HONDA

Press Information 2001

CBR600F

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CBR600F

Introduction

The ever-popular CBR600F has been one of Honda's biggest selling Super Sport street bikes around the world since it shook up the motorcycling world with its first introduction as the Hurricane back in 1987. Since then, through several stages of evolutionary and revolutionary model changes, the CBR600F has consistently delivered an unrivalled combination of breathtaking performance and ergonomic comfort that have made it a well-rounded first choice that provides an inspiring ride for both well-seasoned sport bike aficionados and those setting out to expand the limits of their Super Sport riding abilities.

Out on the world's race tracks, the CBR has also been a dominant figure that has consistently held its own against the latest in technologically sophisticated racing machinery, winning a lion's share of gold and glory. Still, for all its successes on the racetrack, rather than striving to create a narrowly focused racer replica, the CBR600F's design team has never lost sight of its most fundamental design priority: that it always maintain the riding ease, comfort and well-rounded usability for which it has also become famous.

CBR600F

Introduction

In other words, the new machine must always remain true to Honda's 'F' concept of user-friendly Super Sport machines that has guided its development through the years. Thus, even though one of the lightest, strongest and fastest machines in its class, the new CBR600F has always been equally at home providing a comfortable ride for one or two as it is turning up the heat to dominate its class in the world's racing arenas with its fiery performance and nimble handling.

To ensure it retained its place on the podiums of world racing, the 1999 CBR received an all-new aluminium frame and a hotter new engine that boosted both its overall balance of performance and riding ease to unprecedented new levels. In the two years since that major upgrade in the CBR600F's performance, its design team focused not only on refining its renowned total balance of performance with a new look and evolutionary improvements in its power output and handling, they also set out to simultaneously pursue new levels of environmental compatibility in response to increasing world-wide concerns about air pollution.

CBR600F

Development Concept

To give the new CBR600F a more aggressively sporty character, its design team set out to develop a new upper front fairing cowl that would dramatically change its look to one of aggressive 'take no prisoners' performance. This new cowl's stunning new shape features as its central point of focus a pair of new dual multi-reflector headlights that give the new CBR the glaring look of a wild beast.

The CBR's overall performance was further upgraded with the addition of a new high-precision fuel injection system that also makes possible the adoption of Honda's world-leading low-emissions system for special markets. Likewise, handling was further improved with detailed yet fundamental modifications made to its frame to optimise its balance of rigidity and control. The end result of all these improvements is a lighter, sharper, and more aggressive CBR600F than every before, and a sure bet to lead the 600cc Super Sport class for yet another year.

CBR600F

Colouring Concept

The new CBR600F departs from the gradated colour combinations with large patches of colour of the last two years to return to a more aggressive look of boldly laid out graphics. Its four colour variations grab attention with their sharply contrasting swatches of colour and leads off with Honda's traditional tricolor combination, which features a bright red upper cowl that sweeps through white lines to a brilliant blue tail to herald the victorious highlights of Honda's proud racing history. Next, a deep and sinister black takes centre stage as a smoky premonition of the blazing high performance the CBR600F always holds in store.

A bright pearlescent yellow with black and metallic grey combination then lights up the scene with a lively blast of sport riding excitement, and finally, a brilliant, all-new metallic silver variation with specially simplified graphics joins several other models in the Honda lineup to convey a unified image of Honda's unrivalled Super Sport excellence.

With black-painted wheels and a bright aluminium frame to emphasise the CBR's high-performance componentry, the CBR600F sets the stage for yet another year of domination of the 600cc Super Sport class.

Colours

- Sparkling Red
  (with Real Blue and Ross White)
- Black
- Pearl Flash Yellow
  (with Meteor Grey Metallic)
- Accurate Silver Metallic

CBR600F

Styling

To emphasise the new CBR600F's more aggressive character and higher performance, its design team concentrated on developing a new front fairing cowl that takes on a radical new shape highlighted by the glaring eyes of its new dual multi-reflector headlights. Now more sharply slanted downward to slice through the wind at high speed, this new front cowl integrates the ducts of its air induction system into its new curves to realise a larger set of air inlet ports and stronger performance.

Beneath the uniquely angled shape of their one-piece clear plastic lens, the cowl's set of large, new dual-multi-reflector headlights stare menacingly out to make a bold statement of aggressive high performance. Above them, the lines of the cleanly slanted windscreen seem to taper down into a scowling brow that completes the new cowl's look of a wild beast ready to pounce.

Like many of the race machines now circulating the circuits at full speed, including Honda's own CBR900RR Fireblade, the CBR also features a newly designed front fender that covers more of the front wheel and the upper half of the front fork sliders to cut more cleanly through the air.

CBR600F

Engine

As one of the lightest, strongest and fastest machines in its class, the new CBR600F achieves a remarkable level of performance from its highly tuned engine. Featuring a compact, low-friction design that extracts one of the highest power-to-weight ratios in its displacement class, this engine stands as the dynamic result of a careful regimen of weight loss in the interests of both exceptional power output and quicker performance and handling, not to mention a level of riding ease, comfort and well-rounded usability that has won it wide renown.

For the year 2001, an assortment of improvements, both large and small, were made with the goal of achieving an even better balance of top performance and smoother response throughout the CBR's wide band of power. First among these improvements was the incorporation of a new PGM-FI fuel injection system to help the engine achieve a new level of high power output and precision control, as well as further sharpening its already nearly instantaneous response.

Engine

New PGM-FI Electronic Fuel Injection System

The biggest change in the CBR600F's performance menu comes with the addition of a new PGM-FI fuel injection system modelled on that currently fuelling the CBR900RR Fireblade. Following the most recent trends in Honda's high-performance Super Sport lineup, the CBR600F features Honda's latest high-performance, computer-controlled PGM-FI Programmed Fuel Injection system. Using a compact pair of 38mm dual-throat injector bodies, and controlled by an advanced Electronic Control Unit (ECU) that integrates both the fuel injection system's high-precision electronics and the CBR's digital electronic ignition into one compact 'black box,' this system provides ultra-precise fuel metering and combustion control for blistering performance.

The CBR's high-revving smaller displacement engine required several special design innovations to provide not only the desired stronger performance, but also smooth and linear throttle response as well. An extremely difficult combination of characteristics to realise in a midsized fuel-injected engine.

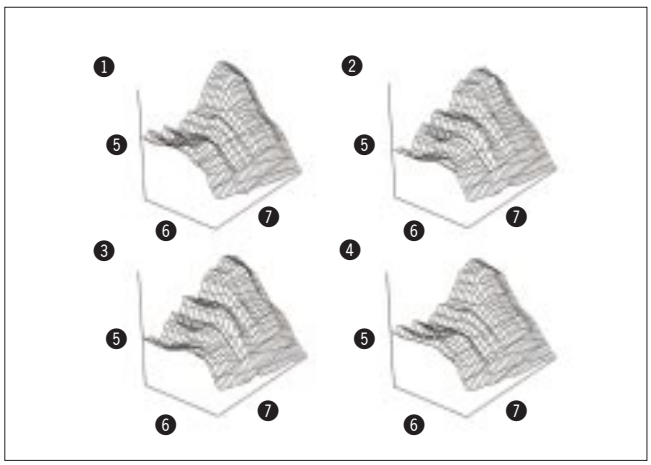
Fuel Injection Control Maps

❶ *Cylinder 1*
❷ *Cylinder 2*
❸ *Cylinder 3*
❹ *Cylinder 4*
❺ *Time (sec.)*
❻ *Throttle Angle (deg.)*
❼ *Engine Speed (rpm)*

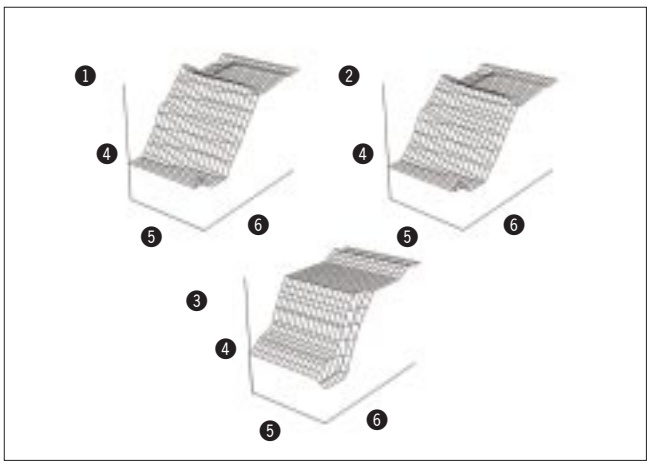
Ignition Timing Maps

❶ *Cylinders 1 and 4*
❷ *Cylinders 2 and 3*
❸ *No Load*
❹ *Spark Advance (deg.)*
❺ *Throttle Angle (deg.)*
❻ *Engine Speed (rpm)*

Fuel Injection Control Maps



Ignition Timing Maps



Engine

Specially tuned to give the CBR600F the hottest, most responsive performance possible over its wide range of operating conditions, this new PGM-FI system features a new, 130% faster ECU that accurately gauges the engine's sharper performance and higher revs. A new throttle sensor, cam pulsar and digital coolant temperature sensor were also incorporated into the new system to provide the ECU with the most accurate readout of operating conditions to ensure precise, high-powered performance and smoother, more linear throttle response. The addition of the new cam pulsar and coolant temperature sensor also necessitated the redesign of the head and head cover, which are all-new.

High-Precision ECU

The new PGM-FI fuel injection system's advanced electronic design integrates both the fuel injection system's Electronic Control Unit (ECU) and the CBR's digital electronic ignition into a single compact 'black box' for precise fuel metering and combustion control. It is also responsible for the CBR's remarkably low fuel consumption figures and—in a special system for the German market—some of the lowest exhaust emissions figures ever attained in a large-displacement motorcycle.

Engine

Larger New Airbox, New Air Induction Ports

To ensure the engine receives a steady supply of cool, power-producing air, the CBR's aircleaner was increased in size from 6.6 litres to a giant 8.1 litres. The aircleaner is also now directly fed by the long air induction ports feeding out to the front edge of the CBR's new front cowl, where they gather up large volumes of cool dense air away from the heat of the engine and radiator. Similar in design to the ports used in the current model, the large resonator chambers leading off the top of the ports to stabilise air pressure have been augmented by a pair of larger resonators reaching down into the front of the fairing. These extra-large pockets of cool, stable air ensure that the aircleaner always has a stable air supply, and also helps prevent the engine from stumbling when the throttle is quickly opened.

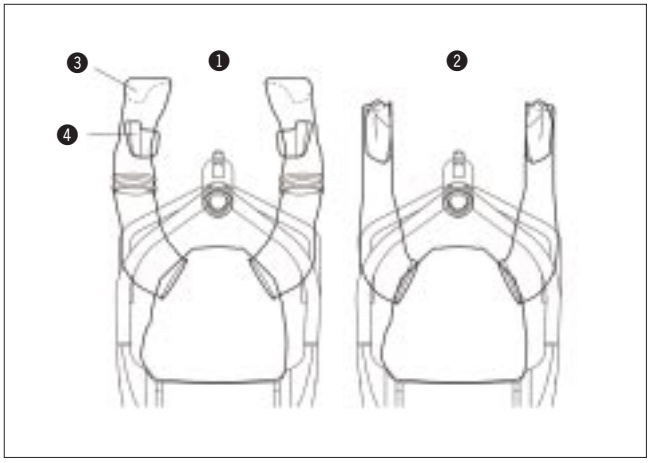
Direct Air Intake System Comparison (Top View)

❶ *New CBR600F*
❷ *Current Model*
❸ *Intake duct*
❹ *Resonator chamber*

Intake Pressure Maps

❶ *Cylinder 1*
❷ *Cylinder 2*
❸ *Cylinder 3*
❹ *Cylinder 4*
❺ *Time (sec.)*
❻ *Intake Manifold Pressure*
❼ *Engine Speed (rpm)*

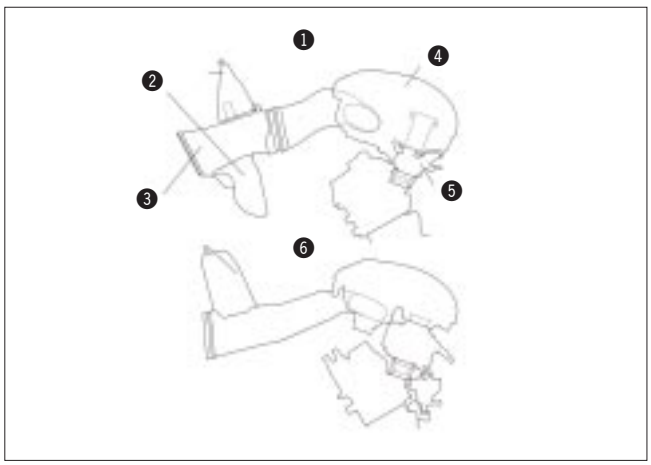
Direct Air Intake System Comparison (Top View)



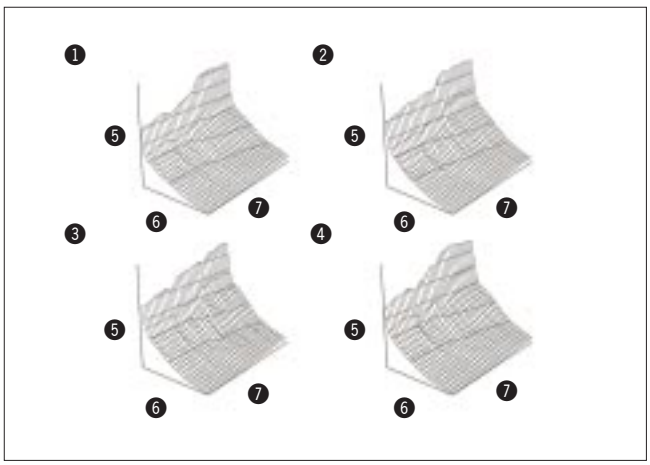
Direct Air Intake System Comparison (Side View)

❶ *New CBR600F*
❷ *Resonator chamber*
❸ *Intake duct*
❹ *Aircleaner*
❺ *Fuel injector body*
❻ *Current Model*

Direct Air Intake System Comparison (Side View)



Intake Pressure Maps



Engine

Automatic Bypass Starter

As introduced on Honda's most recent fuel-injected models, like the CBR1100XX Super Blackbird and CBR900RR Fireblade, the CBR600F's fuel injection system features a uniquely simple but highly effective automatic bypass starter system. Attached directly to the fuel injector assembly, the bypass starter automatically feeds an extra supply of air into the injector bodies in cold to sub-freezing conditions to ensure quick starts and smooth performance in virtually all weather conditions, Automatically turning itself off as the engine warms up, the bypass starter eliminates any need for a choke or manual idle speed adjustment.

New Iridium Spark Plugs

First introduced on Honda's high-performance VTR1000 SP-1, the new CBR600F is now installed with a set of lightweight and narrow iridium spark plugs that feature narrow 0.4mm tips for a higher performance spark, faster, hotter ignition and longer plug life.

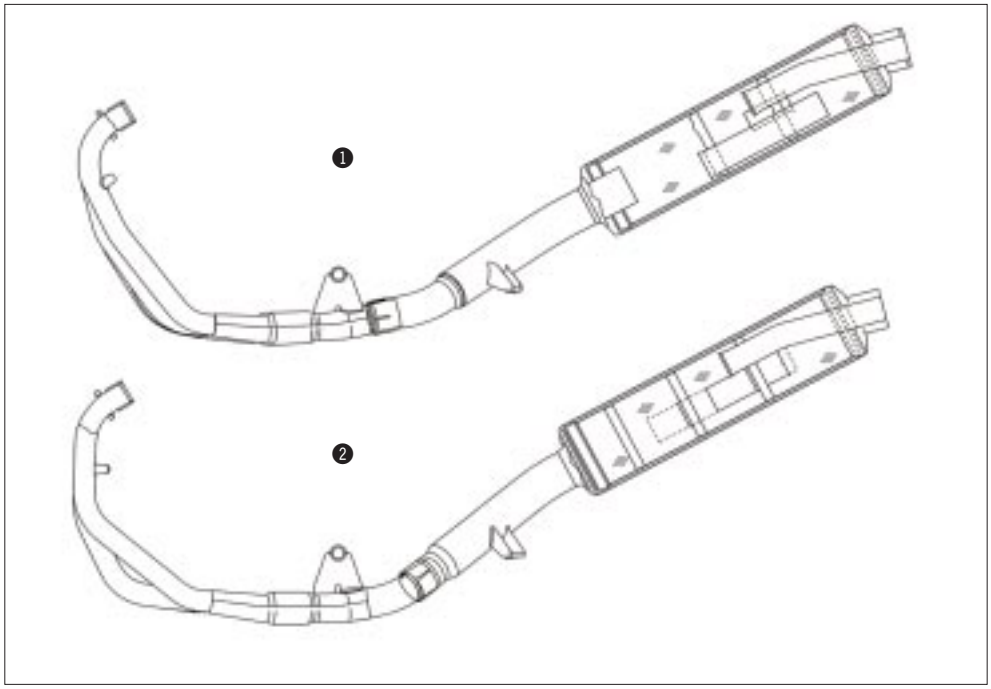
Air Injection System

With the goal of minimising exhaust emissions at their source, the CBR600F, like many of Honda's latest motorcycles, features a simple but effective air induction system that helps complete the burning of exiting exhaust gases by injecting a small jet of air into the exhaust ports on their exhaust strokes to prolong the combustion of any unburned fumes and other exhaust gases into the exhaust ports. The result is greatly reduced levels of unburned fumes and other pollutants that ensure easy compliance with Europe's current EURO-1 emissions regulations.

Exhaust System Comparison

❶ *New CBR600F*
❷ *Current Model*

Exhaust System Comparison



New Transmission Gear Ratios

As the new CBR600F now makes even stronger power than before, and at higher rpms, its instant blast of acceleration has been further augmented with a slight reduction in its 5th and 6th gear transmission ratios for sharper top-end performance and a breathtaking blast of acceleration from virtually anywhere in its wide powerband.

Special Addition for the German Market

Low-Emissions HECS3 (Honda Evolutional Catalyzing System)

Like the CBR900RR and other notable models before it, the new CBR600F also makes a small but positive contribution to reducing exhaust emissions and their resulting air pollution.

Taking advantage of the high-accuracy computerised control of its new PGM-FI fuel injection system, the CBR can now also be fitted with Honda's latest low-emissions exhaust system, the Honda Evolutional Catalyzing System, or HECS3, to easily meet Europe's strictest emissions regulations while maintaining its full-bodied performance output.

As in the other systems, a high-accuracy 'O2' exhaust sensor installed in the exhaust system monitors the level of oxygen contained in the exhaust gases, and instantly feeds this digital information back to the fuel injection system's ECU. To ensure the catalyser element installed in the CBR's exhaust pipe operates at it highest efficiency, the ECU modulates the fuel injection system to closely maintain the air/fuel ratio within a narrow tolerance centred around the optimal ratio of 14.7:1 for an optimal balance of minimised hydrocarbons (HC) and carbon monoxide (CO) on one hand, and nitrous oxides (NO_x) on the other.

The '3-way' catalyser element then completes the system's highly efficient exhaust cleansing operation by chemically neutralising and virtually eliminating the emissions of CO, HC and NO_x gases from the exhaust flowing through it, resulting in exhaust emissions levels that are far below those required by Europe's planned EURO-2 emissions regulations.

The CBR600F's lightweight and rigid aluminium dual-spar frame has received a host of detailed fundamental improvements to achieve a more effective balance of rigidity and lighter weight. The result of these efforts is a total machine weight reduction of 1.5kg compared to the current model, and significantly more responsive control to take riders to a whole new level of riding enjoyment.

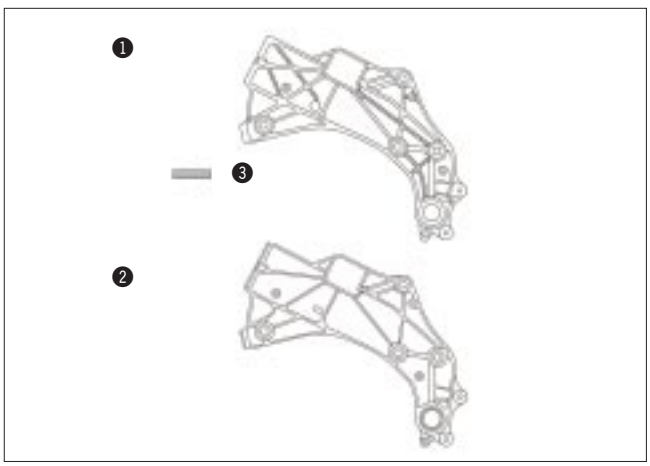
New Reinforced Frame Castings

Totally unseen, but nonetheless a major change in the CBR's frame design are entirely new castings used in the frame's lightweight yet massive-looking construction. To start, the frame's large cast aluminium steering head now features three new internal vertical ribs cast into the space directly behind the steering head pivot to realise a greater degree of torsional rigidity through its longitudinal axis that improves road feel sensitivity and better stands up to the incredible stresses of hard braking and cornering, especially in intense racing applications. Farther back, the inside surfaces of the pivot plate castings reaching down to the ends of the engine-mounted swingarm pivot feature an all-new reinforcement rib layout with more—and thicker—ribs combining to realise greater lateral rigidity for more responsive control during rapid changes in direction. Finally, a new rib cast into the lower bracket that secures the rear damper to the back of the engine provides yet another small but important increase in overall rigidity and strength.

Pivot Plate Comparison

❶ *New CBR600F*
❷ *Current Model*
❸ *New ribs*

Pivot Plate Comparison



Strengthened Swingarm Pivot

The frame's stronger pivot plates are not the only change to affect the rigidity of the all-important swingarm pivot. The hollow swingarm pivot rod itself was increased in strength with thicker-wall steel tubing used for greater rigidity. And even the bearings themselves were given an intensive once-over in the interests of achieving rock-solid rigidity at this critical location. Replacing the current model's high-precision needle roller bearings is a new layout that adds a new ball-type bearing to the outside of the right-side needle bearing to virtually eliminate any side-to-side lateral movement in the swingarm, even under the relentless punishing stresses of racing.

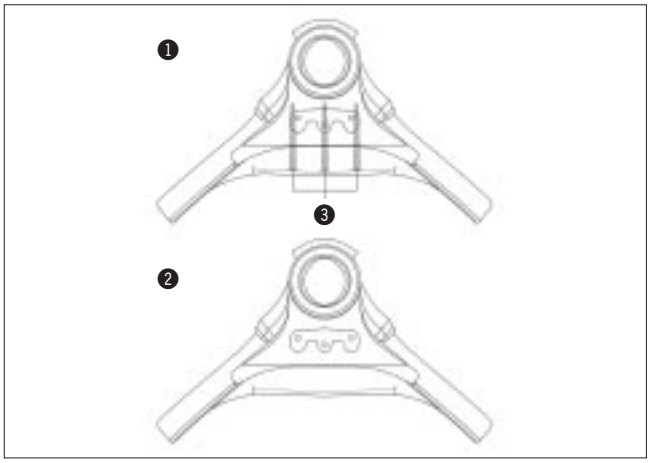
Fine-Tuned Suspension Settings

In the interests of lighter weight, the steel damper cylinders built into the CBR's smoothly responsive 43mm front fork tubes have been changed to lighter weight aluminium tubing. Both front and rear suspension settings have also been fine-tuned for the best balance of riding performance. And while the rear suspension's damper hasn't been fundamentally changed, its outer spring colour has been changed from red to bright yellow.

Steering Head Casting Comparison

❶ *New CBR600F*
❷ *Current Model*
❸ *Interior reinforcement ribs*

Steering Head Casting Comparison



Reduced Unsprung Weight

The CBR600F's already lightweight cast aluminium wheels received another weight reduction in the way of slimmer new hollow-section triple spokes. The front wheel's larger hollow hub also contributes to this weight loss by mounting the disc brakes' lighter new inner rotors.

The CBR's wide-rimmed rear wheel also receives slimmer and lighter spokes, and an all-new wheel damper system to reduce the shocks to the drivetrain caused by the powershifts, downshifts and sudden braking that are so common to racing, and not uncommon to intense sport riding. The current model's five-piece rubber damper set has now been replaced by a 6-piece set using a lighter and more durable compound of urethane for both lighter weight and more effective damping. The rear drive sprocket that attaches to these dampers has also been increased by one tooth in size—from 44t to 45t—for a small but significant role in the new CBR's sharper and stronger acceleration.

Enhanced Braking Control

Even the CBR's brakes weren't overlooked in the quest for top performance. While the CBR retains the same lightweight, compact and responsive dual-piston calliper brakes used on the current model, their calliper pistons have been changed from steel to aluminium for lighter weight and more responsive control. Brake pad material was also changed to a new, higher performance compound like that currently being used in many world-class race bikes. As noted above, the CBR's new gold-finished disc brake inner rotors yield a significant reduction in unsprung weight.

Ultra-Slim,
Fully Electronic Instrument Panel

The CBR600F's compact new fully electronic instrument panel features an ultra-thin and ultra-lightweight design. Its large dial-type tachometer shares space with a large new liquid crystal display (LCD) that provides a large, easily read digital display of speedometer, odometer, clock and fuel reserve readings. The digital odometer also doubles as a dual-setting trip meter, and both it and the speedometer display can be easily switched between kilometre and mile settings if the need arises (E-type only). At the left side of the display is a 4-segment readout of the fuel tank's reserve of fuel, which only appears as a warning when the fuel remaining drops to below 3.5 litres.

While all the standard warning lights are positioned in a row above the large-face LCD, a single yellow LED positioned over to the right of the tachometer provides an instant indication of when the engine's speed crosses over into redline. The tachometer itself features a slightly higher redline reading that the current CBR, owing to the engine's higher performance, and contains a small LCD readout of coolant temperature and a bright green LED that lights to provides visual confirmation when the correct key has been inserted in the ignition switch.

Equipment

Honda Ignition Security System (H.I.S.S.)
Introduced for the first time on the 1999 CBR600F, Honda's latest H.I.S.S. anti-theft system uses an ingenious electronic interlock to prevent the engine from being started by any other than the motorcycle's two original keys. Since the H.I.S.S. disables the motorcycle at the heart of its ignition system, it cannot be bypassed by either hot-wiring the ignition or exchanging the ignition switch module. A large, yellow diamond-shaped H.I.S.S. sticker on the top of the fuel tank clearly indicates the presence of this security system to ward-off potential thieves.

Unique Startup Routine
The meter panel's fully electronic display also allowed the CBR's design team to inject a bit of amusement into the normally bland startup routine. Once the key is placed in the ignition, the H.I.S.S. security system confirms that the correct key has been inserted. At this point, the tachometer needle jumps around to maximum scale and the speedometer flashes to a maximum readout of 290km. In the following brief interval, the tachometer needle winds back down to zero as the speedometer also counts down to zero. Following this the engine can be started normally.

Equipment

Higher-Output Electricals

To permit the CBR600F's electrical system to ably stand up to the extra load put on it by the new fuel injection system, the ACG's output was increased by 20% to 29A.

A smaller and lighter new Maintenance-Free (MF) battery (the same as used on CBR900RR) provides a 10% stronger output (8.6AH) than current unit. This combines with a larger-capacity regulator and the stronger charge of the ACG to meet all the extra electrical demands placed on it by the fuel injection system and dual headlights.

CBR600F

Specifications

Specifications		CBR600F (ED-type) (95/1/EC-values)
Engine		Liquid-cooled 4-stroke 16-valve DOHC inline-4
Bore × Stroke		67 × 42.5mm
Displacement		599cm^3
Compression Ratio		12 : 1
Carburation		Electronic fuel injection
Max. Power Output		81kW/12,500min^{-1}
Max. Torque		65Nm/10,500min^{-1}
Ignition		Computer-controlled digital transistorised with electronic advance
Starter		Electric
Transmission		6-speed
Final Drive		'O'-ring sealed chain
Dimensions	(L×W×H)	2,060 × 685 × 1,130mm
Wheelbase		1,390mm
Seat Height		810mm
Ground Clearance		135mm
Fuel Capacity		18 litres (including 3.5-litre warning light reserve)
Wheels	Front	17 × MT3.50 hollow-section triple-spoke cast aluminium
	Rear	17 × MT5.50 hollow-section triple-spoke cast aluminium
Tyres	Front	120/70–ZR17 (58W) (Radial)
	Rear	180/55–ZR17 (73W) (Radial)
Suspension	Front	43mm fully adjustable cartridge-type fork, 120mm axle travel
	Rear	Pro-Link featuring fully adjustable gas-charged remote reservoir damper, 120mm axle travel
Brakes	Front	296mm dual hydraulic disc with four-piston callipers, floating rotors and sintered metal pads
	Rear	220mm hydraulic disc with single-piston calliper and sintered metal pads
Dry Weight		170kg

All specifications are provisional and subject to change without notice.