

2004 Technical Information

Ninja ZX-10R



OVERALL CONCEPT

Ultimate Supersport! Kawasaki storms into the litre-class with the uncompromising new Ninja ZX-10R, the machine everyone has been waiting for – everyone except the competition. Boasting a category-leading power-to-weight ratio, an awesomely powerful engine loaded with advanced technology and style evocative of the world of MotoGP, the new Ninja ZX-10R is the definitive expression of Kawasaki's supersport DNA.



Unlike most other Kawasaki machines, the Ninja ZX-10R design started with chassis simulations. The engineers wanted an extremely lightweight and compact chassis that would offer superb handling and stability. The combination of a short wheelbase with a long swingarm is a configuration also seen on the Ninja ZX-RR. An all-aluminium frame with 600-class dimensions mated to a long and highly rigid gull swingarm gives the ZX-10R category-leading handling performance on track and twisty roads.

No less impressive, the powerful and incredibly compact new In-Line Four is a showcase of advanced supersport technology. A number of considerations were made to avoid compromising the desired chassis dimensions; use of a one-piece cylinder/crankcase, a compact rear-mounted generator and “stacked” transmission kept the high-spec power unit lightweight and compact. Other engine features include a new fuel injection system, a close-ratio transmission with a back-torque limiter clutch, and magnesium engine covers – all of which contribute to the bike's design aim of being the No. 1 machine on the track. Those sitting on the ZX-10R for the first time will be amazed that despite its compact size and race-purpose ergonomics, it is by no means cramped. Thanks to an idealised seat/pegs/handlebar relationship and a concave tank top, which allows the rider to mould himself to the bike, the 10R puts the rider in a position to take full advantage of the engine's awesome power and the superb chassis response.

The Ninja ZX-10R's key sales features can be summarised as follows:

- **Best Power-to-Weight Ratio in its Class** – Unbeatable combination of high power, brilliant throttle response and low exhaust emissions from a liquid-cooled, DOHC, 16-valve, In-Line Four featuring a sophisticated automotive-style fuel injection system with 43 mm throttle bodies, dual throttle valves and fine-atomising injectors. Light weight care of an incredibly compact engine package, and a compact all-aluminium frame. Newly designed lightweight wheels also contribute to weight savings that result in a litre-class machine with the weight and dimensions of a 600.

- **Race-Oriented Performance** – The combination of a short wheelbase with a long swingarm gives the ZX-10R incredibly nimble handling performance. The concave tank top and an idealised relationship between pegs, handlebars and seat, creates an aggressive, compact riding position. Close-ratio transmission, back torque limiter, radial mount callipers, petal disc brakes and fully adjustable suspension are also all designed with the sole purpose of racing in mind.
- **Aggressive Styling** – Visually expressive of Kawasaki's supersport DNA, the ZX-10R's flowing, edge-driven lines express the machine's amazing performance and unsurpassed power-to-weight ratio.

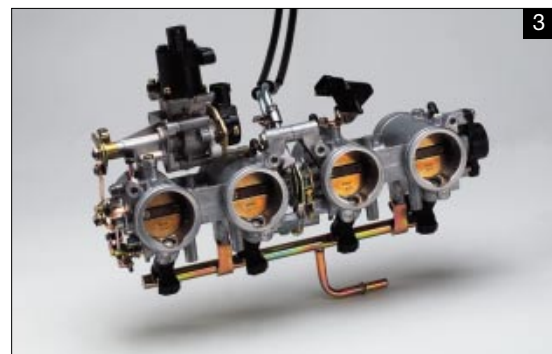
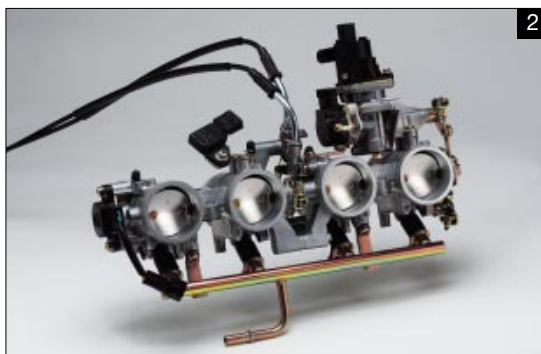
KEY SALES FEATURES

BEST POWER-TO-WEIGHT RATIO IN ITS CLASS

Engine



- * Liquid-cooled, DOHC, 16-valve, 998 cm³ engine has a bore and stroke of 76 x 55 mm. (Photo 1)
- * Huge 43 mm throttle bodies fitted with dual throttle valves ensure massive power output and a smooth, step-free torque curve. (Photos 2,3)



- * Automotive-type fine-atomising injectors improve performance, fuel economy and emissions. While fuel spray from conventional injectors has a droplet size of 120 microns, the fine atomising injectors have a droplet size of approximately 70 microns.

- * Flow analysis used to develop idealised dimensions for intake and exhaust ports, ensuring efficient cylinder filling and high power output (intake/exhaust valve diameters: 31/25.5 mm, stem diameter: 4.5 mm). Titanium exhaust valves contribute to reduced engine weight.
- * Hotter spark of the iridium plugs and high-voltage coils improves combustion efficiency.
- * Camshaft lobes and tappet surfaces feature soft-nitriding surface treatment for long wear and high-rpm reliability.
- * Sintered aluminium valve spring retainers reduce reciprocating weight for reliable valve control at high-rpm.
- * Forged pistons are lightweight and very tough, for low reciprocating weight and high heat resistance. Their flat tops enable a compact combustion chamber with improved combustion efficiency. Compression ratio is 12.7:1. (Photo 4)

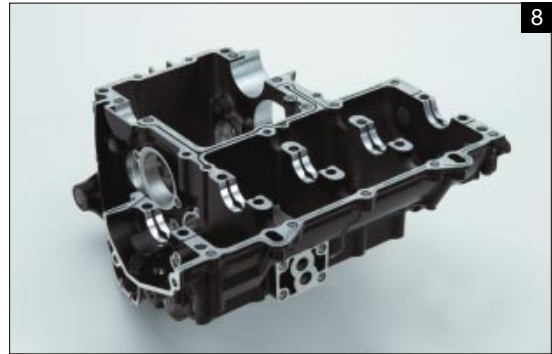


- * Plated cylinders are long wearing and offer excellent heat dispersion. Passageways in cylinders improve crankcase breathing and reduce pumping loss. (Photos 5,6)



- * Intake air is routed via the central Ram Air duct and through the frame tubes to the airbox. A duct between the frame and the air cleaner prevents ingress of water.
- * Compact air cleaner fits snugly between the frame rails, allowing use of a seamless, high-capacity, flat-bottomed fuel tank. Flow analysis was also used to ensure efficient air flow inside the airbox.
- * Butterfly valve located in the cast titanium collector of the exhaust system ensures smooth, linear power delivery at all rpm.

- * One-piece cylinder/crankcase design, compact rear-mounted generator, compact cylinder head and “stacked” tri-axis transmission/crankshaft layout allows an amazingly compact and lightweight engine, permitting the crankshaft location to be idealised and the bike’s centre of gravity to be lowered, thereby contributing to the bike’s highly responsive handling characteristics. The engine is short enough to fit below the twin beams of the frame, allowing the 10R to have the narrow compactness of a 600-class machine. (Photos 7,8)



- * Single valve springs use oval-section wire to realise short springs and a compact cylinder head design.
- * Camshafts are machined from forged billets of SCM420K steel for light weight and high strength. (Photo 9)



- * Lightweight magnesium engine covers contribute to the engine’s low weight.
- * Newly designed liquid-cooled oil cooler with internal aluminium finning is lightweight and keeps oil temperatures under control.
- * All-titanium exhaust system and oval-section muffler with titanium internals and a 1 mm thick aluminium cover designed for light weight. (Photo 10)



Chassis



- * The all-aluminium twin-beam frame is a composite structure of castings and pressings. Lightweight and very compact, it features a short wheelbase and a long swingarm. (Photos 11,12)
- * The frame's thin walled die castings are a mere 2.5 mm thick for maximum strength with minimum weight.
- * Use of a cast cross pipe results in fewer parts and less welding.
- * Frame rails run over the engine to give it a width on par with current 600-class bikes.
- * Front fork features many aluminium internal components to reduce weight.
- * Lightening holes in the top triple clamp contribute to the machine's overall light weight.
- * Forged aluminium handlebars are gun-drilled for light weight.
- * Other lightweight chassis components include dual aluminium steering stem nuts, lightweight pop nuts for the bodywork and aluminium rear-suspension bearing arm sleeves and wheel side collars.

Wheels

- * Lightweight new front and rear wheels feature "H" cross-section spokes. The unique, 6-spoke design permits use of thinner rims, for significant weight savings. (Photos 13,14)



RACE-ORIENTED PERFORMANCE

Engine

- * Close-ratio 6-speed transmission designed to give the 10R impressive performance on the racetrack and on twisting roads.
- * Adjustable back torque limiter fitted to the clutch helps prevent wheel hop under rapid deceleration. (Photo 15)



- * Sloshing analysis was used to develop baffles for the oil pan for better performance under heavy braking. A sub oil pan helps reduce windage by keeping the oil location low, and also helps lower the oil temperature.

Frame



- * Like the ZX-RR, the 10R chassis minimises the distance between the steering stem and swingarm pivot to create a compact, responsive package.

- * Massive braced swingarm delivers the rigidity needed for a machine with the ZX-10R's horsepower. Long swingarm design reduces the engine's leverage on the rear suspension, for excellent suspension action and superb road holding qualities. Specially configured for high torsional rigidity and more flexible lateral rigidity, this "balanced flex" contributes significantly to the 10R's brilliant handling qualities. Amazingly lightweight, the swingarm weighs about the same as the ZX-6R swingarm. (Photo 16)



Ergonomics

- * The 10R's riding position was developed based on computer simulation and exhaustive rider feedback.
- * Thanks to the narrow width of the frame rails, which run over the engine, the rear of the tank could be made very narrow, allowing the rider to grip the bike with his legs. (Photo 17)



- * Because the air cleaner is flush with the top of the frame rails, the fuel tank bottom can be made flat, significantly increasing fuel tank capacity without increasing overall tank size.
- * The top surface of the fuel tank is concave, making it easier to tuck in behind the fairing and increasing rider comfort during high-performance riding.
- * An ideal relationship between pegs, seat and handlebars results in a naturally aggressive riding position.

Brakes

- * The Ninja ZX-10R is the first supersport bike to feature petal brake discs. This unique disc shape improves cooling and helps prevent disc warp. They are also lighter than conventional discs.
- * Front discs are 300 mm. Radial 4-pot opposed-piston callipers deliver impressive stopping performance with excellent feel at the lever. (Photo 18)



- * The lightweight 220 mm rear petal disc is operated by a lightweight single-piston calliper. (Photo 19)

Suspension

- * Highly rigid 43 mm inverted fork is fully adjustable and features settings that are biased towards track riding.
- * A new super-hard DLC coating (Diamond-Like Carbon) has been added to the outer surface of the inner fork tubes to reduce sliding friction (stiction) and improve action, especially in situations where the suspension is subjected to heavy loads, such as during braking or when banked over. While the coating provides its greatest benefits on the racetrack, street riding is also notably smoother. The increased surface hardness also helps to prevent scratches and damage to the tubes.
- * Both front and rear suspension are fitted with top-out springs for stable suspension performance. Because the top-out springs regulate suspension elongation, the rider will also experience less nose dive feel under heavy braking after hard acceleration, as well as greater stability when getting back on the gas after hard braking.
- * Linkage-equipped rear gas shock with reservoir is fully adjustable. (Photo 20)



- * Lightweight aluminium suspension linkage reduces chassis weight and contributes to the responsive rear suspension action.
- * Rear ride height is shim-adjustable.

AGGRESSIVE STYLING

Bodywork/Styling



- * Highly compact front cowl incorporates a central Ram Air duct and features a frontal area smaller than that of the ZX-6R. (Photo 21)



- * Multi-reflector headlamp is compact and is located very low. Lighting performance is first rate.
- * Aerodynamic mirrors look great and offer high visibility.
- * Seamless fuel tank design enhances the 10R's high-quality look and feel.
- * 3-piece front fender is highly aerodynamic and contributes to the front end's light appearance.
- * European models feature front turn signals stylishly integrated in the bodywork for improved aerodynamics. Rear turn signals are extremely compact and feature a new conical design. (North American models feature standard front and rear turn signals.) (Photo 22)



- * Attractive inner fender design follows the lines of the swingarm and contributes to laminar flow of hot air around the rear wheel.
- * Compact rear flap contributes to the 10R's slim appearance. It is mounted directly to the sub-frame for added strength.
- * Flush-surface LED tail light curves up slightly over the top of the seat cowl, making the 10R very visible to the drivers of high vehicles. (Photos 23,24)



- * Multi-piece tail cover allows an ultra-thin design as well as easy maintenance. Removing the top two pieces allows complete access to the top.
- * Frame is finished in flat black to enhance its aggressive, racy image.
- * Robot welding is used for high quality and a superior finish.
- * Optional single seat cover can replace the tandem seat for an even more aggressive image. (Photos 25,26)



ADDITIONAL FEATURES

Engine

- * Compact clutch-driven generator turns at twice engine rpm for high output, even when idling. (Photo 27)



- * Idling Speed Control system contributes to easy starting.
- * Internal oil feed is via grooves machined in the crankcase mating surfaces, eliminating the plumbing and complexity of conventional oil feed systems.
- * Use of KLEEN (Kawasaki Low Exhaust Emission) catalyser system helps keep exhaust emissions environmentally friendly. Honeycomb catalyser located in the muffler helps ensure that the 10R meet Euro II emissions regulations.

Other

- * Immobiliser function incorporated into the ignition switch on most European models helps prevent theft. (Photo 28)



- * Lightweight instrument cluster features a perimeter LCD tachometer, digital LCD speedometer, adjustable shift indicator lamp, and stopwatch-style lap timer – this in addition to a digital temp gauge, clock, tripmeter, etc. and a comprehensive range of indicator lamps. The shift indicator lamp has three settings: Off, Low and Bright. The fuel injection lamp also serves as an immobiliser indicator on immobiliser-equipped models. (Photo 29)
- * Wiring harness features newly designed relay box, compact fuse box and simplified wiring layout for easier maintenance. Most electrical components are concentrated under the seat.
- * Wheels are centre-balanced using environmentally friendly steel weights.
- * An elegant 3D tank emblem enhances the 10R's high-quality image (not used on lime green models).

COLOUR(S)

* Lime Green / Metallic Flat Stoic Black



* Candy Thunder Blue / Metallic Flat Stoic Black (EUR/USA/CAN)



* Metallic Spark Black / Metallic Flat Stoic Black



* Pearl Blazing Orange / Metallic Flat Stoic Black (USA/CAN/AUS)



SPECIFICATIONS

ENGINE	ZX1000-C1
Type	Liquid-cooled, 4-stroke In-Line Four
Displacement	998 cm ³
Bore and Stroke	76.0 x 55.0 mm
Compression ratio	12.7:1
Valve system	DOHC, 16 valves
Fuel system	Fuel injection: ø 43 mm x 4 (Mikuni)
Ignition	Digital
Starting	Electric
Lubrication	Forced lubrication, wet sump with oil cooler
DRIVETRAIN	
Transmission	6-speed, return
Final drive	Sealed Chain
Primary reduction ratio	1.611 (87/54)
Gear ratios: 1st	2.533 (38/15)
2nd	2.053 (39/19)
3rd	1.737 (33/19)
4th	1.524 (32/21)
5th	1.381 (29/21)
6th	1.304 (30/23)
Final reduction ratio	2.294 (39/17)
Clutch	Wet multi-disc, manual
FRAME	
Type	Backbone/Twin-tube, aluminium (Pressed/die-cast composite structure)
Wheel travel: front	120 mm
rear	125 mm
Tyre: front	120/70ZR17M/C (58W)
rear	190/50ZR17M/C (73W)
Caster (rake)	24°
Trail	102 mm
Steering angle (left/right)	27° / 27°

SUSPENSION	ZX1000-C1
Front: Type Compression damping Rebound damping Spring preload	43 mm inverted fork with top-out springs 16-way 16-way Fully adjustable
Rear: Type Compression damping Rebound damping Spring preload	Bottom-Link Uni-Trak with gas-charged shock and top-out spring Stepless Stepless Fully adjustable
BRAKES	
Front: Type Calliper	Dual semi-floating 300 mm petal discs Dual radial-mount, opposed 4-piston, 4-pad
Rear: Type Calliper	Single 220 mm petal disc Single-bore pin-slide
DIMENSIONS	
Overall length	2,045 mm
Overall width	705 mm
Overall height	1,115 mm
Wheelbase	1,385 mm
Ground clearance	125 mm
Seat height	825 mm
Dry weight	170 kg
Fuel capacity	17 litres
PERFORMANCE	
Maximum power	128.4 kW {175 PS} / 11,700 rpm 128.4 kW {175 PS} / 11,500 rpm (USA/CAN) 78.2 kW {106 PS} / 11,500 rpm (FRA)
Maximum power with Ram Air	135.3 kW {184 PS} / 11,700 rpm 135.3 kW {184 PS} / 11,500 rpm (USA/CAN)
Maximum torque	115 N·m {11.7 kgf·m} / 9,500 rpm 88 N·m {9.0 kgf·m} / 6,700 rpm (FRA)

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. Available colours may vary by market.