Kawasaki's Real Eddie Law

This Out-Of-The-Crate Racebike

by John Ulrich

If Rhys Howard's Superbike looks remarkably like Eddie Lawson's, it's no accident. Howard's bike, like the 29 other Eddie Lawson Replica KZ1000S1 racebikes built this year, is outwardly identical to Lawson's. In fact, Lawson and Team Kawasaki teammate Wayne Rainey *ride* Eddie Lawson Replicas. Kawasaki Motors Corp. race manager Gary Mathers bought four of the new replicas for the team, telling reporters that it was cheaper to buy bikes from the factory than to build them from scratch.

The bikes are sold to racers through normal dealerships, for $10,999. As this is written, 15 of the 30 have been sold.

They've been put to good use, winning endurance races and club races, as well as carrying top privateers to good finishes at AMA National Superbike events. The ready-to-race racebikes sold by Kawasaki aren't capable of winning Superbike races, though, excepting the specific four ELRs assigned to Lawson and Rainey.

The biggest difference between the racebikes for sale and the racebikes used by the team is simply horsepower.

According to Rob Muzzy, the crew chief who tuned Lawson to the 1981 Superbike Championship, a stock ELR makes 136 bhp on the race department dyno at Kawasaki headquarters in Santa Ana, California. Eddie's racebike makes 149 bhp on the same dyno. Muzzy takes readings from the dyno—driven off the engine's countershaft sprocket—and mathematically factors them to obtain horsepower produced at the crankshaft. Muzzy calculates horsepower that way because that's the way engineers at Kawasaki's factory in Japan figure horsepower, and the standardized method simplifies communication.

The major engine pieces are all there, according to Muzzy, including the crankshaft, transmission, camshafts, CD ignition, clutch, and major cylinder head work. Like Lawson's, the engine is based on the 1982 KZ1000J, which has a new cylinder head casting incorporating port design changes with roots in Kawasaki's successful 1981 Superbike effort. The ELRs displace 998cc, while Lawson's racebike is 1015cc, with forged pistons, and Lawson's racebike uses an exhaust system with tapered headpipes. Muzzy concedes that the bikes ridden by Lawson and Rainey are faster than the ELRs sold to privateers, but says that either of his riders could put a stock, as-sold ELR into the winner's circle.

"The bike as sold will go faster than the average guy can ride it," says Muzzy. "The motorcycle is capable of beating any of the privateers out there, because it's better than their bikes. The problem is that guys buy them and start having them modified, changing the cams and having somebody port them. The major head work is already done. Maybe it would benefit from a good racing valve job, because the seats are cut kind of rough at the factory, but when guys get in there and start making major port changes, they just are taking a good bike and making it slower."

If he were running a privateer race effort, says Muzzy, he'd make the same changes to an ELR as he makes to the Kawasaki team bikes. But Muzzy won't

Photos by David Dewhurst

son Replica, the KZ1000S1

Needs Some Work...But It's Close.

discuss just what those changes are, and says that if he didn't know what they are, he'd leave the cylinder head stock and go racing.

ELRs come with 33mm CR Keihins and 31mm restrictors, and Lawson and Rainey run with either those carbs or with 35mm CR Keihins and 31mm restrictors, depending upon the racetrack. Lawson's bikes also have a little more trail than the ELRs. Otherwise the chassis are identical down to the forks, shocks and brakes.

The privateer with the best results on an ELR is Harry Klinzmann, who used his bike to win a Budweiser 500 endurance race, finish second in another Bud race and win an exhibition race held in conjunction with an Indy car race in Cleveland. Klinzmann was the top privateer in Superbike racing last year and is always near the front of the privateer pack. At Laguna Seca Klinzmann raced with Honda's Roberto Pietri, Kawasaki's Wayne Rainey and privateer Thad Wolff for much of the race, eventually finishing sixth, the first rider without a factory bike.

Klinzmann disagrees with Muzzy's evaluation of the ELRs. "It was way too slow when we got it," says Klinzmann, who is sponsored by Racecrafters, a Kawasaki dealer and high-performance parts retailer. "We ran it on the dyno and only got 116 horsepower out of it. After we did a lot of work on it we got 126 horsepower, but it took half a year to get it where it feels fast enough."

According to Klinzmann, the extra horsepower came from cylinder head porting by his tuner, Pierre DesRoches, and from the installation of camshafts from Web-Cam. The porting improved flow 30–40 percent as measured on a flow bench, says Klinzmann, and the cylinder head came with rough-cast ports painted black, just like a street bike's. Klinzmann feels that his bike would make another four or five horsepower if he could get the 1015cc pistons used in Lawson's bike, but says those pistons are for factory team use only.

DesRoches agrees that the ELR as delivered wasn't fast enough, but goes further.

"You can't get parts for them. The transmission was real loose in the crankcases, and the gears needed shimming. Some of the gears were contacting each other where they shouldn't have been. Popping out of gears is the normal problem, and now the dogs are all worn on some of the gears, and I can't get new ones—they've been on order for two months. They'd be okay if you could take it apart new and go through it and bring it up to specs, but just getting information is difficult.

"And the parts prices are staggering. A swing arm is like $769. An ignition rotor is $540. A stator is like $300.

"They're good bikes, and Harry likes the way it works and it seems to make good power now, but by the time Kawasaki gets its act together the year will be over and the bikes will be useless."

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(As an aside, parts for privateers have been a problem for years. When Gary Nixon and Erv Kanemoto ran a KR750 and were close to winning the Formula 750 World Championship, they couldn't get parts. Dirt trackers with XR750s have complained long and hard about not getting parts. As long as racebikes and racebike parts are made in small lots, factory teams will get first call and parts for everybody else will be spotty at best, the possible exception being Yamaha and the TZ series.)

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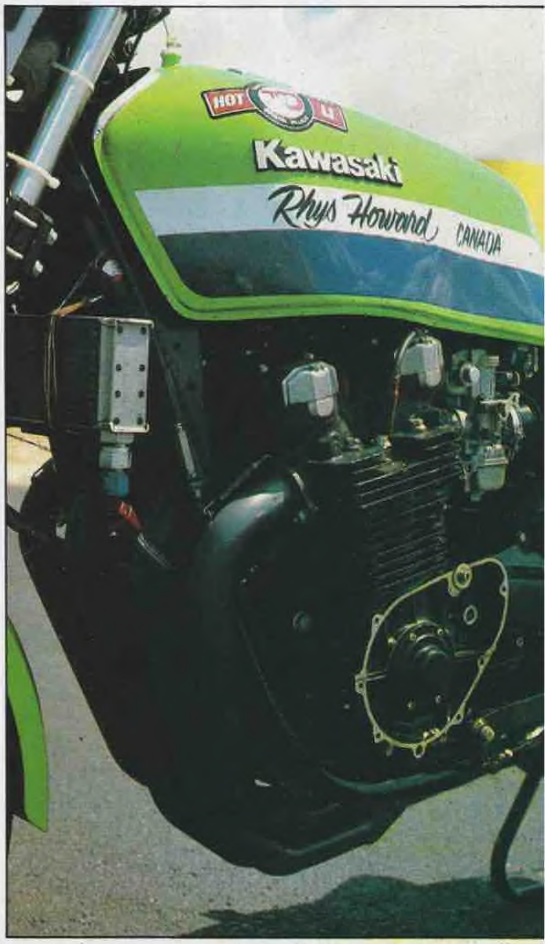
Which brings us to the Eddie Lawson Replica owned and campaigned by Canadian Rhys Howard. Howard, 21, is an up-and-coming rider in his first year of Superbike racing. He hasn't set the world on fire, but has made steady progress with his ELR. His best finishes have been in club races and Canadian Nationals, a first on his home track of Westwood (near Vancouver); a third at Sanair, Quebec; and a first at an AFM race at Sears Point, California. At AMA Superbike Nationals, Howard crashed in his Riverside debut, finished 14th in the rain at Elkhart, and broke in practice at Loudon. Like Klinzmann and Lawson, Howard abandoned the bike's stock quarter fairing, which initiated a wobble at top speed.

Dave Harold, who tunes for Howard, didn't have the problems encountered by DesRoches and Klinzmann. "We were lucky," says Harold. "We got one that had the transmission shimmed right from the factory, but those other guys should have dropped the pan and checked theirs before they ever went racing."

Harold and Howard haven't had problems getting parts, either, reporting that their orders through Steve Baker Kawasaki (near Seattle) were filled quickly. "Most parts are no problem," says Harold, "but then we didn't need any big stuff like gears, just valves and guides and seals and some tach drive parts."

But Harold agrees that the ELR, as delivered, doesn't have enough power. Howard ran the bike stock at his first race, the spring AMA Superbike race at Riverside, California, but crashed. The spill bent the end of the bike's crankshaft, which is exposed through the ignition cover, and the motorcycle needed work. Harold took it to Ken Augustine, known for his work with the BMW Superbike team (in 1976, when the team dominated Superbike racing) and consulting with American Honda's Superbike effort.

Augustine and Harold went through the engine, removing burrs; straightening, cleaning, and welding the crankshaft; surfacing the cases; lightening and balancing the pistons; shaping the combustion chambers to meet Augustine's ideal and, at the same time, matching combustion chamber volumes; checking piston decks and contours; porting the cylinder head; clearancing the head for bigger cams;



Cut-off crankshaft, crankshaft cap, and welded-up cases are standard. Pipe is from Kerker.

opening up the tappet bores; installing new valve springs, titanium collars, tappets and Megacycle camshafts; and putting the engine back together again.

It costs close to $2000 to get Augustine to do that work to a fresh motorcycle, but both Harold and Howard say the bike was much faster afterwards. Harold describes it as being "quite adequate for a privateer, with good bottom end power."

Like the other ELRs, Howard's racebike has a 61.5-in. (± 1.0 in.) wheelbase and comes with Dymag cast magnesium WM4-18 front wheel and WM8-18 rear wheel. The forks have 38mm stanchion tubes and the rake angle is 27°. Rear wheel travel is 5.0 in., front wheel travel 5.5 in. The swing arm is aluminum and the box formed by gusset plates at the front of the swing arm is used as the breather oil catch tank. The bike came with Works Performance shocks but Howard, like Klinzmann, couldn't get the shocks, which come without a manual or instructions, adjusted to his liking. So Howard, like Klinzmann, switched to MX Fox Superbike Shox, which come with a complete and detailed instruction manual.

Bore and stroke are 69.4 x 66mm, c.r. 11.3:1 and displacement 998cc. The cylinder head has two valves and two spark plugs per combustion chamber, the plugs fired by a magneto CDI mounted on the right end of the crankshaft. Ignition timing is set at 28–30° BTDC and advance is electronically controlled. A rev limiter is built into the system and shorts the ignition at 11,000 rpm.

Look at the left side of the engine cases and there's a little cap covering the cut-off stub of the crankshaft, just like on Eddie's bike. And just like on Eddie's bike, the oil galleries normally leading from crankcases to the alternator are welded closed. The seat is cut out in the front, forming a step to hold the rider under hard acceleration, and there's an oil cooler mounted on the frame downtubes. There are aluminum calipers and mag hanger plates and disc rotor carriers, and giant, slotted discs. There are rearset pegs and adjustable shift lever linkage and CR carbs with stacks. There are rear stand pegs just forward of the axle and a neat stand to go with them. The throttle assembly doesn't have a top and is made of magnesium, just like Eddie's.

Looking at an ELR, Harry Maillett, who built Superbikes for Steve McLaughlin a few years back, told us that building a Superbike from the ground up—including R and D—would cost $30,000. Building a second copy of that first, $30,000 bike would cost $15,000 to $17,000 ready-to-race.

Compare those numbers to the ELR's $10,999 base price. Whether or not an ELR needs more power is, as we have seen, a matter of controversy—Kawasaki representatives say it's fast enough now, privateers and their tuners say it isn't. But even if the bike needs $2000 worth of Ken

Augustine's attention, that's still $13,000, not $15,000. And if the bike didn't need any lower-end work, DesRoches would duplicate his cylinder head work and install his preferred grind of Web-Cam camshafts for around $900. Maillett would build an entire motor capable, he says, of putting its owner on the front row at a Superbike National, for $5000–$6000.

So a racer spends the money and lines up on the grid. What does he have?

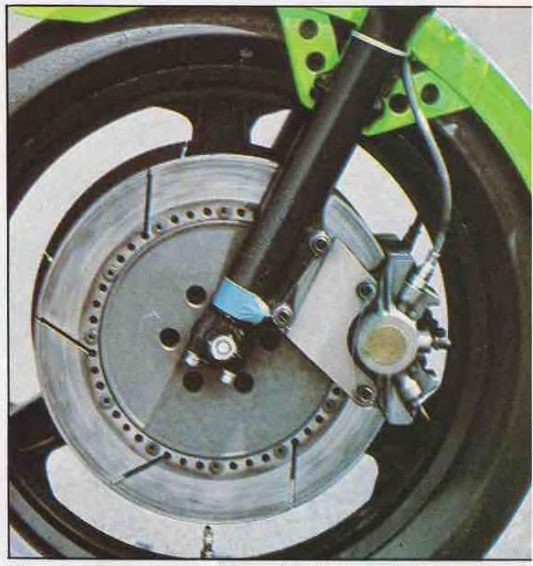
Two Budweiser endurance races gave me plenty of opportunity to observe Klinzmann's bike in action, both from the pit wall and from the seat of another racebike, and it looked like it worked pretty well. A trip to Willow to ride Howard's ELR confirmed that suspicion. Howard's bike, set up correctly for the track, worked much better than Lawson's 1981 Championship-winning racebike, tested in the February *Cycle World*.

The brakes were fantastic, good enough to inspire envy in the eyes of a competing team's manager.

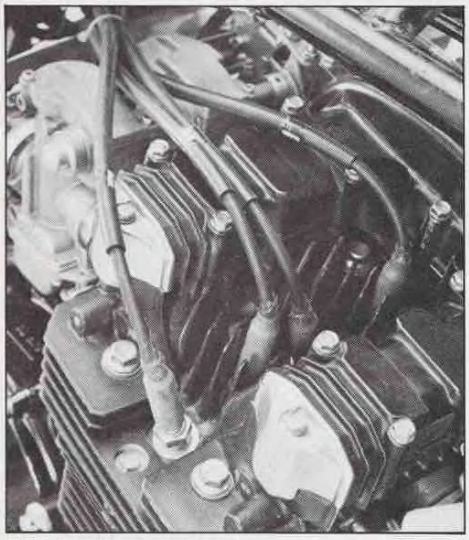
The ELR, in the form raced by Klinzmann and Howard, is easy to ride, handles and stops well, accelerates as hard as other privateer bikes and maybe harder, and has good top end. Aside from the engine, the ELR is extremely close to the real thing, a factory Superbike, and buying one and doing a little hop-up is a whole lot cheaper and easier than building one from scratch.

Where the 30 ELRs built by Kawasaki will end up is anybody's guess, since the Superbike class goes to 750cc for 1983. Maybe they'll haunt the Formula One races, or find their way down to the club level, or win more endurance events.

They aren't perfect, and nobody knows how long the parts supply will hold out, but 30 ELRs is a far better deal for privateers than no FSRs (Freddie Spencer Replicas) and no WCRs (Wes Cooley Replicas). ◙

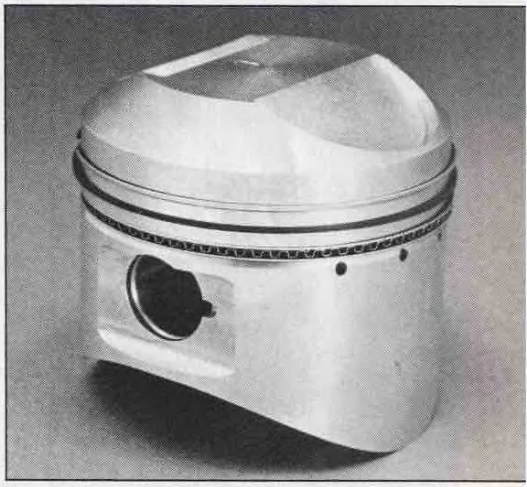


Calipers have two pistons with fluid carried from one side of the caliper to the other via external line. Caliper hangers are magnesium. Disc slots prevent warping.

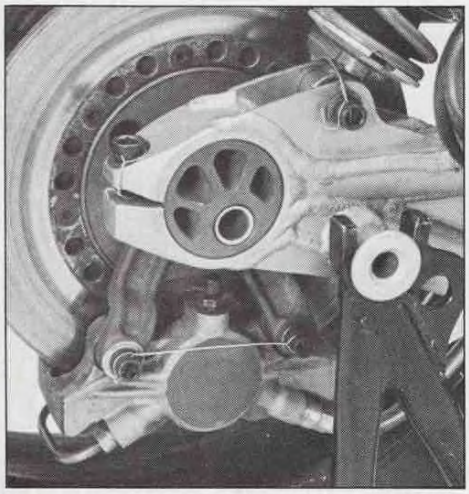


ELR head has two spark plugs per cylinder, just like Eddie's, and runs at 28–30° spark advance.

Intake valves are 38.5mm, exhaust valves 32mm.



Pistons are forged and measure 69.4mm. Eddie's are larger, measuring 69.9mm.



Swing arm eccentrics allow chain adjustment, but when the eccentric is rotated too far upward, the caliper bleed nipple hits the swing arm.