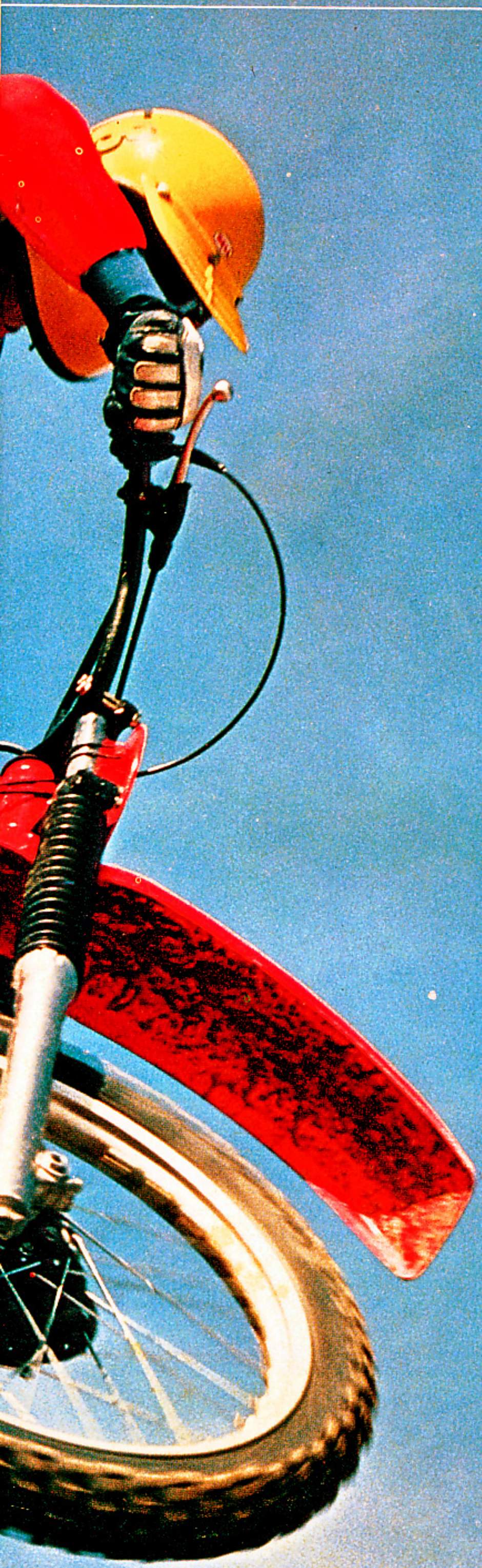
# HONDA CR250R ELSINORE





PHOTOGRAPHY: ART FRIEDMAN

No, this is not another outdated racer disguised in gallons of red paint. All-new from the ground up, this latest CR is the fastest, best-steering 250 yet, with the longest suspension travel *ever.*

Six years ago Honda supposedly knew absolutely nothing about two-strokes, and even less about motocross. One year later, Honda set the industry on its ear by introducing the first CR series motocrossers, which caught all of the other manufacturers with their collective pants down.

Honda decided to dominate trials competition in the United States. None of its production machines were suitable, so works trialers were built. Honda has been U.S. trials champion for three years straight.

Honda decided to dominate the European endurance races. None of its production machines were suitable, so the RCB1000 works endurance racers were built. Honda now dominates the European endurance races.

Notice a pattern? When Honda sets a goal for itself, it is fully capable of building a motorcycle sophisticated enough to achieve that goal.

With the introduction of the CR250R, it looks like the pattern is repeating itself again. Apparently, Honda has decided to once more dominate the production 250 motocross battle—this time with a replica of the formidable Type II works Hondas.

The new Elsinore is more than a replica in name only, though. In most ways it is a carbon-copy of the factory machines, with each part looking like a well-finished, production-line copy of the one-off works item.

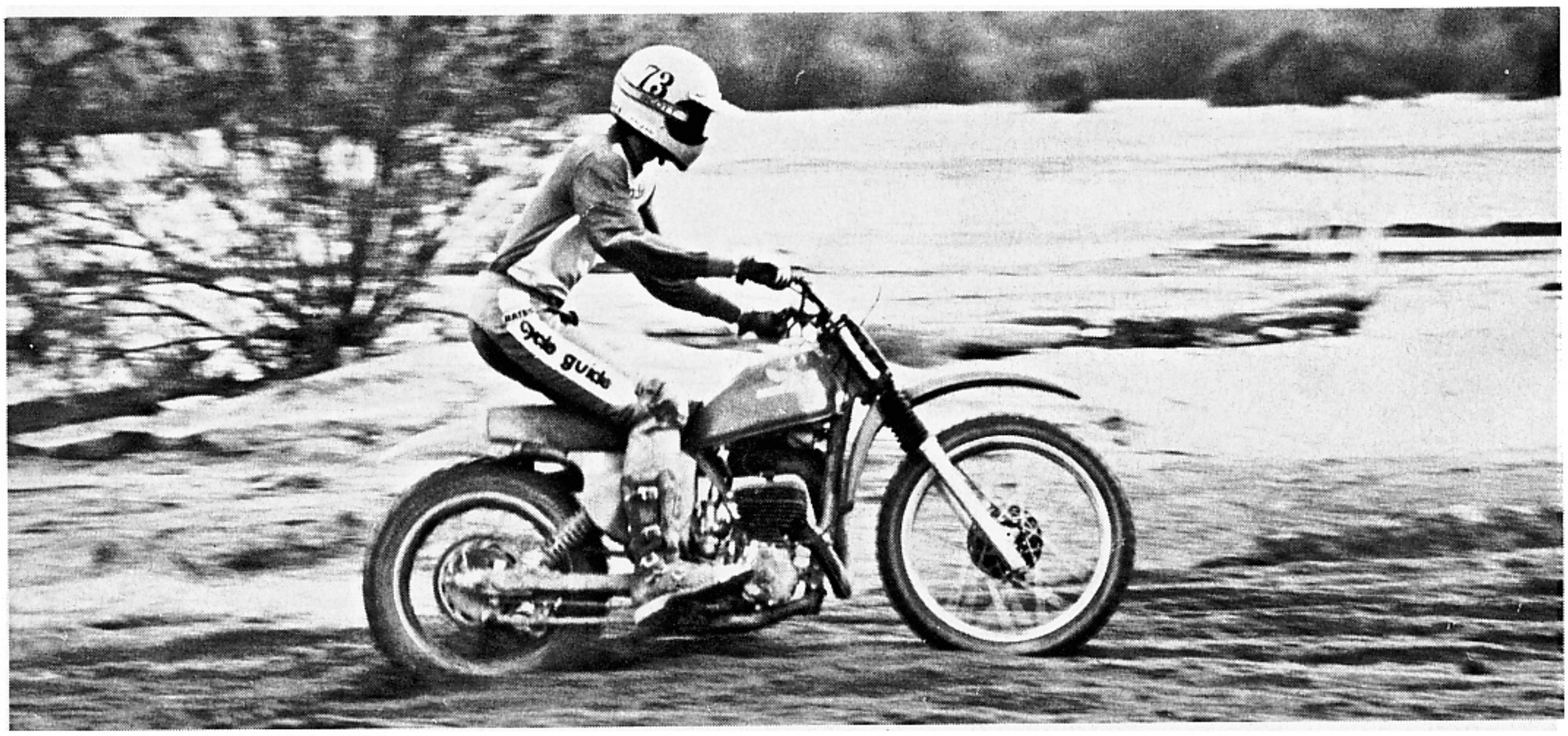
Other than looking like the whole bike fell in a vat of red paint, the most obvious tipoffs to the CR250R's works heritage are the enormous gaps between the Dunlop tires and the wide, red fenders. The CR has more suspension

travel than found on any other production motorcycle—close to a foot at each end—and towers above most other machines. When the average rider stands alongside the Honda, the handgrips come up to about the middle of his chest. The seat is a lofty perch, 37 inches above ground level, a figure matched only by the new Huskys.

Judging by those vertical dimensions, it sounds as though only lumberjacks or pro basketball players could comfortably swing a leg over the Honda's saddle, but thankfully, this isn't quite the case. The CR's Showa fork and shocks settle several inches under the rider's weight, so most riders 5-feet-10 or taller can touch the ground with both feet, although just barely. Shorter riders who can only reach the ground with one foot will have to perform a precarious balancing act at the starting line.

Once a rider gets used to the Honda, he finds the chassis height a small price to pay for the way the suspension performs under most circumstances on rough ground. The front fork handles bumps of all types at least as well as the other best Japanese forks, and it also offers almost two more inches of travel than found on any other box-stocker. The front end performs to near-perfection over ripples and stutter-bumps, which allows the rider to use the front brake more effectively while entering the gnarliest of turns. On those same bumps you can watch riders on other brands getting their hands nearly rattled off the bars during hard braking.

On choppy turns, the front wheel stays on the ground and sticks instead of skipping along on the tops of the ripples and threatening to wash out. Only a truly horrendous obstacle can bottom the fork, but when it does, the rider can hear an audible clicking noise and feel a jolt through the bars. A better hydraulic stop at full compression would make bottoming much less noticeable by cushioning the last bit of

travel more effectively.

Probably the best solution to the bottoming hassle would be to install a set of air caps and run two or three pounds of air pressure in each fork leg to provide more bottoming resistance. On many smoother tracks, the bottoming may not prove to be a problem.

The CR's shocks are a classic mismatch for the compliant Showa front fork. The same impacts that bottom the fork lightly use up only about three-quarters of the rear wheel travel. Our 160-pound tester was unable to bottom the shocks solidly, even during deliberately hard jump landings with the shocks set at their softest preload. The Honda's ten-and-a-half inches of rear wheel travel sound impressive, but that tremendous movement is partially wasted unless *all* of it is usable on each lap. As delivered, only extremely heavy or incredibly fast riders, or really rough courses, will bottom the Showa shocks very often. And under those same circumstances, the fork would prove too soft and bottom too easily. Either the shock springs should be softer or the fork stiffer. For most riders, softer shocks will be the ideal choice.

Honda will offer optional shock springs—in softer *and* harder spring rates than stock—which should take care of the problem. The soft springs should help the shocks complement the fork so the whole suspension will work nicely for riders of average weight.

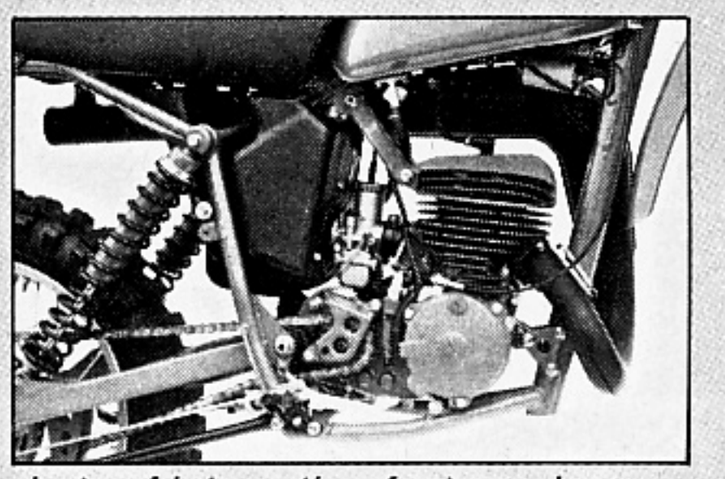
The CR's stock rear-end set-up really deals out the punishment when braking hard on gnarly ground. For one thing, the high center of gravity accentuates the effects of forward weight transfer, so the rear suspension is lightly loaded during hard braking. Too, the stiffly sprung shocks top out and fail to make the wheel follow rough ground as effectively as it should. The CR's back end hops and skips along the tops of braking ripples and stutter bumps, making the already-sensitive rear brake just about useless in these situations. The rear wheel spends a good deal of time in the air where it does a poor job of stopping the motorcycle. It's a common occurrence to come bounding into a rough turn with the back wheel locked and the Elsinore's rear end hopping, chattering and being quite obnoxious in general. Before the bike can make complete use of its full-floating rear brake, the shocks must keep the back tire on the ground more of the time. The lighter, optional shock springs should make a difference in the CR's behavior.

The CR250R's Showa shocks are not without their good points. They take deep whoopers and sky-shot landings in stride, and when the CR is under acceleration, there is sufficient weight transfer onto the rear of the machine to make the shocks follow rough ground accurately, thereby keeping the big 5.00-18 Japanese Dunlop hooked up and driving. On a tacky track, the Dunlop gets incredible traction if the

# TECH PROBE

It has taken the CR250R a long time to get here. While the production motocrossers of Suzuki, Yamaha and Husqvarna have been developing at a feverish rate, the CR250 has received only token changes since its introduction in 1973.

Honda has been criticized in recent years for advertising the successes of its works motocrossers to promote sales of production bikes that were related to the works machines in color only. While the advertising was deserving of that criticism, Honda did not until now introduce a motocrosser more closely resembling its works machines because not until recently did it have works machines *worthy* of imitation.



*Lots of interesting features here, like the close proximity of the swingarm pivot and countershaft; miniscule countershaft cover; ignition timing adjustable by turning the external cover; semi-radial head finning; large cylinder-to-head brace; and Husqvarna-type frame design.*

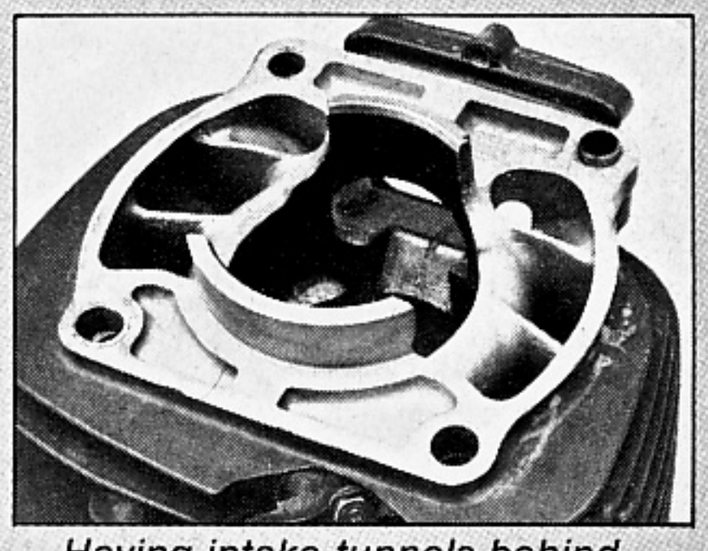
Before the Type II works motocrossers came along little more than a year ago, whatever racing successes Honda enjoyed could most often be credited to its riders. Compared to Suzuki's factory bikes in particular, Honda's early works motocrossers were at a distinct disadvantage. These pre-Type II machines, which so many people wanted Honda's production bikes to be modeled after, were in a constant state of developmental flux. Every few months brought new suspension ideas, new cylinder porting and new frame designs, all in an effort to make a works machine that truly worked.

With the Type II, Honda hit upon a combination that was the equal of anything on the circuits. The spotty victories that had characterized Honda's formal motocross racing suddenly changed to a consistency that its competition found hard to match. But even the first Type IIs had their problems, most notably, a ferocious appetite for pistons. It was not until the new design was debugged that Honda at long last possessed an acceptable prototype for a first-class production motocrosser.

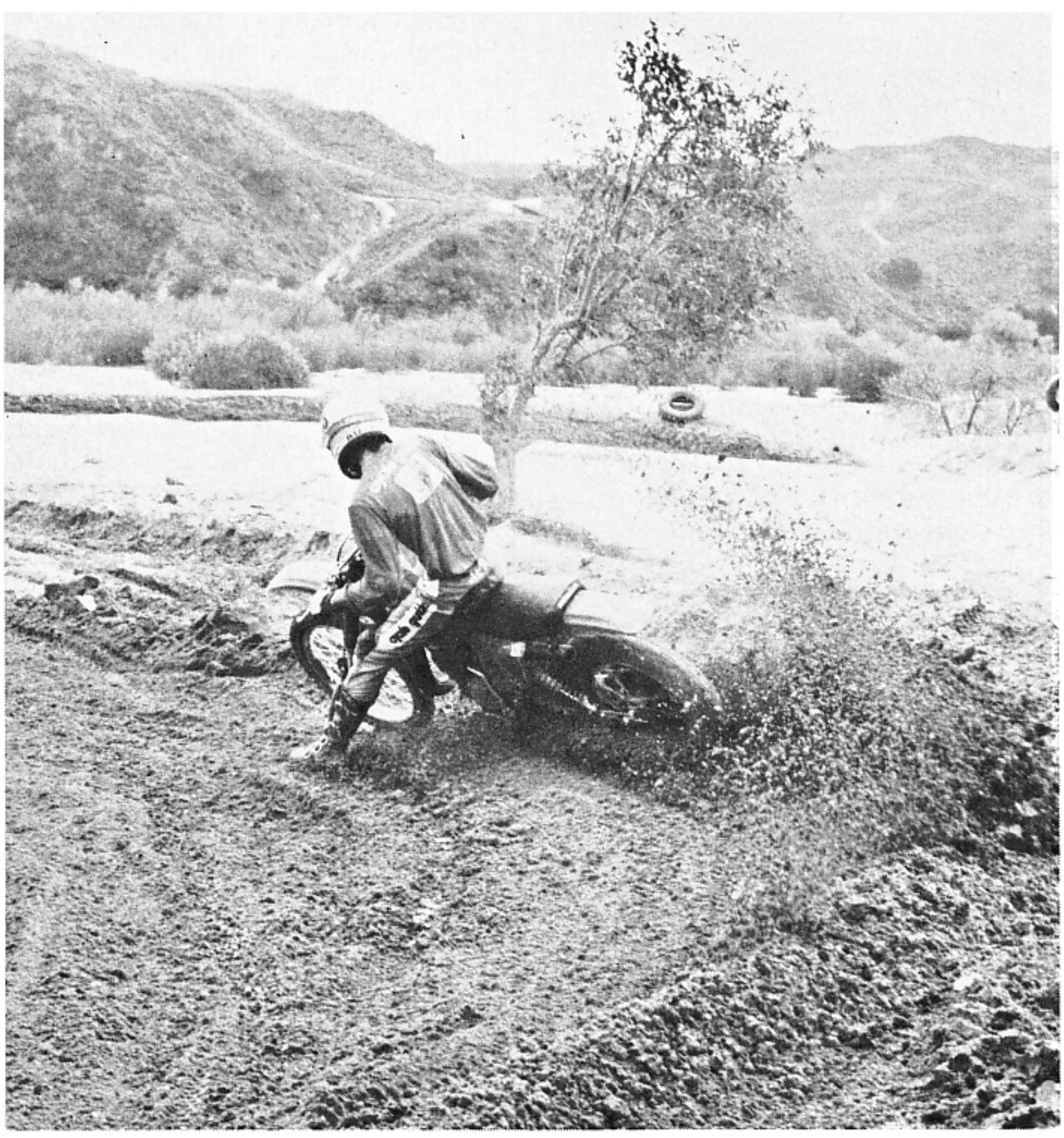
If Honda traveled a difficult course to finally produce a competitive motocrosser, the experience left all those involved with a great deal of knowledge about what does and what does not make a competitive motocrosser. The CR250R doesn't demonstrate great innovation, but it represents a finely-tuned tool that has evolved through much trial and error.

Though its *Longest*-travel suspension may attract the most attention, the CR's engine is perhaps the most remarkable part of the motorcycle. Beneath the red paint is a light, compact engine that produces more usable power over a wider range than any 250 motocrosser we have tested.

The secret to the CR's outstanding power lies in the unusual porting of the cylinder—particularly in the reed-valve-controlled intake port. The engine has four main transfer ports and, like the layout pioneered by Yamaha, the top of the CR's intake port is raised to form a fifth transfer port. Unlike Yamaha, or anyone else, though, the CR cylinder has two additional ports on each side of the main intake port, and they connect the intake port directly with the crankcase. Besides providing a high degree of crankcase-filling efficiency, this arrangement allows the intake skirt of the piston to go without the holes that are commonly used with reed-valve-controlled intake ports. While elimination of the holes increases skirt area and should improve piston life, the CR piston's intake skirt is 15 mm shorter than the exhaust skirt, so overall, it's possible that no piston reliability or longevity improvements



*Having intake tunnels behind each rearmost transfer port creates a case-reed effect which combines with the Yamaha-type fifth transfer port to give unparalleled performance.*



rider slides back on the Elsinore's long seat to get his weight over the rear wheel.

Under power, the CR works so well that the rider can get on the gas earlier while exiting turns. Even with the bike still leaned over, the rear end rarely threatens to slide out too far or get squirrelly. Just hold the throttle wide open and keep grabbing gears. Better keep an eye on the front end, though. It'll probably be off the ground by then. This is how the Honda likes to come out of turns—with the rider staying back for traction and the front wheel waving in the air.

The CR250R doesn't seem to pay any noticeable penalty, steering-wise, for its lengthy suspension travel and high center of gravity. The machine's height never makes it feel awkward or top-heavy in turns. If the rider wants to steer his way through a smooth, flat corner on the inside, he need only slide to the front of the seat and aim, and the Elsinore will turn inside most other 250s.

Using a little more throttle while in these flat corners will put the Honda into an easily controllable broadslide. Even if the rider commits one of the cardinal sins of powersliding—chopping the throttle while in a full-lock slide—the engine has enough flywheel to usually keep the revs from dropping too quickly, hence, preventing a painful high-siding episode. Due to its long wheelbase and boundless travel, the chassis is very stable over rough ground and often bailed us out of some potentially

catastrophic situations.

If the Honda's handling is impressive, its engine is astounding. That little red motor puts out a sobering blast of power that comes on strong in the mid-range and continues right on up to peak rpm. The CR's powerband is very similar to that of a Suzuki RM250C—only stronger everywhere. The motor works beautifully with the rest of the machine to deliver acceleration that nothing currently in the 250 class is likely to match.

This type of powerband makes the Honda a real pleasure to pilot around a racetrack. The engine makes the kind of power that gets to the ground, instead of spinning the wheel uselessly.

Part of the credit for the CR's smooth power delivery goes to its comparatively heavy flywheels, which give the engine more than the usual amount of crankshaft inertia found on Japanese machines. The rider is rarely surprised by a sudden burst of traction-breaking horsepower that might upset his line through a turn.

The CR responds well to short-shifting, which makes use of the motor's substantial mid-range power. The bike hooks up solidly and lunges from corner to corner in a controllable rush that's strong enough to make you choke on your mouth guard. If the rider manages to find himself slightly below the powerband at any time, simply twisting the throttle and flicking the clutch lever in for an instant puts the motor right back in the powerband, ready to do business.

The Red Rocket is a major contender in the race to the first turn, once the rider masters the starting technique. Under most conditions, second gear is about right for the fastest starts. But if the track surface offers good traction, the rider must slide all the way forward on the seat and rest his chest on the handlebars to help keep the front wheel in the general proximity of the ground.

The Elsinore is cursed with the customary Honda toggle-switch clutch, so the lever must be handled with micrometer-like accuracy. The clutch should be slipped for the first fifteen feet or so, because if it is simply dumped at the line, more often than not that big 5.00-18 rear tire will get a healthy bite of traction and stand the CR straight up on end. That's spectacular to watch, but definitely *not* the fast way to the first turn.

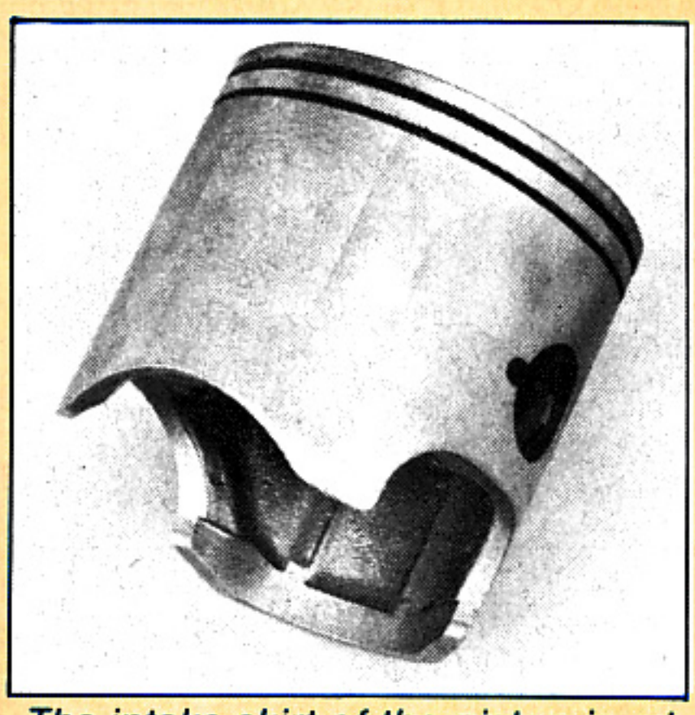
Once off the line, the Honda—like most motocrossers—doesn't mind being shifted without the clutch, so long as the throttle is backed off sufficiently. However, when you're surrounded by fifteen or twenty bellowing 250s as you race down the starting straightaway, it gets a tad difficult to tell whether you're backing off enough to guarantee an upshift. We found that the best way to insure a fast, positive upshift was to keep the gas wired on and use the clutch at each shift.

The Elsinore's racing bloodlines have made it a reliable, durable package with

# TECH PROBE

were gained. The piston has two cast iron rings, the upper of which is a Keystone-type.

The aluminum cylinder has a chrome bore that saves the weight of an iron liner. The chrome also allows the piston clearance to be reduced because the piston and cylinder have a more equal expansion rate. The major disadvantage of the chrome cylinder is that it cannot be rebored. When sufficiently worn, it can only be replaced, although each cylinder should last through three or four new pistons. Home tuners should not attempt to alter the port timing on the CR, because any grinding or filing will usually cause the chrome to chip, either while grinding, or later, while the engine is running.

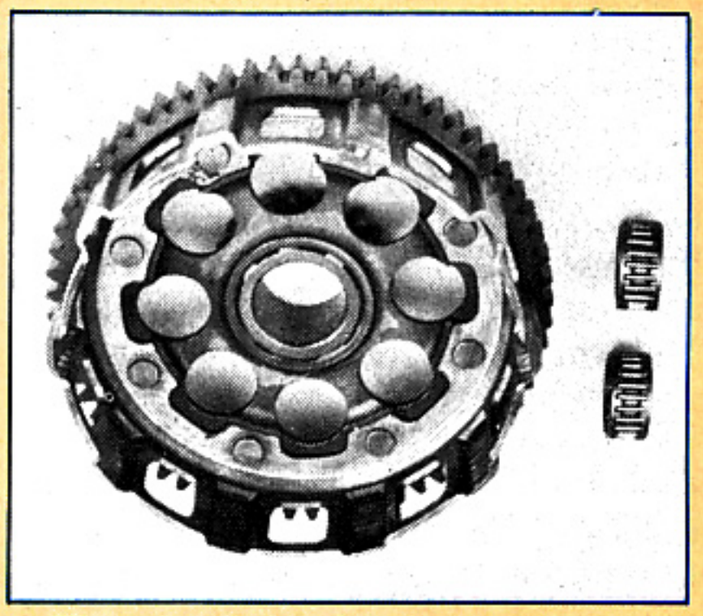


*The intake skirt of the piston is, at its shortest, 15 mm shorter than the exhaust skirt, but at least it has no life-shortening holes in it.*

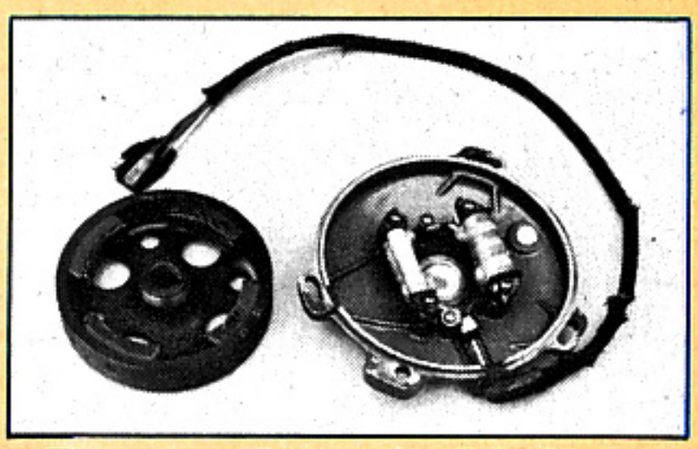
The CR crankshaft is slightly larger in diameter than the 64.4-mm stroke demands. The extra metal adds to flywheel effect and provides rigid support for the crankpin. In addition to the larger crankshaft, the CR uses a flywheel-magneto CDI. This is in contrast to the internal-rotor CDIs used by Suzuki, Yamaha, and Kawasaki. The Honda's greater flywheel effect no doubt helps it get its impressive horsepower to the ground, yet despite the heavy flywheels, the CR engine weighs only 56.5 pounds.

The CR250R gearbox is very compact and well-planned. Both the shift shaft and kickstarter shaft are short and can be removed after pulling the primary cover. The shift linkage has a positive stop to discourage overshifting, all the gear dogs are undercut to help prevent jumping out of gear and the gears are drilled wherever possible to reduce weight. The countershaft is placed at the extreme rear of the transmission housing, so there is no more space between the countershaft and the swingarm pivot than the countershaft sprocket requires for clearance. Consequently, drive chain slack does not vary enough to cause problems, and what slack *does* occur is controlled by a fixed roller. And the clutch basket is a full-circle steel stamping that looks much stronger than the normal cast aluminum affair. Since the clutch friction plates are aluminum, the hub should wear better.

We hate to imply that Honda's designers copied the CR frame from Husqvarna, but it appears they *did*. The two designs are virtually indistinguishable, and Husqvarna started using that frame long before Honda did. The CR frame is inherently flexible because it is almost totally without triangulation, which means that most loads will try to bend or distort it. Triangulation permits loads to be taken in compression or tension, and lighter tubing is therefore needed to resist flexing. Because motocross tracks are so rough, frame flex on a motocrosser doesn't have much affect on its handling, but it *can* cause the frame to break. So a Honda or Husky frame is only reliable if the



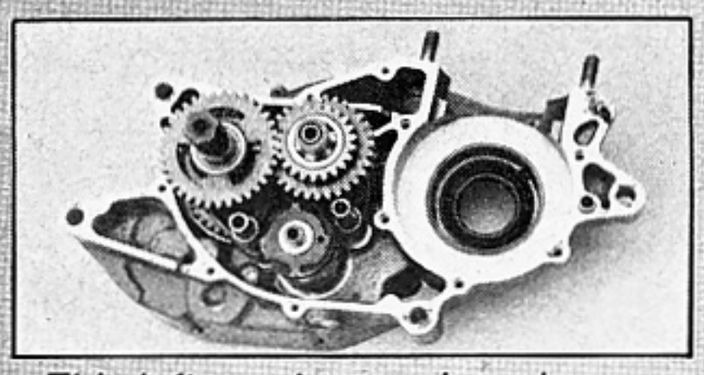
*The clutch basket is an all-steel, riveted-together affair that should far outlast the aluminum units found on other Japanese motocrossers.*



*The open side of the CDI flywheel faces outward, and the high-tension coils are mounted on the inside of the external mag cover.*

# TECH PROBE

flexing can be kept within the "endurance limit" of the tubing, which is that point where continued flexing will cause the metal to fatigue and break. The head stay—which helps strengthen the structure by making the engine a major frame member—is an important element in reducing flex. These stays were not used on the original Type II works machines but were put on the later Type II models and the CR to extend the life of the frames. It is of utmost importance with such a design to keep all of the motor mount bolts tight, so they should be checked each day before riding.



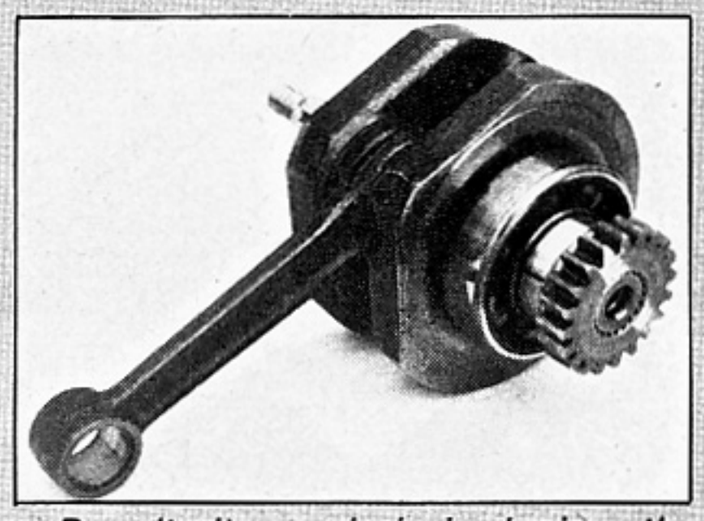
*This left crankcase view shows the CR's efficient, compact engine design. The gearbox cavity is no larger than absolutely necessary and the rear of the cases is shaped to let the swingarm pivot fit as close as possible to the countershaft, between the two rear motor mount lugs.*

At long last Honda has begun using tapered roller bearings at the steering head. Needle roller bearings are used at pivot for the chromoly swingarm. The Type II works bikes use aluminum swingarms.

Ever since the race for long travel suspension began, people have wondered where it will all end. We think the CR250R *is* the end. With 11.5 inches of travel in front and 10.5 inches of rear wheel travel, the CR has not reached any technical limit, but it is certainly bordering on some *human* limitations. The top motorcycle racers have always tended to be average or less-than-average in height, which may result from the simple fact that a 5-foot-8 person weighs less than a 6-foot-2 person, and that given equal ability the little guy will win because his bike has a more favorable power-to-weight ratio. Well, anyone 5-feet-10 or less will have difficulty touching the ground when perched on a CR250R.

The long Showa front fork is somewhat unusual in construction. Instead of having a normal damper tube, the CR has a separate damper assembly that is held at its bottom by a conventionally located Allen bolt. The rod of the damper assembly extends up to, and screws into, the fork cap. Having this rod in the way complicates fork oil changes and the design is heavier and more complicated than the conventional arrangement.

The rear shocks are perhaps the CR's greatest departure from the works machines. Instead of Fox Airshox as found on the Type II, the CR is fitted with a pair of relatively conventional gas shocks. They have no external or remote reservoirs, but do provide three preload adjustments for the springs. The standard springs will be too stiff for many riders but lower-rate springs will be available as spare parts, although we didn't have an opportunity to try them.



*Despite its semi-circle design, the crankshaft itself provides decent flywheel effect which is further increased by the inertia of the large external CDI flywheel.*

To help the suspension keep the rear wheel on the ground, the CR has a full-floating rear brake. Both brakes have magnesium backing plates, which are just two areas where Honda has gone to great lengths to minimize the CR's weight. Because of its long travel suspension, the CR *should* be slightly heavier than its competition. But the chrome cylinder bore, the lightened gears, and the use of aluminum for the fuel tank, brake and shift levers—even the aluminum kickstart lever—have kept the weight down to only 216 pounds.

It has taken the CR250R a long time to get here, but Honda's sales force was smart to wait until they really had something to offer. And now they do. The CR is a state-of-the-art motocrosser that, with perhaps just a pair of Fox Airshox on the rear, is a motorcycle on which a pro rider can be competitive *anywhere*—even against the world's best works machines. If you can't win on this motorcycle, you should resign yourself to the fact that you can't win, period.

few weak points. Starting is invariably a first-kick proposition and there are no unusual between-moto maintenance requirements.

Riders who insist on crashing regularly may find that the cast-in steering stops on the lower fork triple clamp aren't up to continuous get-offs. The right stop on our bike broke during a disagreement with a berm. Nothing else was damaged or bent in the crash so it appears the steering stops are a weak point and would benefit from reinforcement or redesign.

Our only other problem with the Elsinore involved its die-cast magnesium rear brake backing plate. American Honda had heard reports of the first few die castings on the production bikes being defective, so our backing plate was replaced with a sand-cast one from a prototype machine. Honda assured us that this problem would be cleared up long before the CRs were available to the public, but check it out yourself before making a deal on a new CR.

Most maintenance procedures on the Elsinore are pretty uncomplicated, with the exception of fork oil changes. The unusual damper assembly design in the Showa front fork turns routine oil changes into an oil-spilling, boot-staining headache. Even after the fork caps are unscrewed, they remain attached to steel rods that run down through the center of the fork springs to the damper pistons deep inside the fork legs. The fork cap and spring obstruct the fork tube opening, so the oil must be poured through the coils of the spring, which is even messier than it sounds.

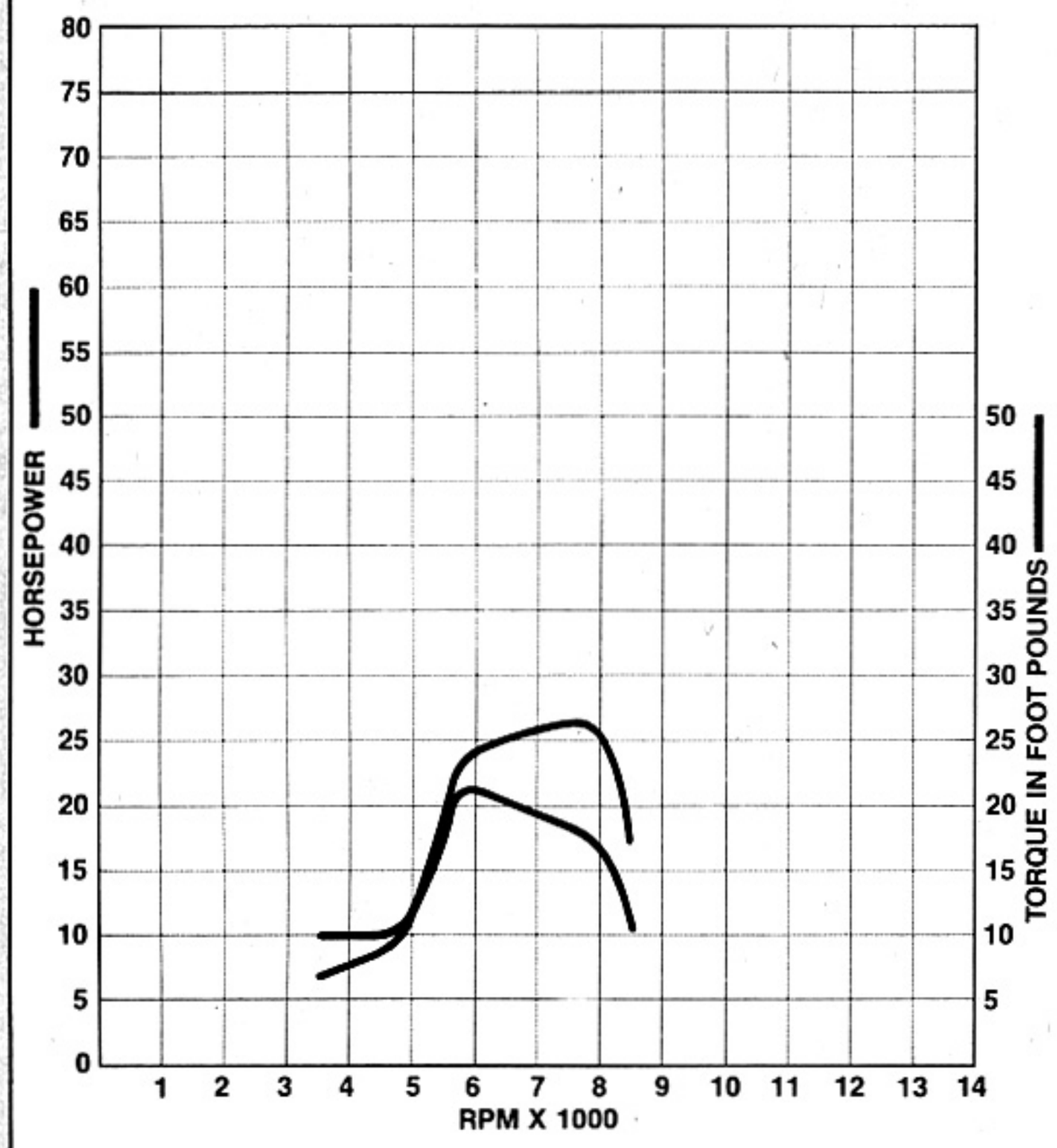
The Elsinore would be a state-of-the-art stopper, were it not for the sensitive rear brake and stiffly sprung shocks. The brake has little feel and locks unexpectedly with small increases in pedal pressure. The cast aluminum pedal could also be tucked in a little closer to the engine cases, but it is otherwise positioned about right.

In contrast to the rear stopper, the front brake requires a slightly firmer squeeze than those on some other 250s. It takes a whole handful to lock the wheel when a lot of traction is available. Most of the time, however, a two-fingered squeeze is enough to haul the CR down from speed.

As Honda's engineers have done so many times in the past, they have again pulled out all the stops and managed to build a machine so formidable that few bikes presently available are even in the same league with it. In fact, Honda has so much faith in the Elsinore that this coming season, Team Honda's 250-class riders will be on factory-modified *production* CR250Rs.

It remains to be seen how the CR will stack-up against the very newest batch of 250s yet to be tested. Obviously, Honda has no doubts. And unless the competition has unleashed an assortment of absolutely astounding motocrossers, we'll put our money on the Red Rocket, too.

# HONDA CR250R ELSINORE SPECIFICATIONS




| RPM | HORSEPOWER | TORQUE | RPM | HORSEPOWER | TORQUE |
|---|---|---|---|---|---|
| 3500 | 6.7 | 10.0 | 6500 | 25.1 | 20.3 |
| 4000 | 7.6 | 10.0 | 7000 | 25.8 | 19.4 |
| 4500 | 8.6 | 10.0 | 7500 | 26.3 | 18.4 |
| 5000 | 11.4 | 12.0 | 8000 | 25.3 | 16.6 |
| 5500 | 19.2 | 18.3 | 8500 | 17.7 | 10.6 |
| 6000 | 24.2 | 21.2 | | | |

This chart shows engine horsepower and torque calculated from figures taken at the rear wheel and does not account for transmission losses between the engine and rear wheel. These results may differ from manufacturer's claims or from results obtained using a different dynamometer.

| | |
|---|---|
| Engine type | two-stroke |
| Cylinder arrangement | vertical single |
| Port arrangement | one reed-valve-controlled intake, four transfers, one booster, one bridged exhaust |
| Bore and stroke | 70 mm x 64.4 mm |
| Displacement | 247 cc |
| Compression ratio (corrected) | 7.3:1 |
| Ignition | flywheel magneto CDI |
| Charging system | none |
| Carburetion | one 36-mm Keihin slide/needle |
| Air filter | washable oiled foam element |
| Lubrication | pre-mixed fuel and oil |
| Primary drive | straight-cut gears, 3.25:1 ratio |
| Clutch | wet, 7 drive plates, 6 driven plates |
| Starting system | primary kick |
| Final drive | #525 chain (⅝-in. pitch, 5/16-in. width); 14-tooth gearbox sprocket, 49-tooth rear wheel sprocket, 3.5:1 ratio |
| Front fork | 11.5-in. (292-mm) travel; 37-mm stanchion tube diameter |
| Rear shocks | Showa gas charged, 10.5-in. (267-mm) rear wheel travel, 3-way adjustable spring preload |
| Front brake | drum, single-leading shoe, conical hub |
| Rear brake | drum, single-leading shoe, rod operated,full floating |
| Front tire | 300 x 21 Dunlop Sports Senior |
| Rear tire | 500 x 18 Dunlop Sports Senior |
| Frame | tubular chromoly steel, single front downtube |
| Steering head angle | 29 degrees from vertical |
| Front wheel trail | 4.7 in. (118 mm) |
| Wheelbase | 56.5 to 57.7 in. (143.5 to 146.6 cm) |
| Weight | 216 lbs. (98 kg) |
| Weight distribution | 46.1% front, 53.9% rear |
| Ground clearance | 12.2 in. (310 mm), at frame cradle |
| Seat height | 37 in. (940 mm) |
| Handlebar width | 33.5 in. (851 mm) |
| Footpeg height | 15 in. (381 mm) |
| Fuel tank | aluminum, 2.4 gal. (9 l) |
| Top speed (calculated) | 70 mph (113 kph) |
| Sound level per SAE J331a | 98.5 db(A) |
| Available color | red only |
| Suggested retail price | $1498 East and West Coasts |

All weights and measurements are made with machine unladen and fuel tank empty.

| GEAR | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| INTERNAL GEAR RATIO | 1.90 | 1.59 | 1.24 | 1.00 | 0.84 |
| OVERALL GEAR RATIO | 21.61 | 18.09 | 14.11 | 11.38 | 9.56 |
| MPH per 1000 RPM | 3.6 | 4.3 | 5.5 | 6.8 | 8.1 |