



**2016 HONDA CRF1000L Africa Twin  
Press Kit**



# 2016 HONDA CRF1000L Africa Twin

Inheriting the “go anywhere” spirit of its celebrated predecessors, the all-new CRF1000L Africa Twin packs an innovative and powerful parallel twin-cylinder engine into a lightweight, agile chassis ready for true adventure both on- and off-road, whether crossing continents or commuting. In addition to the manual-transmission model, another version is available with as Honda’s unique Automatic Dual Clutch Transmission (featuring new off-road functionality). Both versions feature switchable rear ABS and multiple mode Honda Selectable Torque Control (HSTC).





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# 1. Introduction

The essential features of an adventure motorcycle—strong engine, tough chassis with long-travel suspension, upright riding position and wide handlebar—ensure its usability whatever the terrain. This practicality has been key to the popularity of these machines: they're easy to maneuver, comfortable and adaptable, and at home on the road whether touring mountain passes and highways or filtering through jammed city streets. And when the desire for a true adventure takes hold, they're capable of traversing great swathes of distance after the asphalt runs out.

Throughout the development of the CRF1000L Africa Twin, the search for the optimal blend of off-road performance, touring comfort and agility was a constant theme. One motorcycle consistently impressed with its usability, poise and handling both on-road and in the dirt: the original XRV750L Africa Twin. It proved a worthwhile benchmark when set against today's myriad choice of adventure bikes. The machine that now bears its name may share no common part with the old model but—on-road or off-road—it inherits to the full the essence and spirit of what made the XRV750L Africa Twin so popular.

## **Mr. Y. Hasegawa, Series Large Project Leader (S-LPL) CRF1000L Africa Twin**

*"From the outset of designing and engineering our new Africa Twin, we wanted to create a full-scale true adventure motorcycle that was equally enjoyable and capable in crossing vast continents as it was on the highway and in everyday use. The legacy and performance of the previous model was a significant reference point in our thinking and after many satisfying months of research work, testing, development and riding, our CRF1000L has off-road ability that makes dirt roads a joy to tackle, with the comfort of a tourer and agility of a commuter. In other words, a model truly worthy of inheriting the Africa Twin name."*



## 2. Model Overview

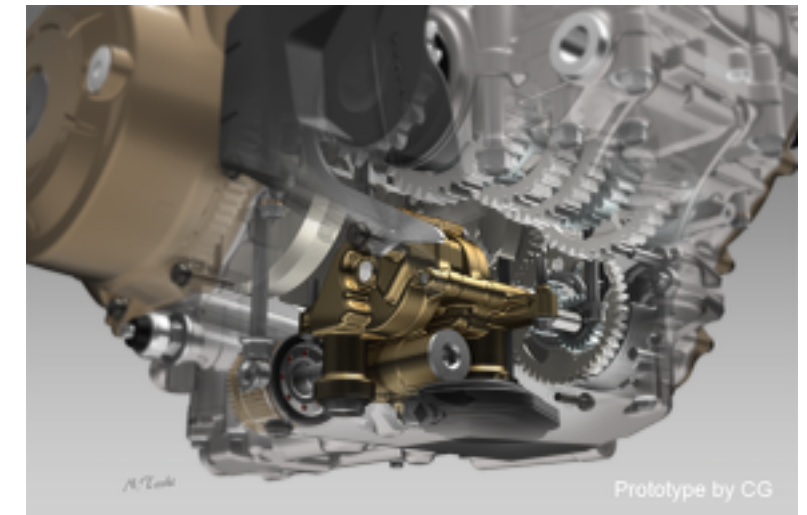
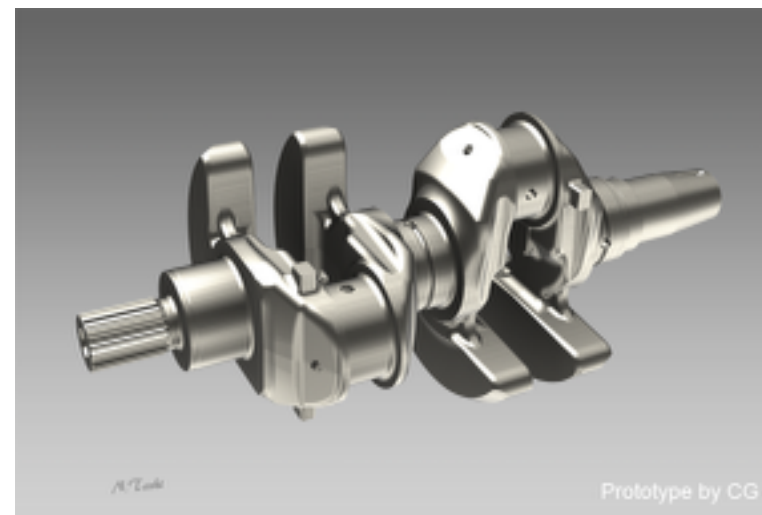
It all starts with the engine, which has to perform in off-road situations as well as on-road long-range touring, and all points in between. The CRF1000L Africa Twin's 998cc parallel-twin power plant draws heavily on Honda's CRF250R/450R competition machines, using the same four-valve Unicam head design for compact overall dimensions.

Strong and linear power and torque deliver instant response anywhere in the rev-range—accompanied by a satisfying, characterful deep growl as rpm rises. A 270° phased crankshaft gives the power delivery a distinct character as well as delivering excellent feel for rear-wheel traction. Biaxial primary balance shafts cancel vibration.

The semi-dry-sump engine's short height contributes to the CRF1000L Africa Twin's 250mm ground clearance. It also uses clever packaging of components to both dynamic and aesthetic effect. The water pump is housed within the clutch casing, and both water and oil pumps are driven by the engine's balancer shafts.

The lightweight, six-speed manual gearbox uses the same shift-cam design as found on the CRF250R/450R to ensure positive changes and is equipped with an aluminum assist slipper clutch.

In addition to the manual-transmission model, a second model is offered, equipped with Honda's unique Automatic Dual Clutch Transmission (featuring new off-road functionality). Both versions feature ABS and multiple-mode Honda Selectable Torque Control (HSTC). It's possible for the rider to turn off the ABS system for the rear brake, allowing the rider to lock the rear wheel when riding off-road. There are four levels of control to choose from the Honda Selectable Torque Control: Level 1, 2, 3 and Off. The degree of intervention decreases as the levels drop, allowing increasing amounts of rear-wheel spin.





## 2. Model Overview (cont'd.)

The unique DCT (Dual Clutch Transmission) version features the standard manual mode—allowing the rider to operate gear shifts through triggers on the left handlebar—and two automatic modes. D mode offers the best balance of fuel economy and comfort cruising, while S mode has been revised to give extra levels of sport performance, with three different shift patterns to choose from.

Of course, for the CRF1000L Africa Twin, DCT is also fully equipped to operate in an off-road environment, and off-road functionality is enhanced by the G button. Pushing the G button in any riding mode modifies the control of the clutch system to give a more direct drive.

The CRF1000L Africa Twin's semi-double-cradle steel frame provides the perfect balance of high-speed stability—while fully loaded—matched to genuine off-road ability by combining sheer strength with flexibility. Mass centralization—with items like the battery packaged at the rear of the cylinder head—contributes to a low center of gravity and aids agility.

The 45mm Showa inverted fork is fully adjustable and features dual radial-mount Nissin four-piston brake calipers and 310mm “wave”-style floating discs. The Showa rear shock has hydraulic spring-preload adjustment. Like the CRF450R Rally, the CRF1000L Africa Twin uses 21-inch front and 18-inch rear spoke wheels. This enables a wide range of off-road tires to be fitted, in addition to the standard dual-purpose 90 front / 150 rear tires.

Following its design theme of “unlimited adventure,” the Africa Twin is styled with minimum bodywork in a tough, lightweight form that offers both weather protection for the rider and a slim, agile feel. Dual LED headlights maintain the original's presence and the seat height adjusts 20mm from the standard 34.3 inches down to 33.5 inches.







## 3A. Key Features: Engine

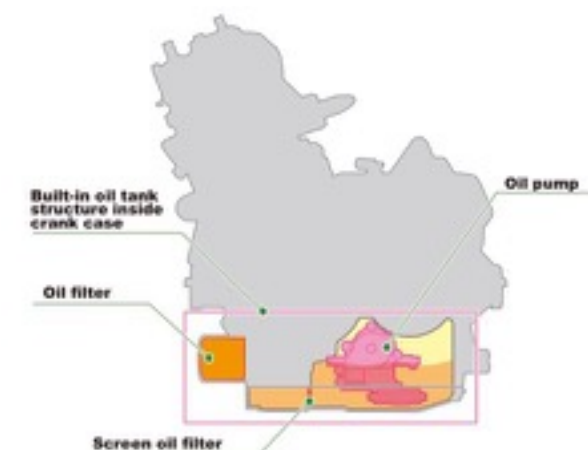
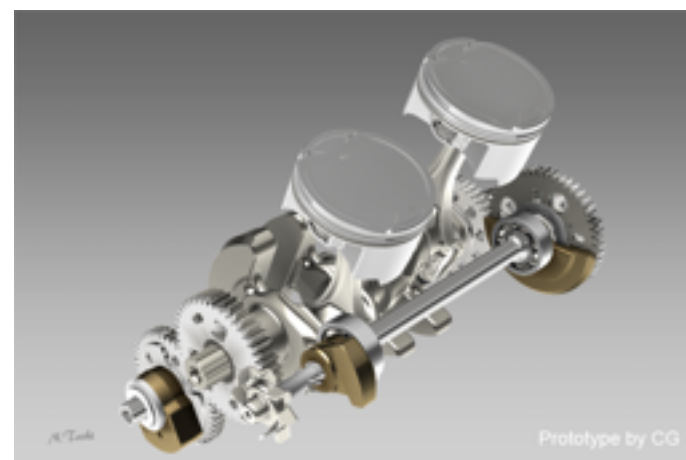
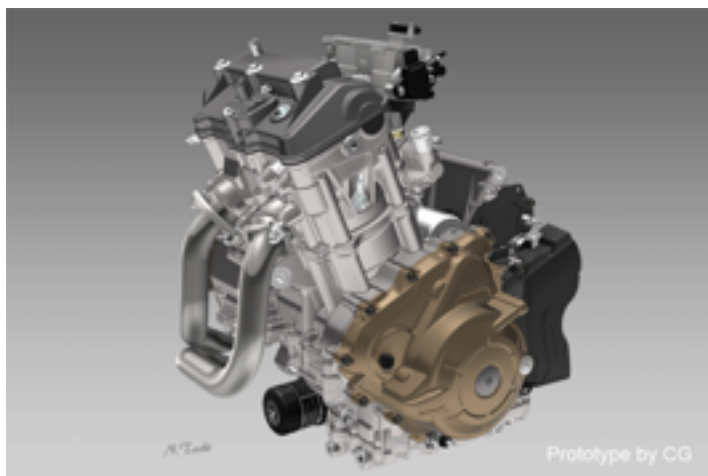
Compact, lightweight and powerful, the CRF1000L Africa Twin's parallel-twin-cylinder engine features a 270° phased crank, Unicam 4-valve-per-cylinder head and dry sump plus common crankcases for both DCT and manual 6-speed gearbox versions.

The CRF1000L Africa Twin's engine has been engineered with a special focus on two key areas—tractable and usable all-day touring performance and power and torque delivery that offer genuine feel for rear-wheel traction. The natural by-product of these abilities is that the machine is also a great all-rounder—as happy on the urban commute as anywhere else.

The parallel-twin layout in 999cc form gives an optimum balance between power, torque, mass and physical dimension, especially when designed from the ground up with weight-saving, mass centralization and a low center of gravity in mind. And lessons learned in both HRC's CRF250/450R Motocross and CRF450R Rally competition programs have been thoroughly applied to keep the dimensions and weight to a minimum—longitudinally, the CRF1000L engine is the same length as the CBR500R engine.

A V-twin of the same capacity and output is physically too long and tall to effectively package a motorcycle with the Africa Twin's performance objectives. The new engine creates a linear, straight power curve and bulging torque curve for fluid, accessible bottom-end and mid-range drive, plus consistent top-end punch.

Good ground clearance—crucial to off-road performance—starts with a compact, short engine. The crankcases are split vertically, with a built-in oil tank (the first Honda to feature such a design). The water pump is housed within the clutch casing (a first for a motorcycle engine), with a thermostat integrated into the cylinder head.





## 3A. Key Features: Engine (cont'd.)

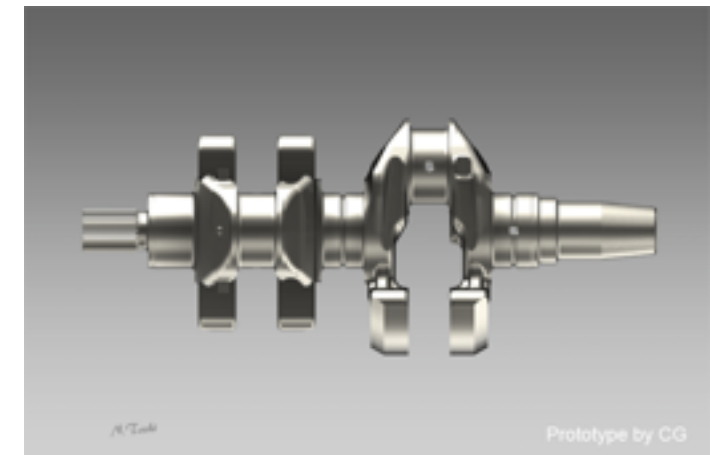
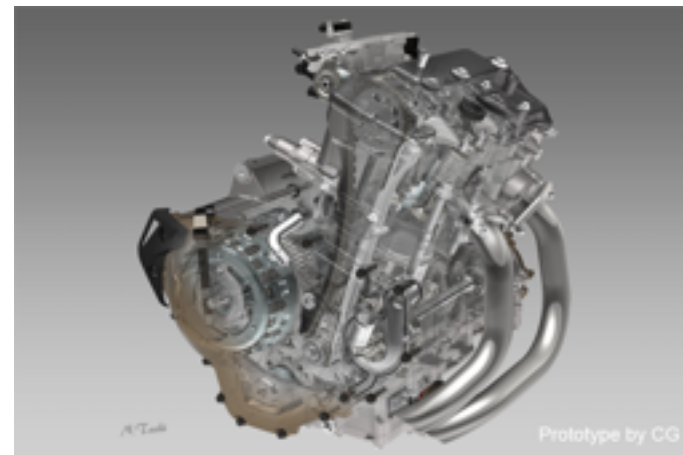
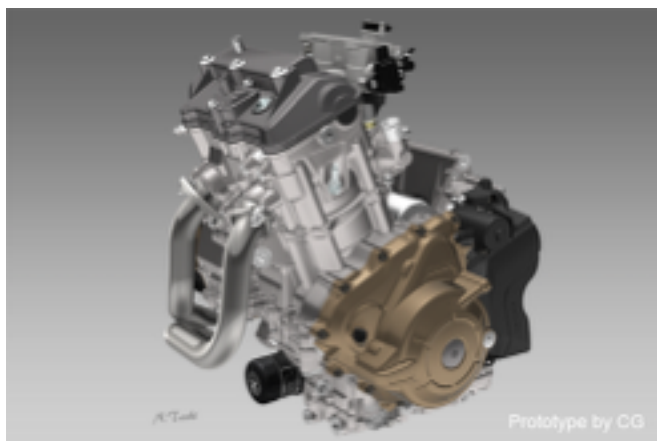
This allows a shorter hose length and frees up scope for appealing exterior design (also eliminating the external mounting bolts) while saving weight. The water and oil pumps are driven by the engine's balancer shafts; Manual and DCT versions of the engine share common crankcases, with only minor external differences.

The engine uses a semi-dry sump and in-tank lower-crankcase oil storage. This allows a lower pan depth, reducing overall engine height. As the pressure-fed pump is located within the tank, where it delivers its oil from, there is no need for a pressure-feed passage, again saving weight and space.

The four-valve cylinder heads, fed by PGM-FI fuel injection, each employ twin spark plugs and dual and sequential ignition control for even combustion, and their phased firing order contributes to engine character and feel. Compression ratio is set at 10:0:1.

Honda's SOHC Unicam valve train is a feature of the CRF250/450R and the low-set position of the cast camshaft (as used on the CBR1000RR) contributes to the compact nature of the cylinder head and allows freedom for the included valve angle, and therefore an ideal combustion-chamber shape. It's also a lightweight design and helps with mass centralization, thus low center of gravity. The inlet valves are 36.5mm in diameter, the exhaust valves 31mm.

The firing order and "power pulse" of the XRV750 Africa Twin's V-twin engine gave excellent traction and feedback for how much grip the rear tire was finding. For the CRF1000L Africa Twin to achieve the same kind of throttle feel, an uneven-interval firing order, through use of a 270° phased crank system, is employed.







## 3A. Key Features: Engine (cont'd.)

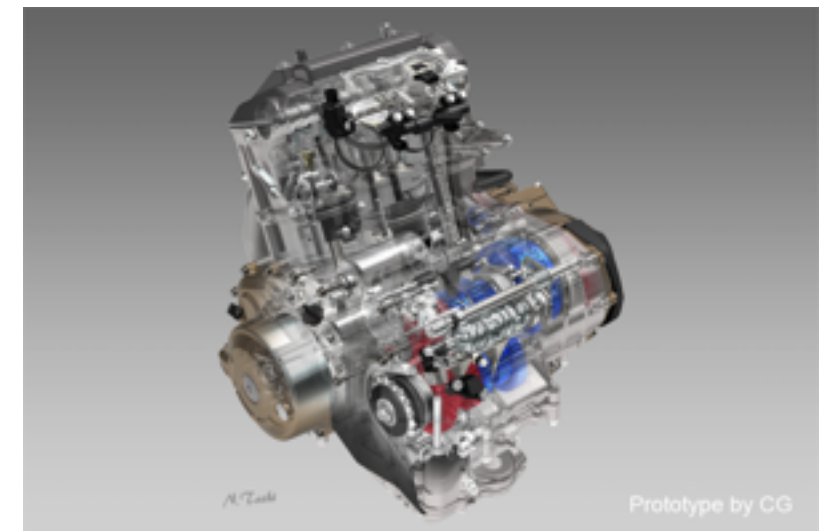
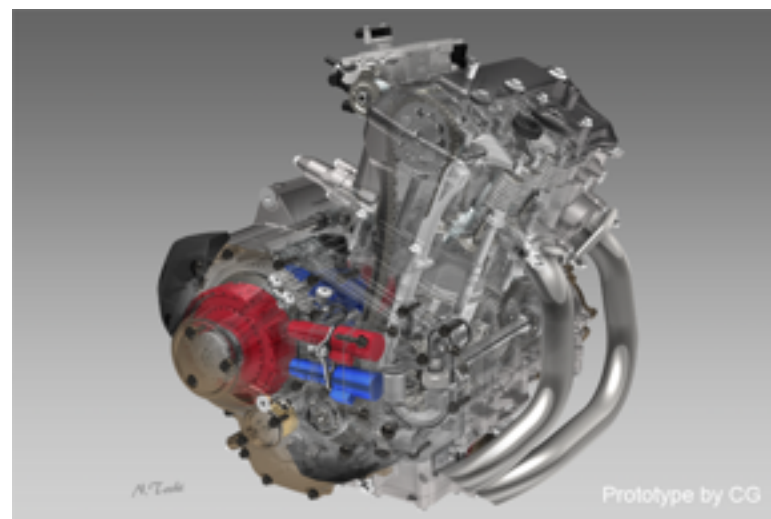
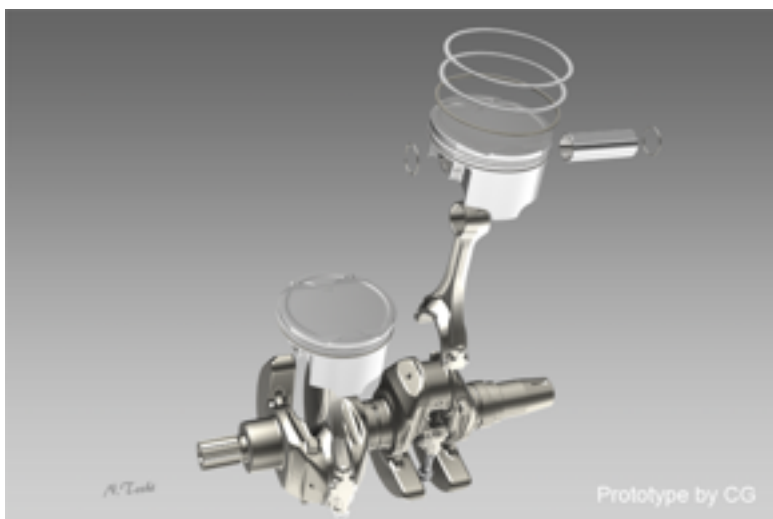
Secondary vibrations are neutralized by the mutually reciprocating motion of the pistons, while primary inertial and coupling vibrations are cancelled by the use of biaxial balance shafts. The front balancer shaft uses two weights, the rear only a single weight in order to save weight.

Bore and stroke are set at 92 x 75.1mm. This bore size is used to optimize the CAE-designed pistons' balance of rigidity and strength, and a resin coating on the skirts reduces friction. Further reducing friction, AB-1 chromium plating and Palphos M1-A treatment (as used on the CBR600RR) are applied to the piston pins and connecting rods.

The aluminum clutch center and pressure plate use "assist" cams to ease upshift and downshift (with lighter lever feel) and "slipper" cams for deceleration and downshifting. Backlash between the pressure plate and center has been optimized, as has backlash between the friction plate and clutch outer.

As the six-speed gearbox is a brand new design—with "pierced" shape dogs for 1st, 2nd, 3rd and 4th gears—the clutch itself is physically smaller, saving 18 ounces compared to conventional units. Oil-gathering ribs have been added to the main journal side of the primary gear, ensuring consistent lubrication for the gear, damper spring and primary sub-gear.

The shift-cam design is the same as used by the CRF250/450R, giving secure gear shifting no matter the riding conditions. And to ensure direct drive—and consistent feel for traction—the cush-drive rubbers in the rear wheel have been optimized in terms of physical size and shape.





## 3A. Key Features: Engine (cont'd.)

Enhancing the rider's experience, the unique internals of the exhaust muffler are designed through CAE to boost the sound and feel of the engine's beat, and patented by Honda. Acoustically tuned, chamber two creates a light, crisp feel at higher rpm while chamber three accentuates the deep, solid tone of a large-capacity twin.

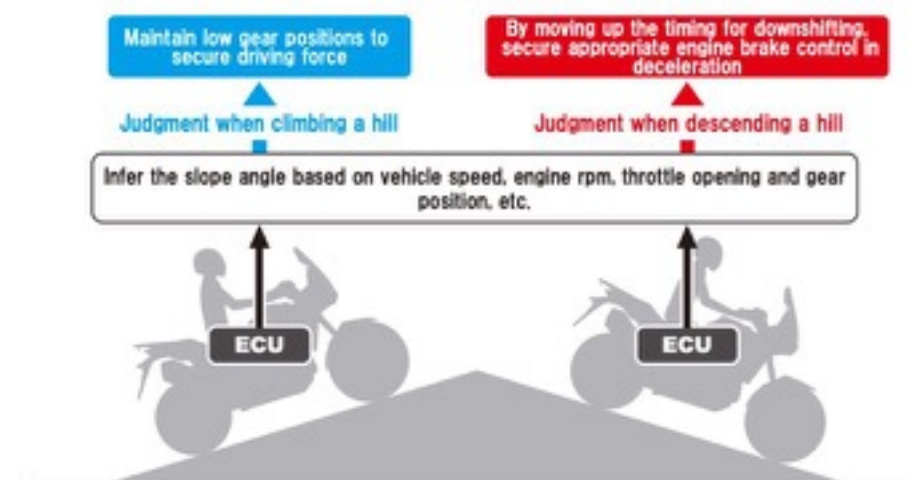
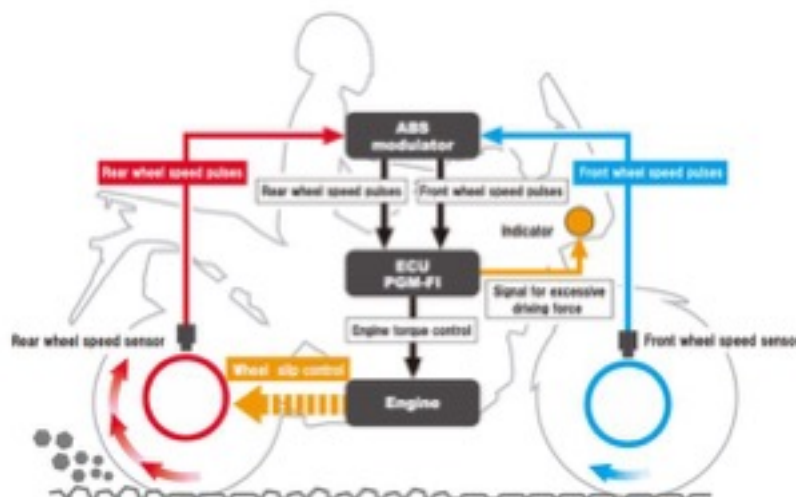
There are four levels of control to choose from on the Honda Selectable Torque Control (HSTC): Level 1, 2 and 3 and off. The degree of electronically generated control from the system decreases as the levels drop, allowing increasing amounts of rear-wheel spin and, with rear ABS off, freedom to fully lock up the back wheel.

The Africa Twin's DCT features a revised S mode, offering three levels of sports performance (faster down-changes and the ability to hold a higher rpm/lower gear). The three modes make it possible to tailor gearbox response to preferred riding style. The selected level is stored, and acts as the default for the next time S mode is used. It is also displayed on the dash.

The DCT also features "adaptive clutch capability control" that gives a natural "feathered" clutch feel at low-speed on/off throttle situations for smooth gear changes. For essential additional off-road DCT performance, the CRF1000L Africa Twin offers new functionality through the use of the G switch, positioned on the right side of the instrument panel. Pushing the G switch while in any riding mode disables the adaptive clutch-control capability to give a more direct drive.

Further new functionality for the DCT system comes in the form of incline detection, by means of which the gear-shift pattern is adapted depending on the grade of any incline to provide optimum control.

Honda Selectable Torque Control System (Concept diagram)





## 3B. Key Features: Chassis

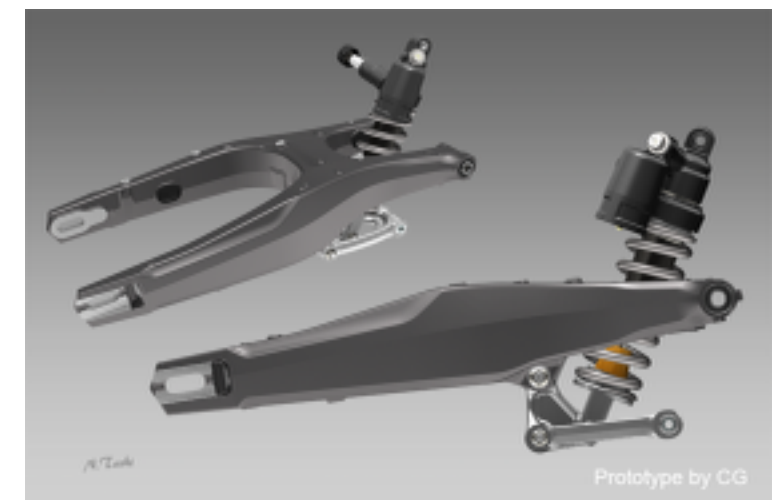
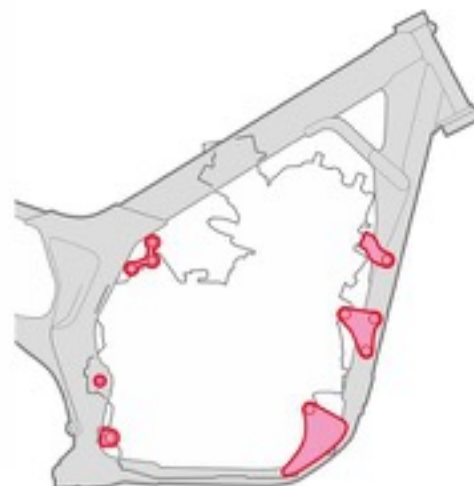
Fully adjustable Showa suspension is matched to a tough double-cradle frame, with rigidity levels tuned for optimum handling. Wheels are 21/18-inch, with 310mm “wave”-style floating front discs and radially mounted four-piston Nissin calipers. Dunlop 90/90-21 and 150/70-18 tires provide all-round performance.

The key objectives laid out for the CRF1000L Africa Twin’s chassis were threefold: the ability to cover considerable amounts of off-road ground, with excellent on-road high-speed stability both when riding solo and when fully loaded with pillion and luggage.

Combining all three attributes presented a stimulating challenge for Honda’s development engineers. The resulting steel semi-double cradle frame (a similar design is used by the CRF450R Rally) has a finely tuned rigidity balance, not only within the frame spine and tubes but also through the use of six carefully placed engine hangers.

Thanks to the compact design of both engine and frame, ground clearance is 9.84 inches, with wheelbase of 62 inches and rake and trail of 27° 30’/113mm. The lightweight subframe features diagonal cross bracing and will carry a cargo weight of 66 pounds. Curb weight of the manual-transmission model is 511 pounds; seat height is 34.3 inches and can be lowered 20mm in a single operation.

Compared to the XRV750L, the distance between the swingarm pivot and front tire is 8mm shorter at 36.65 inches, with the new machine using a 20mm longer swingarm. Add packaging of items like the battery nearer the center of mass (behind the engine cylinders) and load on the front tire is increased, improving both stability and traction. The steering angle of 43° either way equates to a turning radius of just 102 inches—useful for threading through busy streets or tricky trail.







## 3B. Key Features: Chassis (cont'd.)

And even though the CRF1000L's engine is 25% larger in capacity and produces approximately 50% more power than the original, the new Africa Twin is marginally lighter, with slim dimensions around the tank and seat area, and a riding position that enhances control and movement.

With stroke length of 9 inches, the 45mm Showa cartridge-type inverted fork offers class-leading levels of performance. For all-round compliance and feel, the long extension stroke combines with a low spring rate and spring preload; rebound and compression damping are fully adjustable.

The leading axle maintains the required fork offset and center of gravity of the steering system (compared to a center-axle design), aids mass centralization and saves weight. A cast aluminum top triple clamp and forged bottom triple clamp—joined by hollow aluminum stem shaft—clamp the fork legs with two bolts each top and bottom.

The new 45mm inverted Showa fork and triple clamps combined—thanks to extensive weight reduction through hollowing and thinning—are actually 1.9 pounds lighter than the 43mm “right-side up” fork and triple clamps of the XRV750L Africa Twin.

Matching the supple front suspension and generous ground clearance, the Showa shock delivers 8.7 inches of axle travel. Its upper mount is set low for mass-centralization and it features a 46mm cylinder and remote reservoir (as used by the CRF motocrossers) for stable damping control under more extreme off-road riding conditions. Spring preload can be adjusted via a dial on the shock body; rebound and compression damping are also fully adjustable.





## 3B. Key Features: Chassis (cont'd.)

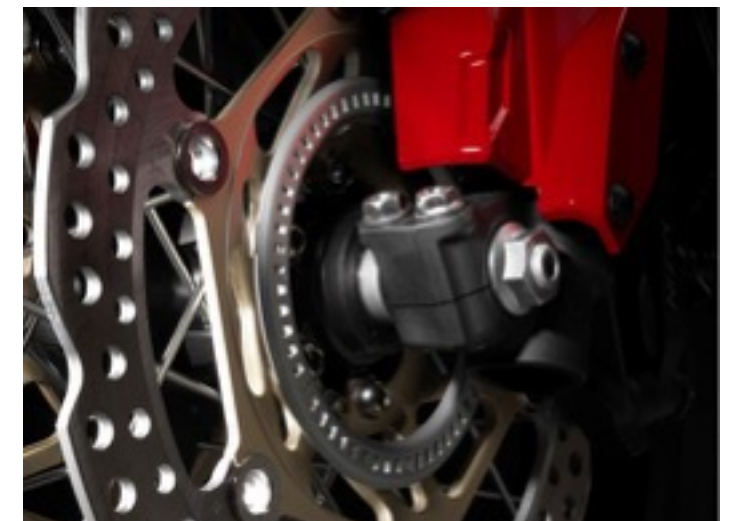
The Monoblock cast aluminum swingarm in cross-section has hexagonal trapezoid spars, with the right (muffler) side thicker in depth—to maintain lateral rigidity balance—and shaped to clear the exhaust. Tough 6000-series forged aluminum is used for the Pro-Link linkage, saving weight while improving durability. The swingarm mounts to the engine cases through 17mm hollowed co-axial bolts.

The CRF1000L Africa Twin uses the same wheel size as the CRF450R Rally, 21-inch front and 18-inch rear; this allows a useful choice of off-road tires to be applied. Widths of the rims are 2.15 inches and 4 inches, and 20mm front and rear hollow axle shafts improves rigidity while saving weight. On the rear wheel's left side, the spokes are arranged tangentially, to make space, and on the right the layout is linear to the hub and rim for strength.

Compact two-piece radial-mount four-piston calipers are designed to work the 310mm “wave” floating discs through sintered pads (similar to the setup used by the CRF450R Rally) and serve up consistent stopping power and feel, on-road or off. The pads' bracket cotter pins have been done away with, simplifying the design and shaving grams, while aluminum disc hubs—the first on any Honda—also save weight.

The rear 256mm “wave” disc is also CRF-derived and has been optimized for the Africa Twin, with hole punching and shaping to deliver secure braking performance. Lightweight two-channel ABS can be turned off for the rear caliper only.

The OE 90/90-21 and 150/70-18 Dunlop tires—featuring large groove widths and narrow pitches between adjacent grooves—use a carcass and compound developed specifically to work well on tarmac or trail.





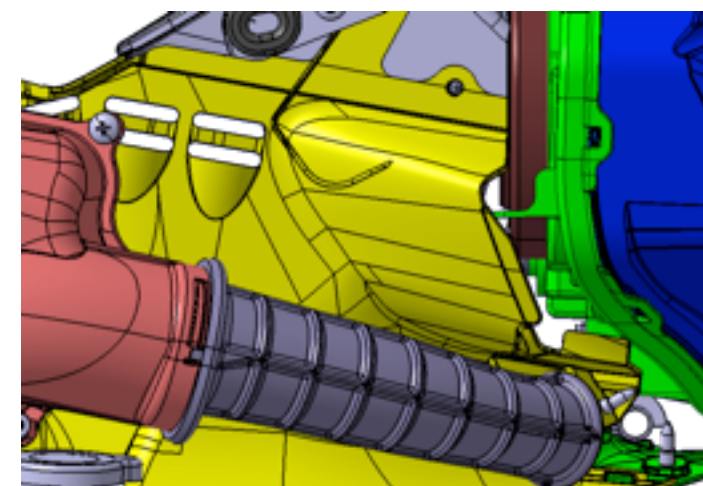
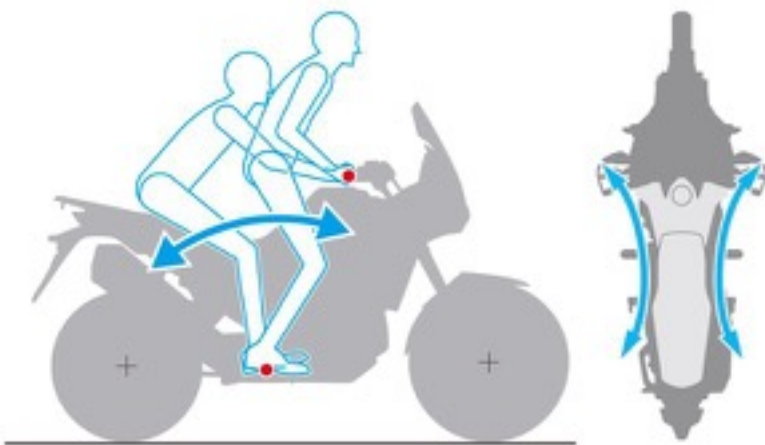
## 3C. Key Features: Styling/Equipment

Minimal bodywork provides protection for the rider without bulk; the negative LCD display stacks rider information vertically rally-style for fast reading. New instrumentation is ergonomically designed for ease of use and mounted on a tapered aluminum handlebar. Lighting is full LED.

The styling concept of the CRF1000L Africa Twin is one of “unlimited adventure.” The compact power unit features minimum exterior parts and this is reflected in the slim body and 4.9-gallon fuel tank, which is designed to maximize rider control and movement. It also features limited overhang, greatly reducing chance of damage in a minor spill. Fittingly, dual LED headlights pay homage to the XRV750L Africa Twin, reinforced with a “twin ring” signature halo of LED light. The rear light is also LED.

To give maximum wind protection while touring—without hindering freedom off-road—the cowl and screen are an integrated unit. The screen’s center duct controls turbulent air and allows a higher screen height, while dual side ducts deflect wind around shoulders and arms. A 90mm taller/30mm wider screen is available as an option for extended touring.

Internal airflow for the engine has also been carefully managed with baffle plates, bypass conduits and doglegs. To channel consistent air to the airbox—while under acceleration or steady load—the four ducts feeding from the radiator area are supplemented by duct ports in three locations: three on the front spoiler, 12 on the inner cover and two on the rear of the inner cover. Air filters are mounted in an area that doesn’t require removal of the fuel tank to access, and are situated vertically to lessen the chance of debris falling into the air box when removed.







## 3C. Key Feat.: Styling/Equipment (cont'd.)

A negative LCD meter, vertically stacked, follows closely the dash layout of a rally-race bike, allowing information to be rapidly assessed with little eye movement left or right. Three rows (clock, gear position, HSTC, odometer, trip meter, ambient temperature gauge and fuel gauge) display in the bottom section, and can be switched around by the rider through use of a cursor. The upper-section LCD displays the essential speed, rpm and fuel. DCT information—with D-S mode selection and G switch setup—is clustered together.

The switch clusters for both manual and DCT machines have been designed to improve rider control and ease of use. The dash functions are controlled from a button on the left handlebar, as is control of HSTC, with the indicator switch set closer to the handlebar. The right-hand cluster has an integrated start/stop engine switch, plus a hazard light button.

To manage the CRF1000L Africa Twin in DCT form, the left cluster incorporates an “up” shift trigger on its rear—in a place naturally found by a forefinger—with the “down” shift trigger on the front, ready for a thumb. The right cluster features an AT/MT (automatic/manual) select button and N-D-S (neutral, drive, sport) switch.

The parking brake is operated by pulling a lever on the left handlebar, with four levels of braking force to suit conditions—up to an 18% gradient with two people and full load—and slipping on the small lock lever; it's released by simply squeezing the lever. A plastic guard shields the parking brake caliper and rear disc.





## 3C. Key Feat.: Styling/Equipment (cont'd.)

The tapered aluminum handlebar is both tough and attractive. It's made in Japan from a new-grade material with a high strength-to-thickness ratio, meaning it's manufactured with 3mm walled tubing. It clamps on a 28.45mm diameter and tapers to 22.2mm, and is 50% lighter—and much stronger—than a conventional steel handlebar.

Rubber mounts reduce impact shock off-road, while brass inserts minimize the vibration fatigue of long-distance touring; bar-end weights incorporate with hand guards for protection.

The CRF1000L Africa Twin is available in two color options: Red/Black/White Dakar Rally and Digital Metallic Silver.

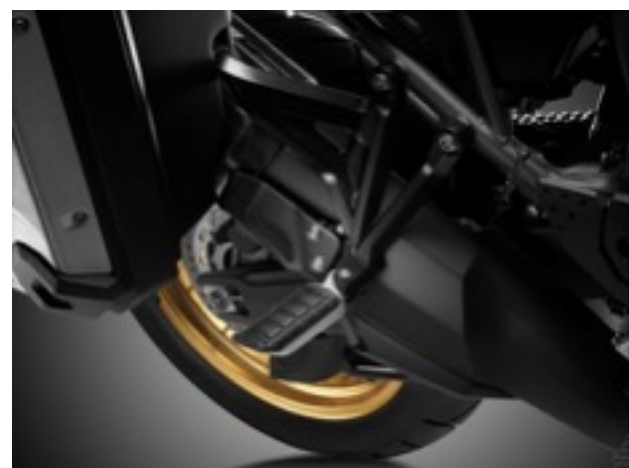
Racing is in Honda's DNA, and the Dakar Rally color scheme, with its Extreme Red and Victory Red stripes, plus three-tone seat, echoes HRC's CRF450R Rally machine.





## 4. Accessories: Hard Goods

A full range of genuine Honda accessories is available, including top box, panniers, high screen, upper and lower wind deflectors, rubber pillion step, DCT foot shifter, heated grips, 12V socket, cowl bar and wheel stripes.







## 4. Accessories: Apparel

As part of a global Honda initiative, American Honda will offer adventure-clothing lines from Spidi, Alpinestars and Arai. These products are distributed by American Honda and sold exclusively at Honda dealerships across the country.





## 5. Specifications

Engine	
Type	Liquid-cooled 4-stroke 4 valve-per-cylinder parallel twin with 270° crank and Unicam
Displacement	999cc
Bore x Stroke	92.0 x 75.1mm
Clutch	Manual: Wet, multiplate with coil springs, Aluminum Cam Assist and Slipper clutch DCT: 2 wet multiple clutches with coil springs
Transmission	Manual: Constant-mesh 6-speed DCT: 6-speed
Final Drive	O-ring sealed chain
HSTC	HSTC 3 levels + switch off



## 5. Specifications (cont'd.)

Chassis	
Type	Steel semi-double-cradle type with steel rear subframe
Dimensions (L x W x H)	91.9 in. x 36.6 in. x 58.1 in.
Wheelbase	62.0 in.
Seat Height	34.3 in. standard position / 33.5 in. low position
Ground Clearance	9.8 in.
Curb Weight	511 lbs. manual transmission, 53.4 lbs DCT
Turning Radius	8.5 ft.
Fuel Capacity	4.9 U.S. gal.
Front Suspension	Showa 45mm cartridge-type inverted telescopic fork with preload adjuster, plus compression and rebound damping adjustment, 9 in. stroke
Rear Suspension	Monoblock cast aluminum swingarm with Pro-Link, w/ gas-charged damper, hydraulic dial-style preload adjuster, plus compression and rebound damping
Instruments	Rally-style negative LCD instrument display including: Speedometer, Tachometer, Fuel, Gear position, ABS, HSTC, Odometer, Trip and Clock
Headlight	Dual LED (1 High / 1 Low)
Taillight	LED
Indicators	Bulb-type





## 5. Specifications (cont'd.)

Wheels	
Front Wheel	Wire spoke with aluminum rim
Rear Wheel	Wire spoke with aluminum rim
Front Rim Size	21 x 2.15
Rear Rim Size	18 x 4.0
Front Tire	90/90-21 tube type
Rear Tire	150/70-18 tube type
ABS System Type	ABS 2-channel with rear ABS off-switch
Front Brake	310mm dual wave floating discs with aluminum hub and radial-fit 4-piston calipers and sintered metal pads
Rear Brake	256mm wave disc with 1-piston caliper and sintered metal pads. Also lever-lock-type Parking Brake System on DCT model with additional slide-type 1-piston caliper



## 5. Specifications (cont'd.)

Other	
Colors	Red/White/Black Dakar Rally, Silver (Manual transmission and DCT available in both colors)
MSRP	DCT: \$13,699 Manual transmission: \$12,999