**2013 HONDA CBR500R**

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Model updates: *A sports middleweight twin – one of a brand new trio of motorcycles– that offers excitement, practicality and low ownership and running costs, plus design cues of the CBR1000RR. 35kW engine makes it ideal for A2 license holders.*



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**1. Introduction**

For riders looking to move up from a 125, or holding an A2 licence, the fully faired twin-cylinder CBR500R provides an excellent first big sports bike experience, which will also appeal to experienced riders looking for a great value alternative to larger sports bikes. The CBR500R is part of a new family of motorcycles from Honda that includes the naked CB500F and adventure sports CB500X.

Sharing a common frame and engine, the three machines each have a distinct feel and character and feature a riding position and design that is tailored, and will appeal to, a wide variety of riders, with adaptable abilities that cover a range of uses from commuting and sports, to touring.

While the CBR500R, CB500F and CB500X are focused in different directions they are all physically easy to manage, and deliver all-round practicality matched to excellent efficiency. As true middleweights, blessed with lightweight agility and an engaging power delivery, above all, they are also enjoyable to ride in every scenario.

Honda has a motorcycling history that goes back over 60 years, and in 1957 released the 247cc Dream C70, powered by its first parallel twin cylinder engine. Through the 1960s the DOHC CB450 twin regularly outperformed larger capacity rivals and the new CBR500R proudly carries the CB suffix (with an extra dash of race-inspired R) and proves the point that – sometimes – less most certainly can be more.

Fast, frugal, affordable and fun, the CBR500R offers a great entry point to the world of sports motorcycles, with high a build quality plus pride of ownership that will last.

**2. Model Overview**

The CBR500R’s performance will give anyone looking for their first sports bike an exhilarating ride on a twisty, winding road – or even race track. It works equally well in urban environments and is a motorcycle designed to be ridden, and thoroughly enjoyed, by people of all shapes and sizes.

Its DOHC twin-cylinder fuel-injected engine produces 35kW (making it ideal for new 2013 A2 licence holders moving up) and returns an impressive 27km/l (75mpg) (WMTC figure). Honda’s engineers see it very much as an “accessible CBR engine,” and worthy of the name.

The steel diamond frame and high quality suspension – 41mm telescopic front forks matched to Pro-Link rear monoshock – provide confident, precise handling as do 17-inch cast aluminium wheels and wide 120 front, 160 rear radial tyres. Powerful wave-pattern disc brakes are assisted by standard-fitment ABS.

While it may feature the styling of the four-cylinder CBR1000RR, the CBR500R’s similarities to its big brother are more than skin deep, and it will be found on racetracks in 2013 as the motorcycle used in the European Junior Cup.

Designed to identify and develop young racing talent from around the world, the EJC will take place at selected European rounds of the 2013 FIM World Superbike championship. Young riders from 14-19 years, based in countries from Europe to Asia as well as the USA and Australia, will be racing for a fantastic prize: a ride throughout 2014 for a Honda team in the UEM Superstock 600 European Championship.

**3. Key Features**

**3.1 Chassis**

The CBR500R’s 35mm diameter steel diamond-tube mainframe is light and strong, and has a tuned degree of yield that gives plenty of feedback to the rider as road surfaces change. The shape and position of the engine mounts, and the frame’s rigidity balance, have also been carefully balanced to reduce vibration.

Wheelbase is 1410mm and rake and trail are set at 25.5°/102mm giving nimble, yet reassuring steering. Mass centralisation, with the engine in very close proximity to the swingarm pivot point, delivers turning agility and optimum front/rear weight distribution ensures stability. Kerb weight is 194kg. Seat height is low at 790mm, making the CBR500R very easy to manage and its sporty riding position will comfortably accommodate riders of varying heights thanks to a relatively high handlebar position.

Overall dimensions are 2075mm x 740mm x 1145mm , with 140mm ground clearance. The fuel tank holds 15.7-litres, including reserve, and combined with the engine’s excellent fuel economy gives great range of 420km (over 260 miles).

The 41mm telescopic front fork, with 120mm stroke, delivers a compliant yet controlled ride and gives a great connection to the front tyre. Pro-Link monoshock rear suspension features optimised leverage ratios and 9-stage preload adjustment for the rear shock. It works with a rigid swingarm, constructed from 70mm x 30mm box-section steel. Final drive is via 520 sealed chain.

Lightweight, 17-inch cast aluminium wheels employ hollow cross-section Y-shaped spokes. Front wheel width is 3.5-inch with a 120/70-ZR17 tyre, the rear 4.5-inch and 160/60-ZR17 tyre. A single front 320mm wavy disc and two-piston brake caliper is matched to a 240mm rear disc and single-piston caliper. ABS is fitted as standard.

The comprehensive dash features a digital speedometer, digital bar graph tachometer, odometer, dual trip meters, clock, plus digital fuel level gauge and fuel consumption. HISS (Honda Intelligent Security System) is built in to the ignition, and the headlights feature two 55W H7 Halogen bulbs and multi-reflectors. There is space under the seat to store a U-lock.

The CBR500R will be available in three colour options:

Pearl Himalayas White

Graphite Black

Seal Silver Metallic

**3.2 Engine**

The CBR500R’s engine is a next generation power unit, looking to the future in both performance and environmental terms. The DOHC, 8-valve liquid-cooled parallel twin layout was chosen because of its light weight, all-round ability and flexible usability.

Bore and stroke is set at 67mm x 66.8mm; the crankshaft pins are phased at 180° and a primary couple-balancer sits behind the cylinders, close to the bike’s centre of gravity. The primary and balancer gears use scissor gears, reducing noise. The crank counterweight is specifically shaped for couple-balance and its light weight allows the engine to spin freely, with reduced inertia. PGM-FI fuel injection provides superb throttle response and peak power of 35kW arrives at 8,500rpm, with 43~~.1~~Nm torque delivered at 7,000rpm.

The ‘triangle’ proportion of crankshaft, main shaft and countershaft is very similar to that of Honda’s four-cylinder RR engines, making for a very compact unit. The six-speed gearbox also mirrors that of its RR cousins, allowing for a short engine and uses the same gear change arm structure and link mechanism. A deep sump reduces oil movement under hard cornering and braking; oil capacity is 3.2-litres. Flow analysis of the cooling system through CAE (Computer Aided Engineering) maximised efficiency and allowed use of a physically smaller, and lighter, water pump.

The DOHC cylinder head uses compact roller rocker arms; shim-type valve adjustment allows them to be light, which means lower valve-spring load and reduced friction. A silent (SV Chain) cam chain has the surface of its pins treated with Vanadium, reducing friction with increased protection against dust. Inlet valve diameter is 26.0mm, exhaust valve diameter 21.5mm. CFD (Computational Flow Dynamic) was used to maximise gas flow efficiency – the route from airbox to exhaust pipe was made as straight as possible, and a plate in the airbox separates the air flow to each cylinder.

Bore size of 67mm is identical to that of the CBR600RR. CAE was used to ensure the pistons had the optimum balance between weight, strength and rigidity. The shape of the piston itself was based upon those used in the CBR1000RR; as peak rpm was going to relatively high piston noise could have been a problem. Friction is reduced by the addition of striations on the piston skirt (a finish that increases surface area, introducing gaps in which oil can flow for better lubrication). As with the CBR600RR and CBR1000RR, an AB 1 salt bath process, used after isonite nitriding, forms a protective oxidisation membrane.

The crankcase uses centrifugally-cast thin-walled sleeves, and the same bore interval as the CBR600RR helps them be as compact and light as possible. Careful attention has been paid to their internal design to reduce the pumping losses that can occur with a 180° phased firing order. Using the same internal relief structure as that of the CBR1000RR, the oil pump features improved aeration performance, with reduced friction and allows use of a simple oil pan.

The engine itself acts as a stressed member, reinforcing the frame’s rigidity with four frame hangers on the cylinder head and the Matt Axis Grey Metallic finish on the crankcase and cylinders adds depth, complementing its taut overall styling.

A secondary air injection (AI) system is built into the cylinder heads, while an 02 sensor and catalyser inside the 2-1 exhaust ensures the CBR500R’s emissions are extremely low.

**4. Accessories**

The following genuine Honda accessories will be available for the CBR500R:

Panniers (with moving system)

Rear carrier

Top box

High windscreen

Seat cowl

Chain case

U-lock

Tank pad

Heated grips (12A)

Cover

**5. Technical Specifications**

 ENGINE

Type Liquid-Cooled, parallel twin

Displacement 471 cc

No of Valves per Cylinder 4

Bore × Stroke 67mm x 66.8mm

Compression Ratio 10.7 : 1

Max. Power Output 35kW @ 8500 rpm

Max. Torque 43 Nm @ 7000 rpm

Oil Capacity 3.2L

FUEL SYSTEM

Carburation PGM FI

Fuel Tank Capacity 15.7L (inc reserve)

Fuel Consumption 27Km/L (WMTC)

ELECTRICAL SYSTEM

Starter Motor

Battery Capacity 12V 8.6AH

ACG Output 23.4A/2000rpm

DRIVETRAIN

Clutch Type Wet multiplate

Transmission Type 6 speed

Final Drive Chain

**FRAME**

Type Steel, Diamond

CHASSIS

Dimensions (L×W×H) 2075mm x 740mm x 1145mm

Wheelbase 1410mm

Caster Angle 25.5 degrees

Trail 101.9

Seat Height 790mm

Ground Clearance 140mm

Kerb Weight 194Kg

SUSPENSION

Type Front Conventional Telescopic, 41mm

 Rear Prolink mono with 9 stage Preload adjuster, steel square pipe swingarm

WHEELS

Type Front Multi-Spoke Aluminium Cast

 Rear Multi-Spoke Aluminium Cast

Rim Size Front 17 x MT3.5

 Rear 17 x MT4.5

Tyres Front 120/70ZR - 17M/C

 Rear 160/60ZR - 17M/C

BRAKES

ABS System Type 2-Channel

Type Front Single Wavy Disk, 320mm, 2 POT caliper

 Rear Single Wavy Disk, 240mm, 1 POT caliper

INSTRUMENTS & ELECTRICS

Instruments Digital Speedometer, Digital Bar Graph Tachometer, Dual Trip Meters, Digital Fuel Level Gauge & Fuel Consumption Gauge, Digital Clock

Security System HISS (Honda Intelligent Security System)

Headlight 55W x 2 lights

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 WMTC. 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.