

# VFR1200F

**2010** Press Information



## The Ultimate road-sports motorcycle

The VFR1200F has been developed in keeping with previous VFRs; that have delivered a combination of sports and touring capabilities using the latest technologies. This motorcycle is however brand new: A clean-sheet interpretation of the ultimate road-sport machine – a concept driven by extensive understanding of customer needs and the adoption of state-of-the-art technologies.

In pursuit of heightened levels of control and feedback, the VFR1200F adopts the latest race-track bred technologies but adapted and evolved to create a machine that can be many things to many riders.

The harmonic growl of the flexible and responsive V4 motor may rekindle the emotions inspired by previous iconic VFRs, but it's unique 'heartbeat' engine feel and an unrivalled level of manageability sets the new VFR apart, not only from its forbears - but also from every bike currently available.

## Development concept

A truly International design team included three Japanese members, one American and one European. Guided by the infinitely experienced Kishi-san (CBR1100XX Blackbird) and overseen by Hasegawa-san, the VFR1200F's design team was not only culturally varied but also spanned generations. Their collective goal was to create a sports bike with long-distance capabilities. To foster the right mindset the designers imagined waking up to a perfect day and deciding, impulsively, to ride 300km, effortlessly devouring large stretches of highway before carving through twisty canyon roads, just to enjoy lunch in a beautiful location before riding home again.

The VFR1200F designers began sketching their ideas in a remote hotel outside Rome. These sketches took many forms and explored every possibility and rather than refine these elements into one final design, the team headed back to Tokyo with all their individual drawings.

On the VFR1200F project, designers and engineers worked in parallel, discussing and perfecting their solutions as the clay model and sketches evolved. European designer, Teofilo Plaza, described this six month-long experience as one of the most intense and passionate of his life. Once the basic design had been agreed, another many months of testing and development lay ahead – a period in which designers and engineers continued to work in unison.

The first V4 Concept model was unveiled to a stunned audience at the Intermot show in October 2008. The radically styled show bike perfectly displayed the free-thinking that had absorbed the design team from day one of this revolutionary project.

Now, twelve months later, the VFR1200F is ready for launch and whilst its V4 heritage may be patently obvious, the reality is that this machine far surpasses anything that has gone before.



## Styling

The designers were clear about one subtle but important aspect of their task. This was not to be a Japanese motorcycle designed as Europeans would do it. It was to be a Japanese bike designed in Europe, with two threads of Japanese culture running through the design process.

The Japanese word 'Ma' has many meanings and no direct translation but in essence it can be described as 'the space between things'. By focusing on the space around an object we can gain a new perspective on the overall form. The visible connects to the invisible and gives it shape. It is perhaps easiest to understand it in relation to music. If one thinks of the intrinsic importance of a measure of silence or the pause between movements in a classical symphony and the effect it has on the performance overall if someone accidentally applauds or disturbs that silence. That illustrates the importance of 'Ma'.

Like Ma, 'Tsuya' is not a physical property. Rather, it describes the lust one can have for an object, its charm, the way it attracts and hold the eye. Focusing on tsuya brings a form to life, giving a new significance to every line, curve and angle.

To a larger degree, pure function determined the VFR1200F's form. Mass centralisation, consummate rider control and aerodynamic efficiency provided the key underlying design criteria and from this starting point the machine's form evolved. The remarkably narrow cylinder heads and clever cylinder spacing allowed a very narrow waist, effectively lowering the seat height thus making it easier for the rider to place both feet flat on the ground at rest. This wasp-like waist also gives the rider the feeling of being 'in' the bike rather than perched on top – crucial for feedback and control. The fuel tank's elegant yet complicated contours have purpose as well as eye-pleasing aesthetics in mind. Its shape and form supports and assists the rider to add extra elements of control and heightened levels of feedback whatever the riding situation. The ergonomically styled fairing works in harmony with the fuel tank to provide extra support and efficient weather protection for the rider and pillion. Even the hand controls and switchgear with their revised button positioning are engineered to ergonomic advantage. The pillion's comfort and security have not been overlooked, either. The supportive, vacuum-moulded dual-seat has a flat and expansive area for the pillion and strong, easy-reach grab handles and footrests positioned with comfort and security in mind.

## Colours

### Layered Fairing technology

The patented layered fairing design of the VFR1200F is a perfect match of form and function. Designers and engineers worked together to create a uniquely beautiful shape and, at the same time, optimal air flow and heat management. The fairing design incorporates two layers, which harnesses the benefits of flowing air to the machine's dynamic and mechanical advantage. This has two functions; air entering between the layers and through two oval-shaped spaces in the front of the fairing is channelled in exactly the directions needed to enhance the bike's stability at higher speeds. By effectively increasing the speed of the air by channelling it through smaller apertures before it reaches the radiators, engine cooling is optimised and the hot, exhausted air is channelled away from the rider and passenger for a cooler, more comfortable ride. The heat generated by the powerful, enclosed V4 engine is also channelled away to keep hot air away from the rider.

A balance of positive and negative surfaces gives the front of the motorcycle a light, open look while also creating a profile that slices through the wind with the least possible resistance. A strongly defined X-shape characterises the front of the machine. Concave surfaces direct the eye and air up towards the windscreen, which incorporates another air-directing aperture at its lower edge. Even the edges of the screen have been crafted to enhance stability at speed. The powerful single line-beam headlight is the same type used on the CBR1000RR Fireblade. Its light streams into two tinted LED-look strips that frame the sides of the headlight, increasing the illusion of lightness and space.

A high attention to detail and quality is evident everywhere, and every design element has been fine-tuned in tandem with engineering requirements. The cowl and body are fused together, creating one smooth, unified, aerodynamic surface. The rear design is compact and tapers upwards, emphasising the bike's lightness and dynamic shape. The tail-light and rear indicators subtly mimic the frontal design.

New painting technologies, specially developed at the hi-tech Kumamoto factory, have focused on creating top-quality colouring with the most uniform coverage. A deep clear-coat finish enhances the bodywork colour, creating a luxurious, high-class shine far above normal production standards. The mirror-like surfaces create a sharp, memorable profile that attracts attention even from a distance.

Three colour options were selected to emphasise the highly-polished look, smooth texture and unique shapes and layers of the bodywork.

In 2010 the VFR1200F will make its debut in:

- Candy Prominence Red
- Seal Silver Metallic
- Pearl Sunbeam White

## Engine

The VFR1200F engine was designed to provide its rider with high speed, quick acceleration and a strong, engaging feeling coming from the engine's power characteristics. Honda also wanted to deliver the invigorating engine sound and feel that characterise the V4 sports bikes, but with an additional focus on comfortable, responsive power delivery. The new V4 engine's performance is delivered where it's most useful and most enjoyable. Its linear torque curve is focused in the low and mid range, making it possible for the rider to simply roll on and off the throttle while powering through bends. This effortless control makes the bike great fun to ride – this is a sports bike with real-world usable power.

### Smooth delivery

There were several challenges involved in tailoring the strong V4 power for use in an all-round machine that can be used for weekend enjoyment, commuting and long-distance touring. Key elements of the VFR1200F's power characteristics are its unrivalled response and strong torque delivery. To allow full enjoyment of the engine's power while still providing a high level of comfort, vibration needed to be carefully managed. A unique cylinder layout was developed for this purpose. Instead of the traditional V4 cylinder configuration, with the cylinders evenly spaced front-to-rear, the VFR1200F adopts an ingenious solution in order to centralise mass and at the same time achieve a compact, space-saving solution. The rear cylinders are placed side by side but close together, while the front cylinders are more widely spaced. This layout allows for a slim, compact 'waist' that fits comfortably between the rider's legs. It also supports mass centralisation, thus contributing to the bike's balanced feel and ease of control. With no right-left couple imbalance, the need for a balancer is eliminated and friction is reduced.

A new Phase-shift Crankshaft complements the advantages of the cylinder layout. Operating with a 28° throw, it effectively reduces primary vibration and noise, eliminating the need for a power-sapping balance shaft. The new V4 typically produces more than 90% of its maximum torque (129Nm/8,750 rpm) at 4,000rpm. To allow the rider to comfortably take full advantage of this torque, delivery is smoothed by four drivetrain dampers, which further eliminate uncomfortable vibration and backlash.

### Off-road technology

The VFR1200F utilises the UNICAM single overhead camshaft cylinder head design from the world-class CRF motocrossers. The logic was straightforward: in an environment where space, performance and weight are at a premium this technology was perfect for a project where mass centralisation and ergonomics were prime design criteria. Also borrowed from the CRF range and the RC211V is the sealed crankcase system that reduces the pumping loss created through piston movement, and air density. This system has never been used on a road machine before but the gains for the rider are identical - electrifying throttle response and improved fuel consumption.

### New transmission layout and ground-breaking shaft drive system

A compact new transmission layout contributes to high-speed stability, better cornering and improved traction capability. The highly developed shaft drive system features an offset propeller shaft and a pivot that expands vertically as well as a sliding constant velocity joint that takes up any variations in length during the rear wheel's arc of travel. At the output shaft a clutch damper absorbs backlash effectively.

Thanks to the rigidity of the pivot, stability is improved and throttle-to-drive delivery is much more direct.



### Refined control

A throttle-by-wire system improves the rider's connectivity with the VFR1200F. Providing light, precise fuel metering at all engine parameters this highly developed accuracy gives the rider increased levels of control, whatever the situation. It is another individual aspect that adds to the heightened feelings of response and control.

To aid control under intense deceleration a slipper clutch is fitted, similar to the system on the CBR1000RR Fireblade. Even under the most excessive downshifting the clutch is designed to slip, thus preventing the rear wheel from inadvertently locking up, allowing the rider to stay firmly in control.

### Unique exhaust and exhilarating sound

Engineers and designers alike focused not only on the new engine's power and delivery, but also on its feel and sound. They chose a configuration which would emulate the briskness of a typical inline-4 engine's performance but deliver this with the beat and feel that are pure V4. The exhaust layout was made as compact as possible with the assembly of catalyser-containing exhaust pipes placed on one side of the sump and the exhaust pipes of the rear cylinder bank placed on the other side. On the bike's right flank a handsome triangular-shaped muffler highlights the styling lines of the bodywork. The combined induction and exhaust notes create a raw, compelling sound that is authentic Honda V4 and distinguishes the VFR1200F from any other motorcycle. At idle it pulses smoothly, hinting at the engine's huge performance potential. Each twist of the throttle releases a burst of instant V4 aggression that becomes a thrilling howl as it rises quickly through the revs. The sound and beat of this engine contribute to the unique character of this new sports bike and are as essential to the design as the bodywork or riding position.

A key element in the raw emotion of this V4's sound is the exhaust system. Engineered to provide excellent cornering clearance and minimal intrusion to the rider's and pillion's feet, the high-volume, twin outlet high-chrome muffler produces an unobtrusive but fantastically stirring note. At low revs the noise is off-beat and bass-rich. Further up the rev range, once the servo-operated valve is opened, the noise changes to a truly inspiring, hard-edged V4 howl to stir the emotions.

## Chassis

The VFR1200F frame, suspension and drive components are brought together in a unique configuration that facilitates both sports bike power and smooth stability. Its strong aluminium twin-spar diamond configuration frame is both lightweight and rigid. The swingarm and driveshaft length are optimised without extending the overall length of the motorcycle. The long swingarm contributes to balanced, confident manoeuvring and exceptional high-speed stability.

The swingarm is complemented by a compliant Pro-Link rear shock absorber with adjustable rebound damping. At the front, sturdy 43mm telescopic forks with adjustable preload provide smooth and assured control. Together, these systems ensure a comfortable ride, even with a pillion and luggage on board, and add to the overall feeling of total control.

### High-performance brakes

The VFR1200F is equipped with the most highly developed brake technology for all-round sports bike use. Powerful new six-piston callipers for the front and two piston callipers for the rear act on large discs (320mm at the front and 276mm at the rear). A Combined Braking System creates the optimal balance of front and rear braking forces. The addition of a standard-fit compact and lightweight ABS supports both the motorcycle's sports riding potential and its touring proficiency.

## Standard equipment

### Instrument panel

The VFR1200F instrument panel combines sophisticated styling and practicality. Shielded and at the same time displayed by the tilt of the aerodynamic windscreen, its elegant design fully complements the airy and spacious feel at the front. It also adds to the sensation of total rider control.

A large, sporty analogue rev counter and a digital speedometer are surrounded by LCD readouts of the fuel, coolant temperature levels and fuel consumption. The display also includes a clock, ambient temperature display, HISS indicator and ABS indicator.

### Pannier mounts

To enhance the touring potential of the new sports bike, the rear is equipped with integrated luggage mounts. These mounting points are unobtrusively cast into the injection moulded under-seat area and pillion footrest mounts. They allow easy installation and removal of specially designed optional panniers without interrupting the motorcycle's clean styling.

### Ergonomic hand controls

The VFR1200F is the first motorcycle to feature state-of-the-art ergonomic revisions to the handlebar and switch layout. The designers looked at the time required to reach controls comfortably and the ease of operation, particularly considering the hand position during cornering. As a result, the VFR1200F has new handlebar switches and a new layout with reversed horn and indicator controls. The indicator switch shape is designed around natural thumb movement for effortless operation.

## Optional equipment

A wide range of optional equipment has been developed by Honda Genuine Accessories specifically for the VFR1200F. These accessories were designed in line with the new all-round sports bike concept and in every detail, from the choice of materials to integration with the bike's contours, they complement its styling and performance. They include:

- A 35-litre pannier kit that fits the bike's integral pannier attachments with no need for any additional conventional pannier stays. Operated with the motorcycle key, the panniers are aerodynamically shaped and coloured to match the motorcycle's bodywork. The left pannier can hold one full-face helmet.
- A sleekly designed 31-litre top box featuring a locking, quick-detach mounting system and a lid that matches the motorcycle's bodywork. The top box can hold a full-face helmet as well as other luggage.
- Tough nylon inner bags for the top box and panniers. Light grey with a Honda Wing logo, they come with carrying straps and handles. As an extra convenience feature, the pannier inner bags can be zipped together for easy carrying.
- A 13-litre tank bag with a preset for easy installation.
- A luxurious Alcantara seat for extra comfort.
- A sporty 3-position adjustable add-on screen that integrates perfectly with the standard windscreen to extend wind protection for taller riders.
- A replacement lower seat with a narrow profile which provides easier reach to the ground for shorter riders while maintaining the bike's carefully designed ergonomics.
- A pair of slim heated grips with an integrated controller for maximum comfort and compact design integration.
- A motorcycle navigation kit with a unique controller that allows operation without removing hands from the handlebars. An earphone and car kit are included and Honda dealers are included in the POI list.

## Background

### Honda and V4 – building a legend

It has been over three decades since we marked our return to Grand Prix competition by developing the first Honda engine with a V4 four-stroke configuration. In the intervening time the V4 formula has been tempered in the fires of competition and honed for more power and better delivery. The NR500, RC30, RVF400, NR750, RC45, VFR750 and RC212V are just some of the milestones that mark the V4 story.

### The VFR – Sport Touring Trailblazer

The VFR lineage reaches back to the track-dominating RS and RVF750, but the first use of a V4 engine in a road bike was the pioneering VF750. Unveiled in 1982, it combined smooth, effortless performance with a practical, easy-maintenance design. The first VFR750 was launched in 1986 and immediately became the standard by which every all-round sports motorcycle was judged. With a restrained and sophisticated body concealing the finest technology and equipment, it was developed to be instantly 'right' for every rider. It was a comfortable and flexible Sport Tourer, with the emphasis placed firmly on 'Sport'. Since then, Honda has treated the VFR as its flagship for new road-going technologies, which are often developed and tested first in the laboratory of MotoGP.

The VFR800 made its debut in 1998. Based around the engine from the RC45 it stayed true to the concept of taking lessons learned on the racetrack and fine-tuning them for road use. In 2002 it received an upgraded fuel injection system, revolutionary new V-TEC valve control system and revised brake systems including optional ABS. Subsequent updates have revised the power delivery and upgraded the bike's consistently contemporary styling. The racetrack is still the source and test environment for its technologies, while its all-round usability and ample smoothly delivered power have continued to lead its class.





# Specifications

General		
Model		VFR1200F
Mold Type		ED-type
Engine		
Type		Liquid-cooled 4-stroke UNICAM 76° V-4
Displacement		1,237cm <sup>3</sup>
Bore x Stroke		81 x 60mm
Compression Ratio		12 : 1
Max. Power Output		127kW / 10,000min <sup>-1</sup> (95/1/EC)
Max. Torque		129Nm / 8,750min <sup>-1</sup> (95/1/EC)
Idling Speed		1050-1250min <sup>-1</sup>
Oil Capacity		4 litres
Fuel System		
Carburation		PGM-FI electronic fuel injection
Aircleaner		Oil-permeated, viscous-type paper filter
Fuel Tank Capacity		18.5 litres
Electrical System		
Ignition System		Computer-controlled digital transistorised with electronic advance
Ignition Timing		6.4° ~ 10.4° BTDC (idle speed)
Sparkplug Type		IMR9E-9HES (NGK); VUH27ES (DENSO)
Starter		Electric
Battery Capacity		12V / 11.6AH (YTZ14)
ACG Output		560W
Headlights		12V, 55W x 1 (low) / 55W x 1 (high)
Drivetrain		
Clutch		Wet, multiplate slipper type
Clutch Operation		Hydraulic
Transmission		Constant mesh 6-speed
Primary Reduction		1.738 (73/42)
Gear Ratios	1	2.6000 (39/15)
	2	1.7368 (33/19)
	3	1.3636 (30/22)
	4	1.1600 (29/25)
	5	1.0322 (32/31)
	6	0.9393 (31/33)
Final Reduction		2.6990
Final Drive		Shaft
Frame		
Type		Diamond; aluminium twin-spar

Chassis		
Dimensions	(LxWxH)	2,250 x 755 x 1,220mm
Wheelbase		1,545mm
Caster Angle		25° 30'
Trail		101mm
Turning Radius		3.5m
Seat Height		815mm
Ground Clearance		125mm
Kerb Weight		267kg
Loaded Weight		463kg
Suspension		
Type	Front	43mm cartridge-type telescopic fork with stepless preload adjustment, 120mm axle travel
	Rear	Pro-Link with gas-charged damper, 25-step (*stepless remote-controlled hydraulic) preload and stepless rebound damping adjustment, 130mm axle travel
Wheels		
Type	Front	5-spoke hollow gravity die cast aluminium
	Rear	7-spoke gravity die cast aluminium
Rim Size	Front	17M/C x MT3.50
	Rear	17M/C x MT6.00
Tyre Size	Front	120/70 ZR17M/C (58W)
	Rear	190/55 ZR17M/C (75W)
Tyre Pressure	Front	250kPa
	Rear	290kPa
Brakes		
Type	Front	320mm dual floating hydraulic disc with two 6-piston calipers, C-CBS/ABS and sintered metal pads
	Rear	276mm hydraulic disc with 2-piston caliper, C-CBS/ABS and sintered metal pads