



2009 MODEL INFORMATION

MODEL NAME | **KX450F**

MARKETING CODE | **KX450E**

RELEASE FIXÉ AU 17 JUIN 2008

Kawasaki
Let the good times roll.

Version: 17 Jun 2008

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KEEPING THE COMPETITIVE EDGE

Ensuring the '09 KX450F retains its competitive edge are a number of major changes, including a new fuel-injected engine, a lighter, slimmer chassis and completely new bodywork designed to facilitate rider control.

The KX450F base package provides an excellent platform for experienced racers to win races in the top classes. Design of the highly rigid aluminium frame, suspension components and settings focused on delivering superb high-speed stability – especially in straight lines – to enable race-experienced riders to ride full out. And to deliver holeshot-winning performance – a key factor that can mean the difference between running up front and winning, or getting stuck mid-pack – chassis geometry and the hard-hitting 4-stroke engine's wide powerband were designed to maximise rear wheel traction. The combination is a proven race-winner, with Kawasaki racers regular podium finishers.

To ensure the Lime Green racers continue to run at the front, Kawasaki engineers further increased the KX450F's winning potential. The biggest change for '09 is a switch to fuel injection. While maintaining the hard-hitting engine character of its predecessor, the new fuel-injected engine offers stable fuel-metering even in vigorous motocross riding situations. Further improvements deliver smooth, controlled power delivery.

OVERVIEW

Changes to the chassis focus on making the new KX450F even easier to ride. The frame was completely re-evaluated for reduced weight, lighter handling and even greater traction performance.

Already acclaimed as the best looking motocrosser in the paddock, the new KX450F benefits from a new styling package that not only gives it sharper factory-racer looks but offers racers a slimmer rider interface to make it even easier to go faster.

The new KX450F – race-winning performance to run out front.



AT A GLANCE

NEW

Lighter, slimmer aluminium perimeter frame - P.10

All large frame parts were redesigned and make use of a new production method to achieve a lighter, slimmer chassis.

NEW

449 cm³ liquid-cooled, 4-stroke Single with fuel injection - P.6

Now fuel-injected, the engine offers the same hard-hitting power while ensuring stable fuel-metering in all conditions.

NEW

Kayaba AOS fork with new DLC coating and Kashima Coat - P.11

New Diamond-Like Carbon coating reduces sliding friction by approximately 15% for improved fork action, especially during cornering. Kashima Coat and high-precision machining further reduce friction.



NEW

Revised swingarm - P.10

New swingarm with revised rigidity contributes to increased ride stability and weight savings.

NEW

Rear shock absorber with larger piston - P.12

New rear shock features a larger, 50 mm piston for improved damping and bottoming performance. Dual compression adjustability offers a wide range of tuning options. Kashima Coat on the tank cylinder improves action.

Petal brake discs - P.12

Front and rear petal brake discs offer efficient braking performance.

New Uni-Trak rear suspension - P.10

Linkage mounts below the swingarm for more precise suspension tuning. Linkage ratios selected to maximise rear wheel traction.

NEW

Slimmer radiator shrouds - P.13

Two-tone shrouds formed using a double-injection moulding process contribute to the slimmer package.

NEW

Motocross ECU - P.6

Lightweight ECU was designed specifically to withstand the rigors of motocross racing. Settings can be reprogrammed with an optional user setting tool.



NEW

Chassis dimensions - P.10

Centre of gravity and key chassis dimensions selected to minimise squat. Higher swingarm pivot and other dimension fine-tuning contribute to increased rear wheel traction and lighter handling.

NEW

Wider footpegs - P.13

Wider footpegs offer increased grip and improved feel.

Renthal handlebar - P.12

Factory-style handlebar and pad comes standard.

NEW

Refined power delivery - P.8

Revised IN/OUT porting, a higher compression ratio, new exhaust system and larger-diameter ACG rotor contribute to improved performance and ensure smooth power delivery at all rpm.

NEW

Progressive throttle link - P.7

Lightweight 43 mm throttle body uses two shafts joined by a progressive link to give sharp response and excellent power feeling.

High-precision ACR - P.9

Dual-weight centrifugal decompression system offers reliable starting.

NEW

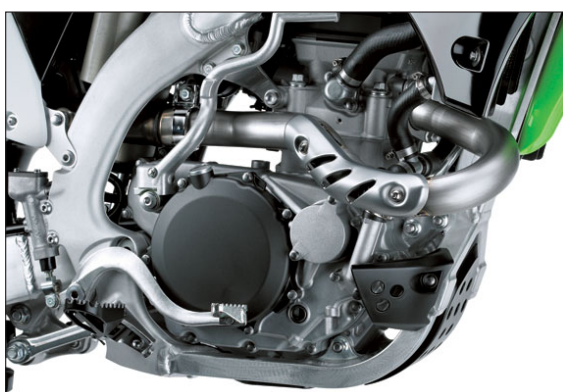
Factory styling - P.12

Factory-style graphics, black alumite rims and black fork guards give the new KX450F the looks to match its highly tuned performance.

KEY FEATURES

KAWASAKI'S FIRST FUEL-INJECTED MOTOCROSS ENGINE

For '09 the KX450F takes its next evolutionary step and switches to fuel injection. While enjoying fuel injection's inherent benefits, the new engine was designed to retain the character of its predecessor. The 449 cm³ liquid-cooled, 4-stroke Single continues to deliver hard-hitting power from low- through high-rpm. The broad powerband and responsive throttle offer a broad spread of torque response that enables racers to get on the gas and go even from down low. With fuel injection, the KX450F's lag-free acceleration, especially after landing jumps, is better than ever. Increased traction at low-mid speeds means better drive out of corners for quicker corner exits. A number of other changes refine performance, ensuring the smooth, linear response of the '08 model was maintained.



■ Battery-less fuel injection system

Designed specifically for motocrossers the fuel injection system incorporates a small lightweight ECU and operates without a battery to further eliminate unnecessary weight. And of course, fuel injection eliminates the need to adjust engine settings to suit track and climate conditions.

NEW

* Ensuring quick starting without a battery was a prime directive when developing the new fuel injection system. Using only electricity generated by the kick starter, the engine can be started with only three rotations of the crankshaft. The system delivers electricity in the following order: 1) ECU, 2) fuel pump, 3) injector. With a warm engine, starting can be accomplished in a single kick.

NEW

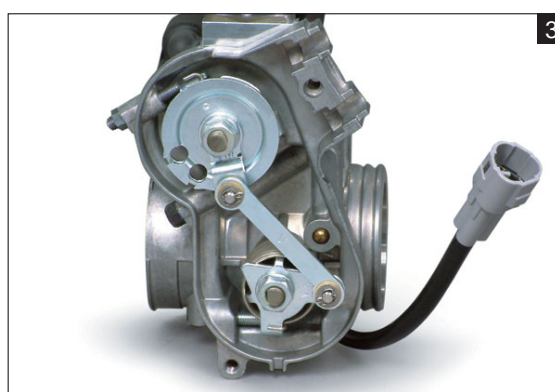
* The compact, lightweight ECU, located just in front of the steering head (behind the number plate), was designed specifically for motocross use. To help cope with the shocks and vibrations of motocross riding, the fuel pump relay is built in to the ECU.

(Photo 1)



KEY FEATURES

- NEW** * An optional user setting tool allows racers to reprogram the ECU's data maps for volume of fuel injected and ignition timing. (This is an actual rewriting of the data maps to adjust engine characteristics to suit rider preference; not to be confused with changing needle jets to suit climatic conditions on a carburetted model.) The tool can also be used as a data logger, recording up to six hours of data (engine rpm, angle of throttle opening, etc). (Photo 2)
- NEW** * The 43 mm throttle body makes use of a progressive throttle link to deliver airflow in much the same way as would a FCR carburettor. Using two linked shafts, the throttle body opens more quickly after the 3/8 open position, delivering sharp response and excellent power feeling. (Photo 3)
- NEW** * Ultra-fine atomising injector with 12 holes sprays particles with a droplet size of 60μ for smooth power deliver and improved engine at partial throttle. (Photo 4)
- NEW** * The injector was set at 45° , the optimum angle for improved mid-range power.
- NEW** * Lightweight throttle body is approximately half the weight of a FCR carburettor – a weight savings of about 600 g.
- NEW** * The newly designed fuel pump, located in the fuel tank, is a lightweight aluminium construction. (Photo 5)
- NEW** * To ensure a stable fuel supply during vigorous motocross riding the fuel pump features a rubber fuel filter cover that wraps around the inlet port and acts as a fuel trap. A fuel return hose from the pressure regulator ensures there is always fuel in the fuel trap.



■ Refined power delivery

- NEW** * Newly designed cylinder head features revised intake and exhaust ports for improved engine performance at all rpm. Reduced height (105 mm >> 100 mm) contributes to a more compact, lighter engine.
- NEW** * New piston with reshaped head increases compression ratio from 12.0 to 12.5, improving performance in the low-mid range.
- NEW** * One-piece titanium exhaust pipe (no longer tapered, with revised length and diameter) contributes to improved low-mid range performance. The optimised pipe line both enables the length necessary for engine performance as well as contributing to improved ergonomics.
- NEW** * Larger-diameter ACG rotor with increased rotational inertia ($4.5 \text{ kg-cm}^2 >> 9.0 \text{ kg-cm}^2$) contributes to improved rear wheel traction performance. The new shape of the crankshaft (rotational inertia unchanged) and ACG rotor enable the balance factor to remain the same while offering weight savings.
- * Wedge-shaped crank web increases offsetting moment for high crankshaft balance factor. At close to 60%, the balance factor of the '09 KX450F is on par with James Stewart's factory racer. The result is reduced engine vibration, smoother power delivery and increased performance – especially at low rpm, where response is noticeably snappier.
- NEW** * In addition to generating greater electrical output to ensure easy starting, the large-diameter ACG also contributes to improved feeling at partial throttle.

■ Other performance-enhancing engine characteristics

- * The engine was tuned such that the torque curve follows the limit of running resistance for as long as possible. (Unchecked, engine torque can exceed this limit, resulting in wheel spin, which does nothing to help forward momentum.)
- * Efforts were made to achieve the widest possible torque band, so that traction efficiency would be maximised for a greater part of the rev range.
- * The engine is almost upright (forward lean angle is 3°) to help place the bike's centre of gravity in the ideal position for maximum traction.
- * Asymmetrical high-acceleration cams yield high intake efficiency.
- * During the cylinder head casting process, the cores for the intake ports were given a special coating to make the intake ports smoother. The extremely smooth surfaces that result increase intake efficiency at all rpm.
- * Lightweight titanium valves (IN: 36 mm; EX: 31 mm) reduce reciprocating weight and offer high-rpm reliability.
- NEW** * Intake valves are made of a new material with finer metal grain. The high-strength material has approximately 50% greater resistance to fatigue.
- * Aluminium valve spring retainers reduce reciprocating weight for reliable valve control at high-rpm.
- * Double valve springs also help ensure stable valve operation and allow a short cylinder head height.

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- * A low-friction coating on the piston skirt reduces mechanical loss.

- * Revised piston jet injects oil at a revised angle for improved piston cooling. The nozzle opening was designed to minimise the tendency of oil to gather at the nozzle opening, further contributing to piston cooling performance.

- * The screw-type adjuster on the cam chain tensioner is equipped with a pressure spring. Because the system automatically minimises the vibration caused by a loose cam chain, it greatly reduces the chance of a mishap during a race. (Non-automatic systems that are tuned incorrectly can actually adversely affect valve timing by putting too much pressure on the cam chain.)

- * The combination of the smooth-shifting, close-ratio 5-speed transmission with the KX450F's low-rpm engine performance offers the rider the option to shift to a higher gear when traversing rough sections. Since this reduces the effect of sudden (unwanted) throttle input, focus previously given to careful throttle control can now be given to racing.

- * Some riders may also find it easier to get into the rhythm of a course when shifting between five gears.

- * In the event of a stalled engine during a race, getting it started again as soon as possible is a racer's first priority, so the KX450F is equipped with an automatic compression release (ACR) system. The dual-weight centrifugal decompression system fitted to the exhaust cam eases starting in much the same way as a conventional lever-type system.

NEW

- * Increased lift for the ACR pin (0.5 mm >> 1.0 mm) reduces the power necessary to kick start the bike.

- * Sprocket-style chain drive roller helps smooth engine braking by reducing the effect of driveline lash when the rider gets off the gas quickly and play in the lower side of the chain suddenly tightens. The additional control facilitates corner entry.

FACTORY-STYLE CHASSIS COMPONENTS AND TUNING

The KX450F's slim aluminium perimeter frame is a lightweight construction composed of forged, extruded and cast parts. Chassis balance and settings were all set to suit race-experienced riders. The centre of gravity and key dimensions (swingarm pivot, output sprocket and rear axle locations) were chosen so that the rear tyre would drive the bike forward (instead of causing it to squat). For '09 revisions to the frame and suspension components were designed to offer a slimmer package, lighter handling, and increased rear wheel traction.

■ Lighter, slimmer chassis

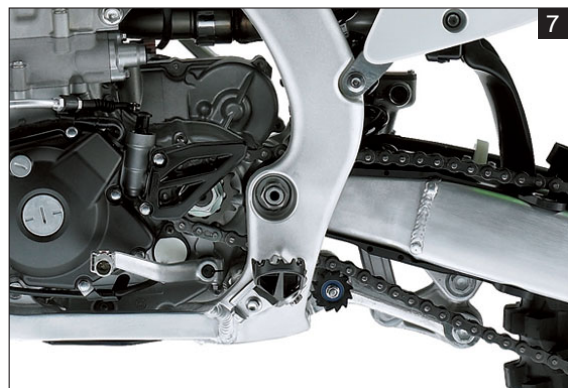
All the large parts of the new aluminium perimeter frame were re-examined for ways to trim weight. Rigidity balance was optimised to offer increased riding stability.

- NEW** * Main pipes have a smaller cross-section (70 mm >> 68 mm tall; 27 mm >> 24 mm wide), contributing to both weight savings and the revised rigidity balance.
- NEW** * The head pipe is now slimmer. The down tube is now formed with a swaging (squeezing and hammering) process and has a smaller cast bracket, further contributing to both weight savings and the revised rigidity balance.
- NEW** * Revised chassis dimensions contribute to improved handling. Altogether, the parts revisions combine to give a weight savings of approximately 800 g.
- NEW** * New swingarm has revised rigidity, which contributes to improved riding stability, and is approximately 200 g lighter. (Photo 6)
- NEW** * Swingarm construction is basically the same as that of the '08 model, but is more tapered than before and has a slightly D-shaped cross section.
 - * The alloy swingarm uses a cast front section, tapered hydroformed spars and forged chain adjusters.



■ Superior rear wheel traction

- NEW** * The swingarm pivot is located higher in the frame for improved rear wheel traction. (Photo 7)
- * The New Uni-Trak rear suspension system mounts the suspension arm below the swingarm, allowing a longer rear suspension stroke. The longer stroke in turn allows more precise rear suspension tuning.



KEY FEATURES

- * Extensive rider testing was conducted to determine the ideal linkage ratios and rear shock absorber damping settings to achieve maximum rear wheel traction.

■ Factory-style and other race-oriented components

- * Kayaba AOS (Air-Oil-Separate) fork keeps oil and air in separate chambers for stable damping performance during long motos. Low-friction fork seals contribute to smooth action. (Photo 8)
- NEW** * The new DLC (Diamond-Like Carbon) on the outer surface of the inner fork tubes offers 15% reduced sliding friction (stiction) compared to the previous model when the fork is exposed to lateral forces that would usually hamper slide action. The result is improved fork action, especially during cornering. (Photo 9)
- * Friction-reducing Kashima Coat on the inside of the fork outer tubes contributes to smoother suspension action (especially at the initial part of the stroke) and a better ride feel.
- NEW** * Revised (more rigid) upper triple clamp and fork outer tubes offer optimised rigidity for improved performance when tracking over gaps.
- NEW** * Fork offset reduced from 24 mm to 23 mm combined with the frame's revised rigidity balance and revised suspension settings offers lighter handling and increased front wheel traction.
- NEW** * New black fork guards wrap further around, offering greater protection for the inner tubes.



KEY FEATURES

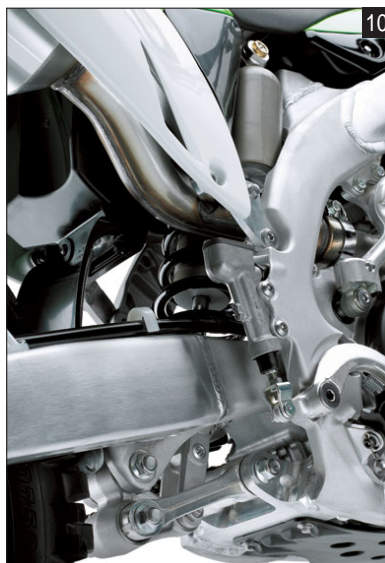
NEW

* New rear shock features a larger 50 mm piston (previously 46 mm). Improved damping and bottoming performance result in better ride feel and increased road-following ability. (Photo 10)

* The rear shock features dual compression adjustability, allowing high-speed and low-speed damping to be tuned separately.

* The rear shock also features the Kashima Coat on the tank cylinder. The reduced friction smooths suspension action.

* The KX450F features petal brake discs front and rear. In addition to helping reduce unsprung weight, the wave shapes of the petal discs help clean the brake pads for more efficient braking performance. (Photos 11-12)



* Rear caliper guard protects the caliper from damage.

* A factory-style Renthal (standard-type) aluminium handlebar is standard equipment.

* Rims are coated in black alumite – just like our factory racers.

* Factory-style graphics complement the KX450F's highly tuned performance.

■ Rider interface

In addition to giving the '09 KX450F a stunning new look, completely revised bodywork was all designed with rider ergonomics in mind. The new components offer the rider an even slimmer interface, the natural position making it even easier for racers to go fast.

NEW

* New frame is approximately 6 mm slimmer across the main pipes.

KEY FEATURES

NEW

* Formed using a double-injection moulding process, the new 2-tone shrouds contribute to a slimmer package. (Photo 13)

NEW

* 2-tone side covers are also formed using a double-injection moulding process. Like the shrouds they contribute to the slimmer package. A hole in the right-side cover helps cool the silencer. (Photo 14)

* The frame widens at the ankles to offer the rider better grip and narrows near the bend below the seat to allow a slim riding position.

NEW

* New seat is slimmer and features a harder urethane for optimum rider ergonomics. (Photo 15)

* The seat uses a slip-resistant top surface for good grip when seated and smooth sides for excellent rider mobility.

NEW

* New wider (front to rear) footpegs (46 mm >> 50 mm) offer riders increased grip as well as improved feel at the pegs. (Photo 16)

* The clutch cable boot features a large quick adjuster, making it easier for riders to adjust play in the clutch cable.

* Throttle grip has a unitised collar. The one-piece unit provides additional stability during throttle operation.

* Lightweight short-length grips feature a pattern designed to provide excellent grip.

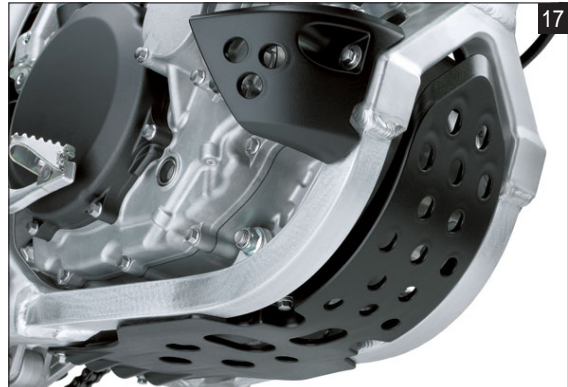


KEY FEATURES

■ Lightweight components

In addition to the frame and bodywork, Kawasaki engineers re-examined a number of other components to see where weight could be reduced.

- NEW** * Designed to accommodate the new fuel pump, the fuel tank is now formed using a rotational moulding (or rotomoulding) process that reduces weight. Tank capacity is now 7 litres.
- NEW** * Larger synthetic skid plate replaces the small aluminium unit. The new skid plate offers greater protection without increasing weight. (Photo 17)
- NEW** * Narrower drive chain guide trims rubber parts for approximately 100 g weight reduction. (Photo 18)
- * Rib-less rear hub and butted spokes reduced unsprung weight.
- * Aluminium instead of steel is used on a number of components in order to save weight: the clutch cable elbow, the clutch cable fitting nuts, the fuel tank fitting nuts, the seat mounting brackets, the front brake hose clamp. The upper mounting brackets for the plastic fork slider protectors were also eliminated.



ADDITIONAL FEATURES

■ Engine

- NEW** * Fast-idle knob on the throttle body allows riders to increase engine speed when first starting a cold engine.
- NEW** * New silencer body has increased volume to be able to meet future noise regulations. (Current regulations are 99 dB for USA and 94 dB for EUR and Japan.) (Photo 19)
- * The crankshaft and connecting rod received a carburising and quenching treatment for additional rigidity.



U.S. model shown

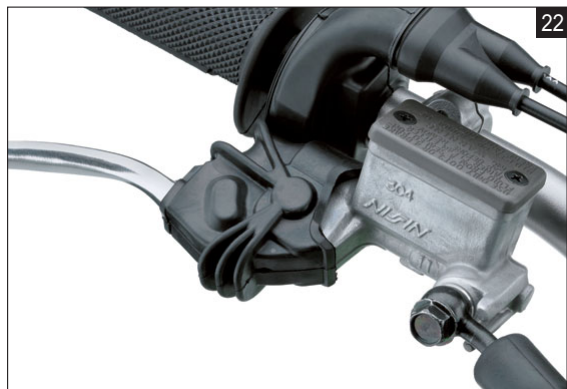
ADDITIONAL FEATURES

- NEW** * Longer roller bearings (17.8 mm >> 19.8 mm) for the connecting rod big end offer approximately 40% greater durability.
- * The camshaft lobes and tappet surfaces feature a soft-nitriding surface treatment for long wear and high-rpm reliability.
- NEW** * A larger flap inside the air cleaner case helps prevent the ingress of mud. (Photo 20)
- * High-capacity Denso radiators deliver superior cooling efficiency. The radiators are very slim and feature tightly packed cores and a fin design for excellent heat dissipation.
- NEW** * A brace bar reinforces the radiator bracket, contributing to increased durability.
- NEW** * New radiator louvers contribute to increased cooling performance. (Photo 21)
- * A hot start system gives quick starts when the engine is hot. The hot start lever is unitised with the clutch lever.
- * The silencer uses long-fibre packing which is much more resistant to being blown out of the tail pipe than standard length packing. As a result, packing needs to be replaced half as often.



Chassis

- NEW** * Beefier sub-frame complements the heavier new muffler.
- NEW** * Larger front brake lever boot offers increased protection against dust. (Photo 22)
- * Front/rear tyres and suspension settings vary by market to suit local conditions.



Other

- * Optional engine parts include magneto rotors with different inertias (8.5, 9.5 kg·cm²; STD: 9.0 kg·cm²).
- * Optional chassis parts include handlebar holder for a f28.6 mm bar (STD: ø22.2 mm), aluminium and steel rear sprockets (+/-2T), solid petal brake rotors for wet races, different springs for the front fork and rear shock, and a 20" front wheel.

COLOUR(S)

* Lime Green with factory-style graphics



* Ebony with Monster Energy graphics (USA/CAN/AUS)



SPECIFICATIONS

ENGINE	KX450E9F
Type	Liquid-cooled, 4-stroke Single
Displacement	449 cm ³
Bore and Stroke	96.0 x 62.1 mm
Compression ratio	12.5:1
Valve system	DOHC, 4 valves
Fuel system	Fuel injection: ø43 mm x 1 (Keihin)
Ignition	Digital DC-CDI
Starting	Primary kick
Lubrication	Forced lubrication, semi-dry sump
DRIVETRAIN	
Transmission	5-speed, return
Final drive	Chain
Primary reduction ratio	2.727 (60/22)
Gear ratios: 1st	1.750 (28/16)
2nd	1.412 (24/17)
3rd	1.188 (19/16)
4th	1.000 (19/19)
5th	0.875 (21/24)
Final reduction ratio	3.846 (50/13)
Clutch	Wet multi-disc, manual
FRAME	
Type	Perimeter, aluminium
Wheel travel: front	315 mm
rear	315 mm
Tyre: front	90/100-21 57M (EUR/USA/CAN/AUS)
	80/100-21 51M (JPN)
rear	120/80-19 63M
Caster (rake)	26.7°
Trail	116 mm
Steering angle (left/right)	42° / 42°

SPECIFICATIONS

SUSPENSION	KX450E9F
Front: Type Compression damping Rebound damping Rear: Type Compression damping Rebound damping Spring preload	48 mm upside-down AOS-type telescopic fork 22-way 20-way New Uni-Trak 22-way (low-speed), 2-turns or more (high-speed) 22-way Fully adjustable
BRAKES	
Front: Type Caliper Rear: Type Caliper	Single semi-floating 250 mm petal disc Dual-piston Single 240 mm petal disc Single-piston
DIMENSIONS	
Overall length Overall width Overall height Wheelbase Ground clearance Seat height Curb mass Fuel capacity	2,185 mm 820 mm 1,280 mm 1,480 mm 340 mm 965 mm 112.1 kg 7 litres

The specifications mentioned here apply to and have been achieved by production models under standard operating conditions. We intend only to give a fair description of the vehicle and its performance capabilities but these specifications may not apply to every machine supplied for sale. Kawasaki Heavy Industries, Ltd. reserves the right to alter specifications without prior notice. Equipment illustrated and specifications may vary to meet individual markets.