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## HONDA CRF400RX ENDURO 2022



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Model updates: *Developed by RedMoto on the basis of the CRF 450RX Enduro, the new CRF 400RX Enduro is conceived and developed with the concept of the usability of the engine by softening the response to the touch of the gas and the power delivery of the engine to adapt it to the needs of all fans of the Honda brand. The 2022 YM receives further refinements, offering smoother drivability from new ECU settings plus a damping re-valve for the Showa suspension improving balance between front and rear, and overall control. The frame remains unchanged, and is the exact same frame used on the CRF450RX Enduro piloted by Thomas Oldrati, winner of the ISDE 2021.*

Road Homologation and fitting are by Redmoto S.r.l., official partner of Honda Motor Europe LTD for the distribution of the Honda CRF off-road range in Italy.

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## **1. Introduction**

For 17YM Honda introduced an all-new, competition-ready Enduro machine into its off-road line up – the CRF450RX. And it took as its rock-solid base the engine and chassis of the 17YM CRF450R – Honda’s first totally new 450cc motocrosser in eight years – with modifications including larger fuel tank, 18-inch rear wheel, revised PGM-FI mapping and suspension changes.

The CRF450R was the perfect platform to expand on and gave the CRF 450RX both the pure DNA to deal with any enduro stage *and* the confidence-inspiring competence to handle flat-out trails, challenging climbs and tight, tricky sections. And, just as importantly to an owner, it’s a high quality machine built with the long-term Honda reliability that makes it easy to live with over years of use.

Development has mirrored the CRF 450R, too. An HRC-developed cylinder head upped peak power and torque considerably in 19YM; HRC launch control was also added along with revised rigidity balance for the frame and swingarm, a new front brake caliper and adjustable-position Renthal Fatbar. For 20YM, just like its MX sibling, it received Honda Selectable Torque Control (HSTC).

21YM saw a major evolution for the CRF 450RX. Starting from the exact same point as CRF450R, almost totally redesigned by HRC.

Now, for 22YM, the CRF 400RX Enduro, sibling of the CRF 450RX gains an ECU remap and suspension updates further polishing a complete off-road package.

## **2. Model Overview**

In the major 21YM update – carried out under the development theme of ‘*Ultimate Off-Road Weapon*’ – the new (2kg lighter) frame and swingarm’s rigidity balance were combined with a tighter chassis geometry and heightened ground clearance to target peak cornering performance.

HRC’s engine knowhow delivered strong low- to mid-range torque and the revised decompressor system gave more consistent off-the-bottom driveability.

A new hydraulic clutch and comprehensive electronics package ensured that the new bike’s ergonomics made it easier for the rider to go *consistently* fast. A new sidestand and brush guards completed the update and improved practicality.

Building on these solid fundamentals from the new 21YM model, the 22YM the CRF 400RX Enduro receives an ECU update boosting drive plus extensive re-valve of the front and rear Showa suspension, elevating damping performance.

## **3. Key Features**

### **3.1 Chassis**

- ***For 22YM, firmer suspension damping creates more balanced suspension performance***
- ***HRC input running through frame, swingarm, rigidity balance and geometry combines for amplified cornering ability and ease of use***
- ***Compact and narrow plastics aid rider freedom***





For 22YM the CRF 400RX's chassis is unchanged aside from internal adjustments to the front and rear Showa suspension. The aim for the 22YM evolution is to deliver noticeably improved 'hold up' – raising the compression damping ride height of the stroke front and rear in use – optimising balance between the front and rear of the machine.

All suspension settings are specific to the CRF 400RX Enduro, given the wider variety of terrain and conditions the bike will cover compared to the pure MX machine. The Showa 49mm USD coil spring AG2 fork is based on the 'factory' unit supplied to MX race teams in the Japanese championship. Through the 21YM update the fork received 5mm more stroke, to 310mm, and increased rigidity for its axle clamps.

For 22YM the low-speed shim-stack has been re-valved to generate firmer settings for both compression and rebound damping. Oil volume reduces 8cc to 380cc; there are now 13 adjustment positions (rather than 14) for rebound with 14 for compression, as before.

A complete re-valve of the Showa MKE AF2 rear shock's low-mid- and high-speed shim stack delivers a firmer overall setting for compression damping. There are now 13 adjustment positions for rebound (from the 10 of the previous iteration) and 7 for low-speed compression (from 9) and 2-1/3 for high-speed (from 2-1/6). Spring pre-set length goes from 6.1mm/305N to 6.5mm/325N. Oil volume increases 1cc to 422cc.

The 21YM evolutionary leap saw the cycle parts and ergonomics greatly improved. Thanks to narrower main spars the weight of the main frame was reduced by 700g, while the redesigned subframe also saved 320g. The chassis dynamic was also new; with torsional rigidity maintained, lateral rigidity reduced 20% to increase corner speed, traction and steering accuracy. Both top and bottom yokes were redesigned for greater flex, for quicker steering and improved feel, and the aluminium Pro-Link swingarm given a rigidity balance tuned to match the frame.

To aid movement around the machine the seat was made shorter, lighter and 10mm lower at the rear compared to the previous design. It was also made easier to remove and install, and maintenance was simplified with only four 8mm bolts securing the bodywork each side.

Designed with Computational Flow Dynamics (CFD) for maximum through-flow of air, the radiator shrouds are constructed from one piece of plastic and include a lower vent while the radiator grills are optimised for airflow. The RedMoto redesigned plastic fuel tank holds 7,3L.

Standard-fit, lightweight Renthal Fatbar flex for optimal comfort; the top yoke features two handlebar-holder locations for moving the handlebar rearward and forward by 26mm. When the holder is turned 180°, the handlebar can be moved an additional 10mm from the base position, resulting in four unique riding positions.

Up front, the twin-piston brake caliper employs 30 and 27mm diameter pistons and 260mm wave-pattern disc; along with low-expansion rate brake hose it gives both a strong feel and consistent staying power. The single-piston rear caliper is matched to a 240mm wave-pattern disc. Knuckle guards protect hands and levers while the forged aluminium sidestand tucks away neatly to minimise interference while riding. The new side stand elastic band support perfectly integrates with the bike's ergonomics.

DID aluminium rims, with directly attached spoke pattern layout are finished in black; the front is a 21 x 1.6in, the rear an 18 x 2.15in. The rear wheel was made both stronger and lighter for 21YM and tyres are Metzeler Six Days Extreme 90/90-21 front and 140/80-18 rear.

The full led headlight perfectly integrates with the streamlined CRF design.





Sturdy back mudguard with integrated support for the registration plate, that also increases the resistance to the hits, typical of heavy off-road use.

A striking red-blue graphic complements the 22YM CRF400RX's aggressive lines.

### **3.2 Engine**

- ***Revised ECU mapping for enhanced bottom-end drive drivability***
- ***Hydraulic clutch gives consistent and light lever feel***
- ***Decompressor system delivers improved stall resistance***

22YM sees the 413 cc four-valve Unicam engine unchanged, except for updated ECU mapping further enhancing the boost in low to mid-range driveability that it received in 21YM.

Those changes for 21YM were very significant. An increase in peak power above 5,000rpm – accompanied by a stronger low-rpm torque feel – was the result of an extra 1.8L volume (to 4.1L) on the 'clean' side. The injector angle, too went from 30° to 60°, spraying fuel all the way back to the butterfly to improve intake efficiency, cooling of the charge and all-important throttle feel. The decompression system was also new: its counterweight moved from the right of the camshaft to the left, giving more stable operation at low rpm with increased stall-resistance.

The biggest change was to the twin exhaust ports: like the CBR1000RR-R Fireblade their exit became oval rather than round in shape for improved efficiency. The downpipe was also tucked in 74mm closer to the centre line while the single muffler featured twin resonators to reduce noise while boosting power.

Drawn directly from Gajser's bike was the 8-plate hydraulic clutch. This gives outstanding control and feel at the lever as well as delivering consistent lever clearance under arduous riding conditions. Slippage was also reduced by 85% at peak power.

Bore and stroke is set at 92 x 62.1mm with compression ratio of 13:1. A gear position sensor allows the use of three specific ignition maps for 1<sup>st</sup> and 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup>, and 5<sup>th</sup>. Rock-solid reliability has always been a big factor in the CRF400RX's success and a 5-hole piston oil jet and dual 12mm drum scavenge pump manage all-important lubrication.

### **3.3 Electronics**

- ***Honda Selectable Torque Control (HSTC) with 3 riding modes (plus OFF)***
- ***HRC Launch Control offers 3 start options***
- ***Engine Mode Select Button (EMSB) features 3 maps to adjust output character***
- ***HRC Setting tool tailors Aggressive and Smooth modes***

The CRF 400RX's HSTC works to minimise rear wheel spin (thus wasted forward drive) and maximise traction. It doesn't use a wheel speed sensor, and critically maintains feel at the throttle while managing power; ignition timing is retarded and the PGM-FI controlled when the *rate* of change of rpm is detected to have gone over a set amount.

The three Modes differ in drive management level for different riding conditions:





Mode 1 intervenes most lightly, and after the longest time – useful for reducing wheelspin and maintaining control in tight corners.

Mode 3 has the system intervene more quickly and strongly, and is therefore useful in more slippery, muddy conditions.

Mode 2 naturally offers a mid-point between 1 and 3 in terms of speed and strength of intervention.

The Launch Control indicator, EFI warning, HSTC and EMSB mode button, and LED indicator are sited on the left handlebar. Pressing and holding the HSTC button for 0.5s will cycle the system to the next mode, with a green LED indication – 1 blink for Mode 1, 2 for Mode 2 and 3 for Mode 3 – to confirm selection.

The HSTC system can also be switched off completely. When the engine is turned on, the system uses the last-selected setting.

HRC Launch Control gives any rider the best option for a strong start and also has 3 modes to choose from:

Level 3 – 8,250rpm, muddy conditions/novice.

Level 2 – 8,500rpm, dry conditions/standard.

Level 1 – 9,500rpm, dry conditions/expert.

Activating HRC Launch Control is easy: to turn on, pull in the clutch and push the Start button on the right. The purple LED will blink once for Level 1 selection. Push the Start button again, for 0.5s or longer, and the LED will blink twice for Level 2. Repeat the process and the LED will blink 3 times, indicating that Level 3 has been chosen.

The Engine Mode Select Button (EMSB) alters the engine's character and three maps are available to suit riding conditions or rider preference:

Mode 1 – Standard.

Mode 2 – Smooth.

Mode 3 – Aggressive.

The LED also displays mode selected, but with a blue light.

The HRC Setting Tool can deliver an ECU map with a much more easy-going Smooth mode, with gentler throttle response for less experienced riders. It can also inject Aggressive mode with a hyper-sensitive throttle reaction and engine response for race conditions.





#### **4. Technical Specifications**

ENGINE	
Type	Liquid-cooled 4-stroke single cylinder Uni-cam
Displacement	413cc
Bore ´ Stroke	92mm x 62.1mm
Compression Ratio	13 : 1
FUEL SYSTEM	
Carburation	Fuel injection
Fuel Tank Capacity	7,3 litres
ELECTRICAL SYSTEM	
Ignition	Digital CDI
Starter	Self-starter
DRIVETRAIN	
Clutch Type	Wet type multi-plate
Transmission Type	Constant mesh, 5-speed, manual
Final Drive	Chain
FRAME	
Type	Aluminium twin tube
CHASSIS	
Dimensions (L´W´H)	2,182 x 839 x 1,282mm
Wheelbase	1,477mm
Caster Angle	27.2°
Trail	115mm
Seat Height	965mm
Ground Clearance	336mm





Weight	Dry 107.3kg – Wet 113.4kg
SUSPENSION	
Type Front	Showa 49mm USD fork
Type Rear	Showa monoshock using Honda Pro-Link
WHEELS	
Type Front	Aluminium, spoke
Type Rear	Aluminium, spoke
Tyres Front	90/90-21" Metzeler Six Days Extreme
Tyres Rear	140/80-18" Metzeler Six Days Extreme
BRAKES	
Front	Single 260mm disk
Rear	Single 240mm disk

All specifications are provisional and subject to change without notice

