

**HONDA**

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# Press Information

**FOR IMMEDIATE RELEASE**

**26 May 2021**

**2022 HONDA CRF450R**



*Model updates: After a major evolutionary leap in 21YM the CRF450R receives further refinements for 22YM, offering smoother drivability from new ECU settings, plus a re-valve for the Showa suspension to improve damping balance between front and rear. The frame remains unchanged, and is the exact same frame used on the CRF450RW piloted to back-to-back MXGP World Championships by Tim Gajser in 2019 and 2020.*

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### 1. Introduction

The Honda CRF450R has been *the* benchmark motocrosser since its introduction in 2002. Its package has always aimed to offer its rider – whether amateur enthusiast or pro-racer – total control through balance and agility. Plus, of course, it's built with the quality, durability and longevity that Honda has long been famed for.

And it's a race bike that has constantly evolved. In 17YM, under a development concept of '*ABSOLUTE HOLESHOT!*', Europe's favourite open-class MX machine was given a ground-up redesign, with completely new chassis and a major top end power boost from a brand-new engine. Standard-fit electric start was a convenient addition in 18YM and, for 19YM, an HRC-developed cylinder head upped power and torque considerably; HRC launch control was also added. For 20YM the CRF450R gained Honda Selectable Torque Control (HSTC).

Aside from the wheels and fundamental engine architecture, for 21YM the CRF450R was effectively a totally new machine, drawing heavily on developments from the 2019 MX GP championship-winning CRF450RW. And, while the 2020 MXGP championship was a challenge for a variety of reasons, Gajser and HRC secured the title for a second year in a row at the 18<sup>th</sup> round in Trentino, Italy in November 2020.

Backed up by this continued proof of its top level racing pedigree, the 22YM CRF450R features further refinements to engine and suspension. And it remains, at its core, an HRC racer it *is* possible to buy.

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### 2. Model Overview

The redesigned 21YM CRF450R was based on the development theme of '*RAZOR-SHARP CORNERING*', centred around stronger low/mid-range torque, ultra-accurate handling and rider-friendly ergonomics. 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 throughout a race – helping not only MXGP riders but also MX enthusiasts of *all* ability levels to constantly post optimal lap times.

Building on these solid fundamentals from the new 21YM model, for 22YM the CRF450R 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 outstanding cornering ability and ease of use, lap after lap***
- ***Compact narrow plastics aid rider freedom***

For 22YM the CRF450R'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 both front and rear in use – optimising balance *between* the front and rear of the machine.

The Showa 49mm USD coil spring AF2 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 15) for rebound with 15 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 11 adjustment positions for rebound (from the 8 of the previous iteration) and 6 for high and low-speed compression (from 12). 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 titanium fuel tank holds 6.3L.

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.

DID aluminium rims, with directly attached spoke pattern layout are finished in black; the front is a 21 x 1.6in, the rear a 19 x 2.15in. The rear wheel was made both stronger and lighter for 21YM and Dunlop's MX33F/MX33 soft-terrain tyres are fitted as standard equipment.

Rake and trail remain at 27.1°/114mm with 1481mm wheelbase and 336mm ground clearance. Dry weight is 105.8kg.

The striking all-red graphic treatment complements the 22YM CRF450R's aggressive lines.

### **3.2 Engine**

- ***Revised ECU mapping for 22YM enhances smoother power delivery***

- ***Hydraulic clutch gives consistent and light lever feel***
- ***Decompressor system delivers improved stall resistance***

22YM sees the 449.7cc four-valve Unicam engine unchanged, except for updated ECU mapping further promotes linear throttle control enhancing the boost that it received in 21YM.

Those changes for 21YM were very significant. An increase (up to 0.6kW) 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 96 x 62.1mm with compression ratio of 13.5:1. 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 CRF450R’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 CRF450R’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.

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#### 4. Technical Specifications

ENGINE	
Type	Liquid-cooled 4-stroke single cylinder uni-cam
Displacement	449.7cc
Bore ´ Stroke	96.0mm x 62.1mm
Compression Ratio	13.5 : 1
FUEL SYSTEM	
Carburation	Fuel injection
Fuel Tank Capacity	6.3 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 827 x 1,267mm
Wheelbase	1,481mm
Caster Angle	27.1°
Trail	114mm
Seat Height	965mm
Ground Clearance	336mm
Weight	Dry 105.8kg – wet 110.6kg
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	80/100-21-51M Dunlop MX33F
Tyres Rear	120/80-19-63M Dunlop MX33
BRAKES	
Front	Single 260mm disk
Rear	Single 240mm disk

All specifications are provisional and subject to change without notice

Please note that the figures provided are results obtained by Honda under standardised testing conditions prescribed by WMTTC. Tests are conducted on a rolling road using a



standard version of the vehicle with only one rider and no additional optional equipment. Actual fuel consumption may vary depending on how you ride, how you maintain your vehicle, weather, road conditions, tire pressure, installation of accessories, cargo, rider and passenger weight, and other factors.