 1978. In every respect, the 246cc engine is designed for mild, reliable performance. A one-piece cylinder head houses mid-sized valves: a 37mm intake and a 31mm exhaust. Each valve is one millimeter larger than the 1979 KL's; the KLX designers hoped this minor change would make the bike rev higher and produce more power. In fact, the KLX develops about one-half horsepower more than the KL at a peak 500-rpm higher.

Techno-freaks won't OD on Kawasaki's stone-simple single. The camshaft rides directly on plain-bearing journals. While a camshaft mounted on ball or roller bearings may withstand more abuse (such as the neglect of oil changes), an ordinarily

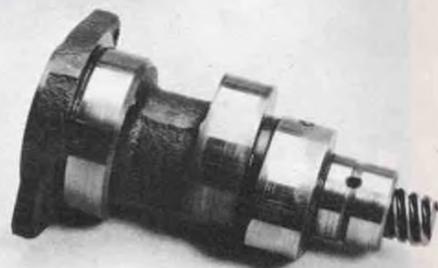
prudent owner will find no problem with a plain-bearing-mounted camshaft. The KLX uses an automatic cam-chain adjuster, which the KL does not have. This device employs a spring-loaded shaft pressing against the rubber tensioning rail to hold the cam chain taut, keep the chain quiet and minimize tedious servicing chores.

Other top-end components are equally straightforward in the 70 x 64mm engine. A one-piece connecting rod rides on caged roller bearings at the big end, and the piston mounts on the plain bearing surface of the rod's small end.

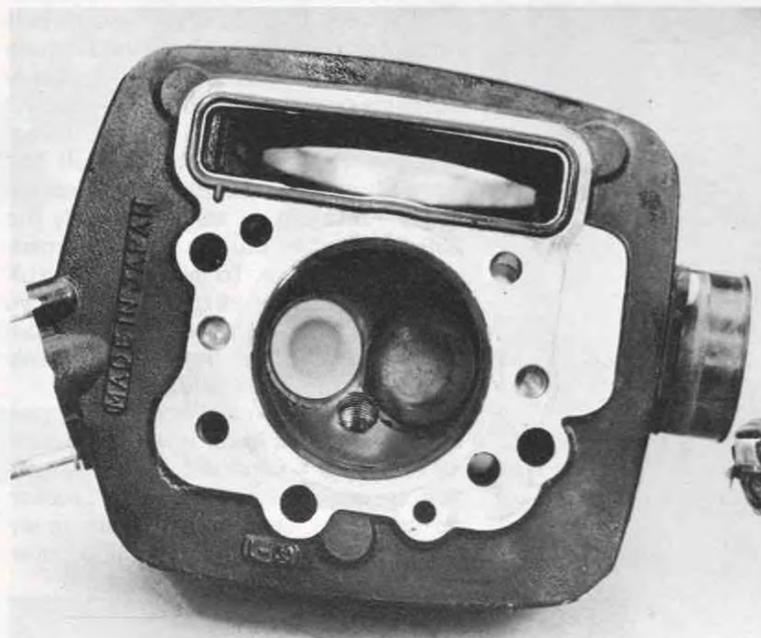
Both the induction and exhaust systems of the KLX differ from the KL's. A 32mm Mikuni carburetor replaces the dual-purpose bike's 28mm unit and is another device helping the enduro bike to rev higher. The KL's downswept, heavily-muffled exhaust pipe would have been unacceptable on the KLX. A slightly upswept straight-pipe tucks in nicely behind the right rear shock, where a USFS-approved spark arrestor and very adequate muffler attach. The basic KL engine makes a virtue out of the tried and true approach. The KLX unit has no counter-

balancers, no twin pipes, no third or fourth valves, no power chambers. It's just a no-nonsense engine with very little horsepower or torque.

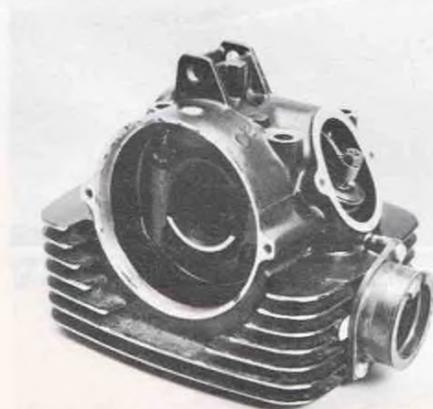
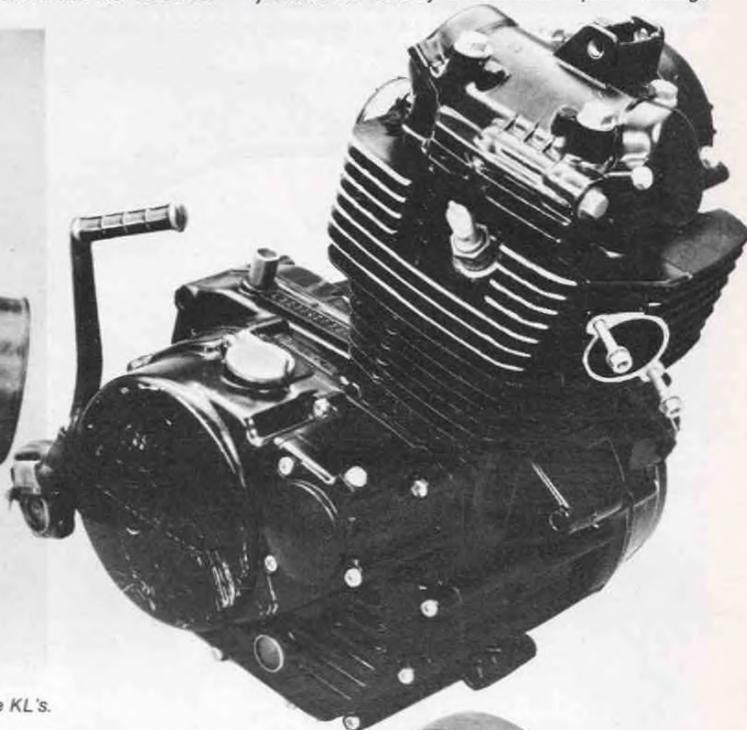
There are a couple of benefits to such a mildly tuned engine. In any circumstance the KLX starts easily with only one prod at the kick lever. On two separate occasions the KLX was lying exactly upside down while *Cycle's* testers were picking themselves up and getting back to the bike. Both times the 250 started first kick. Heavy



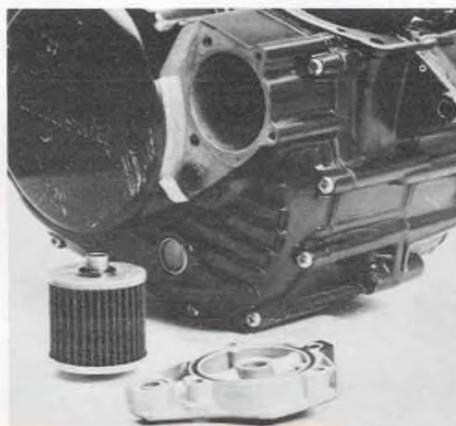
Camshaft is driven by a standard roller chain; its journals ride directly on the head's plain bearings.



Intake and exhaust valves (37 and 31mm) are each one millimeter larger than the KL's.



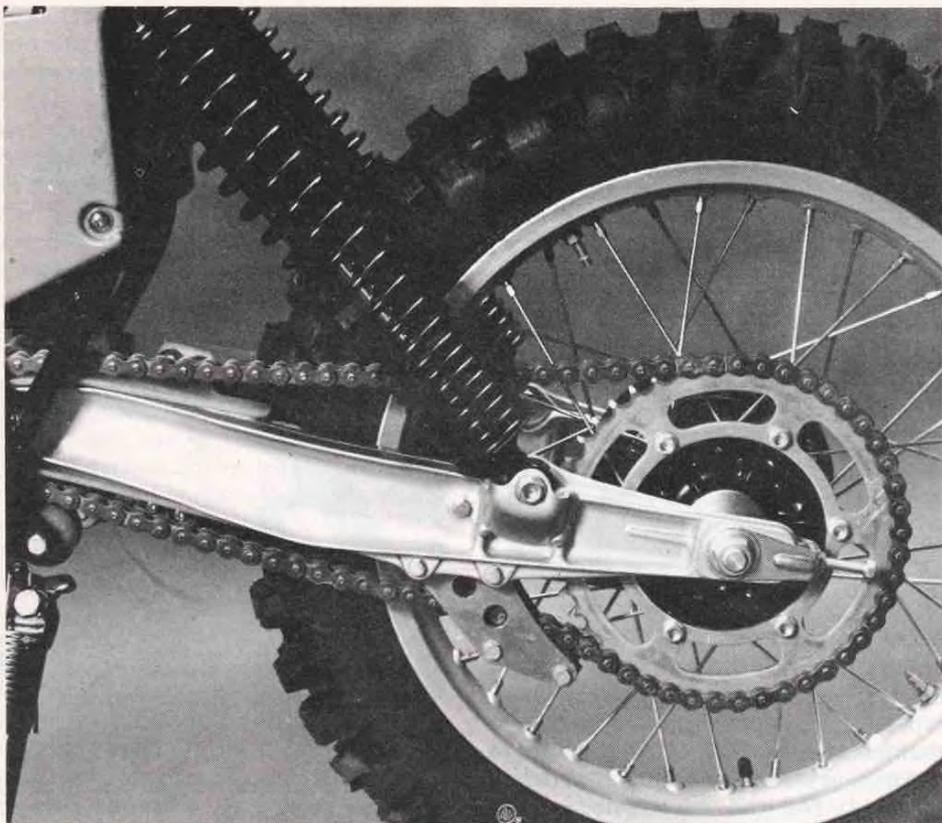
The KLX uses a one-piece cylinder head; the KX frame was slightly modified to accept the tall four-stroke. JULY 1979



Oil filter is easily accessible now that the KL's clutch cover has been modified for use on the KLX.



To produce any significant power the KLX needs to be run in its high-rpm range, but heavy crank flywheels inhibit quick revving.



The KLX and the KDX (Kawasaki's 400cc two-stroke enduro bike) share a new extruded aluminum swing arm.



Kawasaki offers some enduro options. This lighting kit, including all the necessary wiring, costs \$49.95.

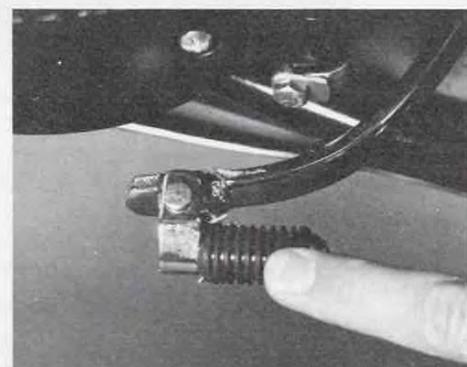
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flywheels—both ignition and crankshaft—help the Kawasaki start easily. Once the kick gear gets the flywheels turning, the inertia keeps the piston going until the combustion process begins. Another result of the heavy flywheels is the engine's tendency to gain revs very slowly. Since there's so little power available, however, less flywheel effect would be appreciated because the rider must get the 250 into the peak of its powerband quickly and keep it there if he has any interest in fast riding.

At its peak—from 7500 to 9000 rpm—the KLX produces a whisp more than 17 horsepower. That's exactly what the Suzuki PE175 makes; it's also three horsepower down on the Yamaha IT175F and about two horsepower short on the Honda XR250. Comparisons with two-stroke 250s would only serve to make the KLX look silly.

Exactly what do those figures mean when the Kawasaki rider gets on the trail? As you would expect, the KLX is most at home on tight trails where its power shortfall is not so noticeable; with some clutch work and careful planning, you can keep the 250 revving hard enough in a low gear to whip the bike up short, rough hills without any problems. Longer hills require a good fast approach. Slides are nearly out of the question; the 250 simply doesn't have the power to keep the rear wheel spinning. Running the machine on fast fireroads or in sand takes the heaviest toll of the Kawasaki. In sand especially the 250 has trouble pulling above the mid-range in fifth gear. To its credit, the KLX carburets cleanly in all rpm ranges; above 3000 rpm the engine responds without bogging even when the rider suddenly cracks the throttle wide open.

There have been a couple of changes made to the KL's lower end to prepare it for KLX duty. A capacitor-discharge ignition system replaces the KL's breaker points setup. Though CDI units rarely need attention, the magneto side cover



Spring-loaded shift lever tip folds back ninety degrees from its original position. Brake pedal is non-folding.

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on our test bike did not properly cover the gasket. Consequently, when the bike was washed or slogged across a stream, water found its way to the ignition system. Secondary insulation of the system must be good, because the 250's electricals never misfired. To be on the safe side, though, an owner should check if his cover's leaking, and if it is, silicone it.

A particular sore spot on the KL250

dual-purpose bike is cleaning the oil filter. The entire clutch cover must be removed, which in turn requires the removal of the right footpeg and the exhaust pipe. This tedious ritual can discourage someone from cleaning the paper filter on the KL. The KLX's right case has been modified to solve the problem. A small removable plate covers the oil filter, and maintenance is now a five-minute affair.

An unmodified KL250 crankshaft, gearbox and clutch are found inside the KLX's

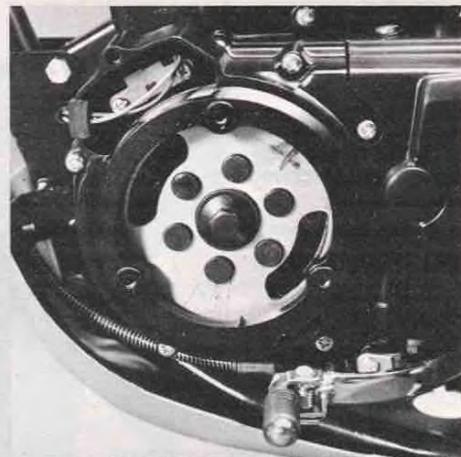
black cases. The pressed-together crankshaft mounts on roller bearings on the left side and ball bearings on the right. Straight-cut primary gears transfer power to the seven-driven-plate/six-drive-plate clutch. During clutch engagement there's very often a curious grinding sound. Throughout the test, the severity of the grinding neither increased nor decreased. At no time did the clutch's performance indicate there was a mechanical failing. In fact, the clutch's operation



Two items unique to the KLX: black paint for the engine cases and a light weight aluminum skid plate.

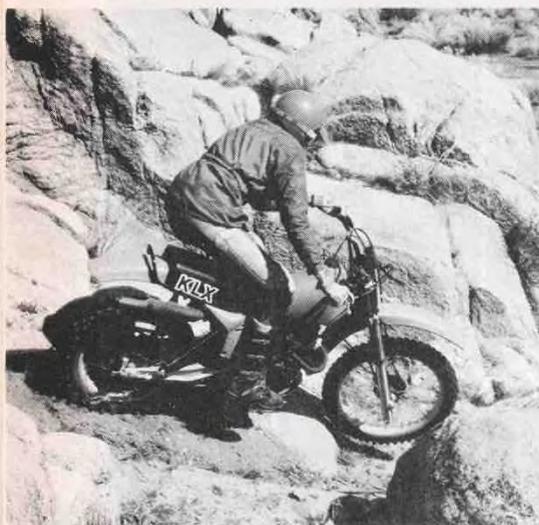


The air cleaner is easy to service; the air box, with its top breather, is almost completely waterproof.



Magnetically-triggered CDI replaces the KL's points system. The side cover needs silicone waterproofing.





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is especially good. There's no fade at all, even with heavy abuse. Upon disassembly of the KLX's engine, the clutch plates appeared completely unmarred. Kawasaki spokesmen had no ready explanation for the grinding noise; it may be an idiosyncrasy of that model's clutch and one which does not result in problems.

A five-speed gearbox transfers power to the countershaft. Mechanical operation of the transmission is very good; the Kawasaki rarely catches a false neutral or missed shift and then only when the rider has fumbled with the lever. Spacing of the gear ratios is excellent. If the rider is on either reasonably level or fairly firm ground the KLX doesn't fall off the powerband through power shifts.

The KLX gets less than sensational gas mileage. On a typical riding session Cycle's testers have a tendency to wring out a machine. Underpowered bikes get thrashed that much harder. In deep sand the KLX returns 25 miles per gallon. Ridden in more typical situations, such as on tight trails or fireroads, the 250 delivers anywhere from 31 to 36 miles per gallon, giving the KLX (with its 2.5-gallon tank) a minimum range of 77 miles. That's enough for a long trail ride or a longer-than-average enduro loop.

The KLX powerplant, including carburetor but excluding exhaust pipe and oil, weighs 74.5 pounds. Compare this with the 79.4-pound Honda XL250 engine and the 78.5-pound Suzuki DR370 engine. It's light compared to the Honda and

(Continued on page 40)

Make and Model Kawasaki KLX250
Price, suggested retail as of 4/21/79 \$1649

ENGINE

Type Four-stroke, single-cylinder with two-valve single-overhead-camshaft head
Bore and stroke 70 x 64mm (2.76 x 2.52 in.)
Piston displacement 246cc (15.01 cu. in.)
Compression ratio 8.9:1
Carburetion (1) 32mm Mikuni
Exhaust system Upswept pipe with silencer/USFS-approved spark arrestor
Ignition Capacitor-discharge; magneto
Air filtration Oiled and washable foam
Oil filtration Replaceable paper filter
Oil capacity 1.5 liters (1.6 quarts)
Bhp @ rpm 17.85 @ 8500
Torque @ rpm 11.81 @ 7000

TRANSMISSION

Type Five-speed gearbox with a 13-plate wet clutch
Primary drive Straight-cut gear; 69/21; 3.29:1
Final drive Chain; 46/14 sprockets; 3.29:1
Gear ratios (at transmission) (1) 29/11, 2.64 (2) 26/15, 1.73 (3) 26/20, 1.30 (4) 21/20, 1.05 (5) 21/24, 0.88

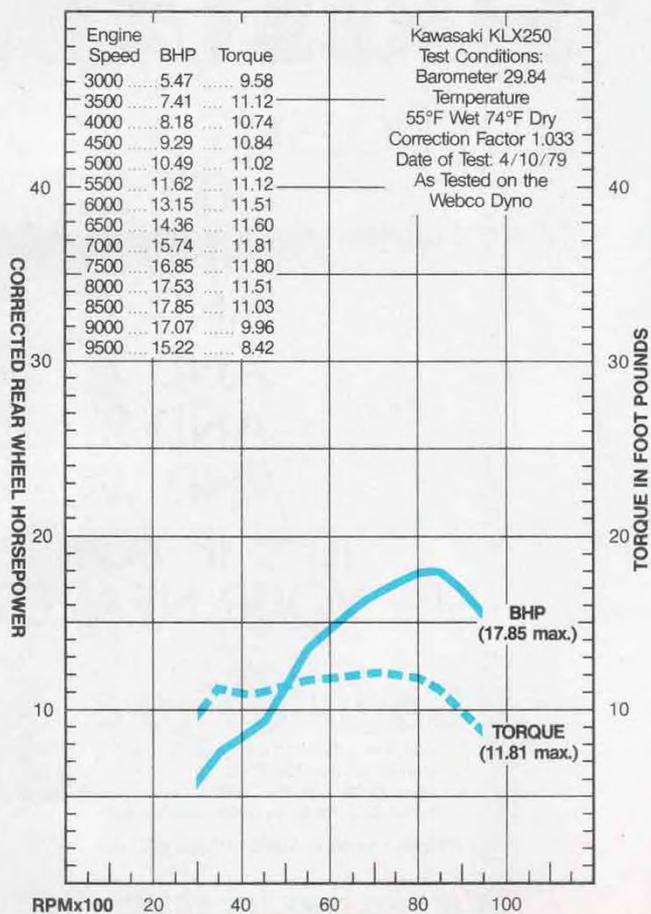
CHASSIS

Type Single-downtube full-cradle chrome-moly frame with extruded-aluminum swing-arm
Suspension, front Air/spring oil-damped forward-mounted-axle fork with 9.8 inches of travel
rear Gas-charged shocks with remote reservoirs and five preload settings, producing 9.8 inches of wheel travel
Wheelbase 1420mm (55.9 in.)
Rake/trail 28°/121mm (4.8 in.)
Brake, front Conical hub; 120 x 28mm (4.7 x 1.1 in.) brake shoes
rear Conical hub; 130 x 28mm (5.1 x 1.1 in.) brake shoes; full-floating design
Wheel, front 1.60 x 21 DID rim with one rim lock
rear 1.85 x 18 DID rim with two rim locks
Tire, front Bridgestone 3.00 x 21 Motocross M17
rear Bridgestone 4.00 x 18 Motocross M20

Seat height 940mm (37.0 in.)
Ground clearance 307mm (12.1 in.)
Fuel capacity 9.5 liters (2.5 gal.)
Curb weight, full tank 113 kg (250 lbs.)
Test weight 190 kg (420 lbs.)

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Kawasaki 250 Continued from page 38 average at best compared to the Suzuki. The KLX weighs 250 pounds; its four-stroke competitors, the XR250 and the DR370, weigh 271 and 281 pounds respectively; its two-stroke class rivals, the PE250 and the IT250, weigh 266 and 262 pounds. The KLX's featherweight chassis gives the Kawasaki its advantage.

A couple of minor changes have been made to the KX's chrome-moly frame to make the chassis trail-ready. The frame member which runs below and parallel to the backbone has been curved to make room for the 250's cam tower. Aside from a few additional brackets to accept such items as the KLX's aluminum skid plate, the frame's only two other differences are a welded-on grab bar behind the seat, and the relocation of the shock's top mounts.

There are more significant differences with the KLX's swing arm and rear suspension. The 250 does not use the 125's gold anodized swing arm. Rather, it and the KDX (Kawasaki's 400cc two-stroke enduro bike) share an extruded aluminum arm which weighs the same as the 125's unit but is 12mm shorter. The rear shock mounts are also farther forward on the 250 than on the 125, and this pulls the 250's shocks in a more vertical position. The shock bodies and damping rods make the units 40mm longer than the KX's. The longer suspension units and the shorter swing arm combine to give the KLX a steeper head angle (28 degrees from the 125's 29), a taller seat height (37.2 from 36.0 inches) and a shorter wheelbase (55.9 from 56.6 inches).

The 250's shock and swing arm differences also give the KLX more rear-wheel travel than the 125: 9.8 inches compared to the KX's 8.8 inches. The

(Continued on page 72)



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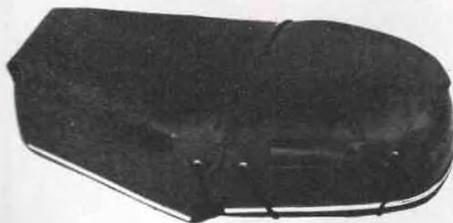
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Kawasaki 250 Continued from page 40
KLX's fork is basically the same as the 125's, having the same travel (9.8 inches), the same damping rods and the same forward-axle and air-spring designs. The 250, thanks to its greater overall weight, uses heavier fork springs; it also has non-finned fork legs.

On the trail it quickly becomes obvious that the KLX needs still heavier fork and shock springs. Though the 250's designers intend the gentle thumper to be exceptionally comfortable (for example, they opted for softer foam in the seat, which otherwise is the same as the 125's), the suspension goes beyond fulfilling the needs of comfort. It's entirely too soft. Over semi-rough terrain, intermediate to expert 250 riders bottom the KLX's suspension about once a minute, or a couple times every mile. The Kawasaki is comfortable; if the rider isn't really gassing it, the 250 is as smooth as any enduro bike made. The fork and shock damping is progressive without any hitches, and it never fades. The amount of travel, too, is sufficient to allow the rider to berserk it with confidence.

In an attempt to stiffen the fork action by simply increasing the air pressure in the fork, *Cycle's* testers fiddled endlessly with the front suspension. Kawasaki spokesmen recommend 14 psi in the fork, and the KLX service manual cautions the owner not to exceed 36 psi. With 14 psi, the fork is ridiculously soft and bottoms unacceptably often. Adding air in one-to two-pound increments, we stopped inflating at 26 psi; at that pressure the fork made the front wheel skittery and topped out every time it had a chance to extend fully. For *Cycle* testers the optimum pressure was 22 psi; with that pressure the fork would top occasionally but still provide good control and seldom bottom. Still, we believe the best way to eliminate the bottoming problem is to install heavier fork springs and use the recommended air pressure.

Even though the suspension is too soft, the basic chassis performs exceptionally well. Over whoops the KLX tracks straight, and side-hopping is never a problem. On tight trails—or in any situation which requires the rider to turn quickly—the 250 steers precisely with just a hint of oversteering apparent. Sliding isn't the KLX's long suit, but the bike's lack of power, not its chassis, accounts for the reluctance to slide.

Overall, the KLX is a pleasure to ride. It's light, and that encourages the rider to throw the bike around. Its seating and peg positions are comfortable; even though its 37-inch seat height is tallish for an enduro/play bike, the bike settles on its suspension to lower that height, and the seat's foam also collapses more than is usual, allowing a five-ten rider to reach the ground easily.

Both of the KLX's wheel assemblies differ just slightly from the KX's. DID alu-

minum alloy rims replace the motocrosser's gold anodized rims. The 250 uses the 125's spokes, but it shouldn't. The extra weight works a real hardship on the wheels. The spokes continually need re-tightening, and at every adjustment there's another opportunity to pull the rim out of alignment. Neither front nor rear brake is overly powerful but both respond progressively and quickly if the rider is willing to exert a lot of pressure on the lever and pedal. Both brakes resist fading when wet.

Now that Kawasaki has introduced the KLX250, all four of the major Japanese manufacturers offer four-stroke off-road bikes that are fun to ride. Three of the companies (only excepting Honda) consider their machines to be play bikes rather than competition machines.

None of the thumpers is ready for competition or even for very hard play riding right off the dealer's floor. The Yamaha TT, the Suzuki DR and the Honda XRs all need better suspension and some weight trimmed to be really fun in the dirt. The Kawasaki KLX, on the other hand, needs only engine work and heavier suspension springing to be really enjoyable on a Sunday trail ride.

The engine work that the KLX needs is less expensive than the chassis work the others require. The KLX will create a demand for high-performance engine components. Some companies already manufacture hop-up parts for the KLX which fit the KLX, and Kawasaki is currently planning to market an engine kit, though at press time they had not decided whether simply to make the 250 more potent or take the alternate route and gain performance by increasing the KLX's displacement. The big question, however, in any major engine hop-up is how much modification an engine will stand without unduly compromising its reliability. In the near future *Cycle* will test the Kawasaki factory high-performance kit, and we'll be interested to see how much more horsepower can be pulled out of the engine, at what price, and with what trade-offs.

If you're planning on spending money on your bike after you buy it, the KLX is a first-rate choice. With a better engine in its chassis, it would be the best four-stroke off-road machine available, and it would be competitive with the leading two-stroke enduro bikes. But as it comes, it's a slow, good-handling, comfortable play bike. And nothing more. ●

