

2002
CRF450R
PRESS INFORMATION

Introduction

Motocross—and its dazzling, aerobatic offshoot, stadium Supercross—have been enjoying a phenomenal surge of popularity and interest around the world over the last few years, as the world's top riders tear across the most ruggedly designed courses and leap over big jumps like they were born to fly. This has subsequently inspired a boom of popularity that has seen new riders of all ages rushing out to enjoy the fun and excitement of off-road riding, and honing their skills on the rough-and-tumble bumps and berms of amateur motocross competition.

It takes a special sort of motorcycle to successfully negotiate these unique, closed-circuit tracks, never mind to see an experienced rider through to consistent podium finishes and championship points. Until now, the premier class in this sport has been dominated by the powerful 2-stroke-powered machines of the 250cc class. Delivering explosive power to match their specialised chassis and suspension components, these kings of the flyways have been the only game in town for the world's top motocross class. But suddenly all that's changed. With the new model year, Honda has completely updated the technological state-of-the-art with a dazzling new four-stroke motocross racer—the CRF450R—which heralds the arrival of a whole new era in motocross racing.

Powered by an innovative, new high-tech liquid-cooled four-stroke engine, the CRF450R makes Honda's dreams of a new, cleaner generation of motocross racing a bold, new reality. And not just a reality of production, but a reality of championship performance. In fact, in its first-ever outing, it won the final round of the 2000 All-Japan National Motocross series, and in doing so, proved that the CRF450R already has the ability to win against the best two-stroke machines that the premier 250cc class can offer.*

* NOTE: 4-stroke powered motocrossers like the CR-F will not be homologated for entry in FIM-sanctioned 250cc-class motocross events in Europe during the 2002 racing season, but are instead currently scheduled to qualify for the 2003 season.

Development Concept

The CRF450R's race-dominating advantages start with the explosive power delivery of its 'new from the ground up' 4-stroke 4-valve single-cylinder engine. Putting out over 40kW of berm-ripping power, this dynamic engine combines with a remarkably light 102kg vehicle weight to realise a power-to-weight ratio that has been the sole domain of two-stroke motocrossers—until now.

With such features as its unique 'Unicam' head, ultra-flat and lightweight 'miniskirt' piston, a dual-sump lubrication system that separates the crankcase from the transmission, and astoundingly compact proportions, this new engine delivers the strong, instantaneous rush of big-single power needed to compete—and conquer—the world's most competitive class of off-road racing.

The CRF450R also features Honda's most-advanced aluminium motocross frame design, which is based closely on the newly developed frame featured on the 2002 CR250R. Using essentially the same concept and construction, but fine-tuned to match the mountings and power characteristics of its new 4-stroke engine, the CRF's frame incorporates the same weight-saving features to realise an overall weight that's less than 225g heavier than the CR250R frame on which it's based.

The new 2002 racing season stands as a brave new world for motocross and remarkable changes are even now on the horizon. By bringing to bear the formidable power of Honda's four-stroke engine technology and cutting-edge aluminium chassis design, the designers of the 2002 CRF450R are turning the racing world upside down—once again.

The 2002 CRF450R—Honda's first four-stroke motocrosser—is the world's new performance leader, offering the best power-to-weight ratio available.

Loaded with CR-inspired racing technology, the CRF450R will soon be the race-winning standard against which all other motocrossers will be compared.

Styling

Like the other members of the CR family, the CR450R features a sharp and stunning look of speed and aggressive, 'take-no-prisoners' performance. Designed to emphasise its single-minded focus on high-flying, championship-class motocross performance, as well as the high-tech look of its engine and chassis, the CRF's bodywork takes on swoopy lines with a fully integrated form that follows the narrow, streamlined curves of the frame to smoothly conform with a rider's every movement. All panels are designed for easy attachment and removal, to allow quick access for needed maintenance between heats.

Colouring Concept

The CRF's colour scheme is unmistakably Honda Racing. Bright red fenders, shrouds and seat side panels contrasting with a background of white number plates and black Honda Wing-based graphics, with bright yellow 'CRF' markings on its shrouds to boldly announce the arrival of the new kid on the blocks.

Colours

- **Explosion Red (with Ross White and Black)**

Engine

The CRF450's incredibly powerful 449cm³ 4-stroke single overhead-cam engine is packed with innovations designed to deliver race-winning performance with instant leaps of breathtaking power and torque. Specially designed to deliver strong 4-stroke power from a lightweight and compact configuration, the 29.5kg engine 's churns out a remarkable 41kW at 9,000rpm—nearly 91kW per litre—and 49.8Nm of torque delivered across a wide powerband for easy control and quick response at the twist of its throttle while maintaining Honda's legendary simplicity and dependability.

The totally new engine's vertically split crankcases feature a built-in oil pump that reduces weight by 145g over conventional designs, and a gear-driven balancer to reduce vibration while it drives the water pump. The high-strength crankshaft is made of low-carbon steel, and its main journals have been carburised for maximum durability at sustained high engine speeds.

The engine's five-speed gearbox features a separate lubrication system that makes possible a smaller oil sump, less weight, and less power-robbing windage from the crankshaft contacting the oil. This design also keeps the oil bath surrounding the strong eight-disc clutch running cooler and cleaner. The CRF's durable five-speed close-ratio transmission matches the engine's power delivery with a gear for every bump and jump of the track.

New Unicam Valvetrain

The engine's four valves are all operated off only three lobes of the chain-driven cam. The two outer lobes directly actuate a pair of lightweight 36mm titanium intake valves located directly below the cam. The centre lobe actuates the two 31mm exhaust valves by way of a unique forked rocker that features a

single large roller following the lobe to reduce friction and stress, and by extension the size of the cam.

These titanium intake valves have several advantages. First, of course, is their light 24.8g weight, which saves 15.2g over a comparable steel valve. Besides permitting higher revs with no valve float, these lighter weight valves can use smaller, lighter valve springs, which in turn allows the camshaft to be positioned lower for more compact and lightweight construction. In fact, the CRF's entire compact Unicam assembly is fully 337g lighter than a comparable DOHC design. The compact arrangement of the valves also makes possible a remarkably narrow, 21.5-degree included valve angle for a flatter, optimised combustion chamber shape that realises a high 11.5 : 1 compression ratio and free flame propagation for more efficient combustion and hotter performance.

A unique, pin-rotation-type automatic decompression system eases both cold-weather starting and hot-restarts. This system combines with the CRF's light-action primary kickstart system to ensure quick starts with minimal effort in any gear. Valve adjustments, when needed, are done with shims used in the intake valves' direct, shim-under-bucket system, and installed between the rocker arm and the exhaust valve stem keepers.

An ingenious press-fit tube installed between the forks of the exhaust rocker permits the spark plug to be centrally positioned in the compact head and accessed through a hole in the top of the head cover.

New 'Miniskirt' Piston

Derived directly from Honda's Formula One race car technology, the CRF's forged, two-ring flat-top piston is remarkably short compared to its width. At 96mm in diameter, it stands only 36mm tall, thanks to its miniskirted 'slipper' design, and weighs an amazingly lightweight 267 grams, or fully 108 grams

less than convention designs. Attached to a double-carburised connecting rod that utilises a needle-roller bearing at its big-end for maximum high-rpm performance and durability, the piston rides in a lightweight and durable NiCaSil-plated cylinder that does away with heavy steel cylinder liners while ensuring cooler and quieter operation for extended engine life.

High-Efficiency Intake and Exhaust

The flat slide of the CRF's 40mm Keihin FCR carburettor features two large rollers on each of its sides to reduce throttle pull resistance for lighter throttle effort, smoother operation, crisp response and excellent rideability. Its finely atomised fuel/air mixture is fired by a centrally positioned spark plug which gets its charge from a high-speed, high-accuracy 8-bit digital CPU incorporating the Capacitor Discharge Ignition (CDI) for maximum performance.

Exhaust duties are handled by a lightweight titanium header feeding into an aluminium silencer that can be rebuilt and repacked with new sound-damping material.

Cooling this compact, liquid-cooled engine are a set of dual radiators that provide significantly greater surface area and more effective heat dissipation compared to most single-radiator designs.

Chassis

The CRF's compact and lightweight, 3rd Generation semi-double-cradle, twin-spar aluminium frame is based directly on the same revolutionary chassis currently used by Honda's high-flying CR125R and CR250R motocross racers. Providing an optimal balance of rigidity, strength and compliance, its narrow proportions ensure superb rider manoeuvrability and comfort, while making a major contribution to the CRF's class-leading 102kg dry weight to ensure breathtaking acceleration and responsive handling control. The frame's tall swingarm pivot plates and sleek frame spars combine to create a narrow overall frame cross-section for superb rider comfort and the easy manoeuvrability needed for optimal racing control. Hanging from its compact forged aluminium steering head is large, tapered box-section downtube was created with Honda-original swaging technology that achieves maximum rigidity with minimal weight. Two rugged box-section rails attach to the base of the downtube to provide support for the engine while hanging higher for less contact with the ground in the heat of rugged motocross competition.

Superb rider ergonomics are, of course, central to this frame's unique design, and have been optimised through the design and positioning of the handlebars, pegs and seat. Seat and the footpeg height, for instance, place the rider's legs at the narrowest cross-section of the frame for optimised comfort and handling feel, while the seat's multi-density foam construction has been designed to conform with the fuel tank and frame's unique curves to ensure smooth transitions that increase rider mobility and the feeling of being part of the machine, rather than just riding on it.

The rubber-mounted handlebars help reduce rider fatigue and improve comfort, while their centrally positioned mounts can be easily switched with those used on the CR125R to provide 3mm of fore or aft positioning

adjustment to match rider size and preference. Their Works-type handlebar grips also contribute to enhanced rider comfort.

High-Performance Suspension System

The CRF450R's massive 47mm inverted cartridge-type front fork tubes are essentially the same as those fitted to Honda's championship CR250R, though specially tuned to match the CRF's unique performance characteristics. With aluminium damping rods providing a 350g weight reduction from the fork's previous generation, it features 16-position rebound and compression damping adjustment to match any rider and track conditions. Molybdenum-coating on the inner surface of the front fork's larger outer tubes ensures a full 305mm of smooth, low-friction operation to absorb the punishing impacts of motocross racing.

Its proven rear Pro-Link suspension system supports a superb, high-tech aluminium swingarm that features dual-axis, double-taper spars mated to a large cast aluminium cross-member with casting wall thicknesses specially tuned to ensure maximum strength with minimal weight.

The heavy-duty remote reservoir rear damper's wide 50mm piston delivers consistent performance to hold up under the demands of intense motocross racing conditions. This trick unit boasts 17-position rebound damping, plus separate low-speed (13 positions) and high-speed (3.5 turns) compression damping adjustments for 318mm of smoothly compliant rear wheel travel to deliver traction on touchdown from high-flying triple-jumps.

Lightweight Wheels and Brakes

Like Honda's latest CR's, the CRF450R is shod with lightweight aluminium wheels front and rear featuring lightweight HRC Works-type aluminium

spoke nipples that reduce wheel weight by 100g. And taken together with the rear wheel's new hub and spoke design, rear wheel unsprung weight alone was reduced 450g over earlier configurations.

The front wheel also features a large-diameter front axle and a wide wheel-bearing span for excellent rigidity, while the rear wheel's 25mm wide axle and large-diameter bearings deliver excellent rigidity to stand up to torturous track conditions. A smaller optionally available 20-inch front wheel offers improved cornering traction and comfort for discerning riders.

Braking duties are handled by big 240mm-wide drilled disc brakes front and rear. The compact dual-piston calliper mounted up front features anodised aluminium pistons squeezing a lightweight front rotor between high-grip sintered metal pads to reduce unsprung weight for lighter, more responsive handling to get in and out of the corners quicker.

At the rear, a newly designed, HRC Works-type rear brake system features a compact new integrated rear master cylinder and fluid reservoir that eliminates the standard remote reservoir and hose used on most bikes to further minimise weight. Together with a smaller single-piston calliper and smaller-diameter master cylinder piston, overall brake system weight is fully 335g lighter than conventional designs while offering improved serviceability. Other features such as the rugged disc cover and calliper guard have also been designed smaller and lighter for reduced unsprung weight.

Equipment

- The frame's open, dual-spar design permits larger air-intake ducts to be designed into the sidecovers, contributing to improved airflow in the engine's mid- and upper-rpm range. Inside, the large, two-stage foam air filter provides optimal engine protection and easy maintenance, and can be quickly washed and put back into place. The frame's easily removable aluminium rear sub-frame allows easy maintenance and easy access to the rear suspension components.
- The CRF's wide, cleated, self-cleaning stainless steel footpegs provide excellent grip. Strong against corrosion, their folding designs provide extra ground clearance and minimise damage in a spill.
- The lightweight aluminium brake pedal and shift lever were also designed to complement the CRF's riding position. The cleated brake pedal features an optimised ratio to match its integrated rear brake master cylinder design, and both are built to stand up to the punishment of motocross racing.
- The compact front brake lever is adjustable.
- The chain guide is made of a strong, new material that offers improved wear resistance and three-times longer service life than conventional materials used till now. The heavy-duty hollow chain roller also features a tough, double-sealed bearing for assured operation.

Specifications

CRF450R (ED-type)

Engine	Liquid-cooled 4-stroke 4-valve SOHC single
Bore × Stroke	96 × 62.1mm
Displacement	449cm ³
Compression Ratio	11.5 : 1
Carburettor	40mm Keihin FCR flat slide
Max. Power Output	41kW/9,000min ⁻¹
Max. Torque	49.8Nm/7,000min ⁻¹
Ignition	Computer-controlled digital capacitor discharge with electronic advance
Starter	Primary kick
Transmission	5-speed
Final Drive	'O'-ring sealed chain
Dimensions	(L×W×H) 2,187 × 825 × 1,258mm
Wheelbase	1,488mm
Seat Height	945mm
Ground Clearance	331mm
Fuel Capacity	7.5 litres
Wheels	Front Aluminium rim/wire spoke
Tyres	Front 80/100-21 51M Rear 110/90-19 62M
Suspension	Front 47mm inverted leading-axle twin-chamber telescopic fork with adjustable compression/rebound damping, 305mm axle travel Rear Pro-Link with adjustable compression/rebound damping, 318mm axle travel
Brakes	Front 240mm hydraulic disc with dual-piston calliper and sintered metal pads Rear 240mm hydraulic disc with single-piston calliper and sintered metal pads
Dry Weight	102kg

All specifications are provisional and subject to change without notice.