PRESS INFORMATION

Ninja H2R

BUILT BEYOND BELIEF

Kawasaki

BUILT BEYOND BELIEF

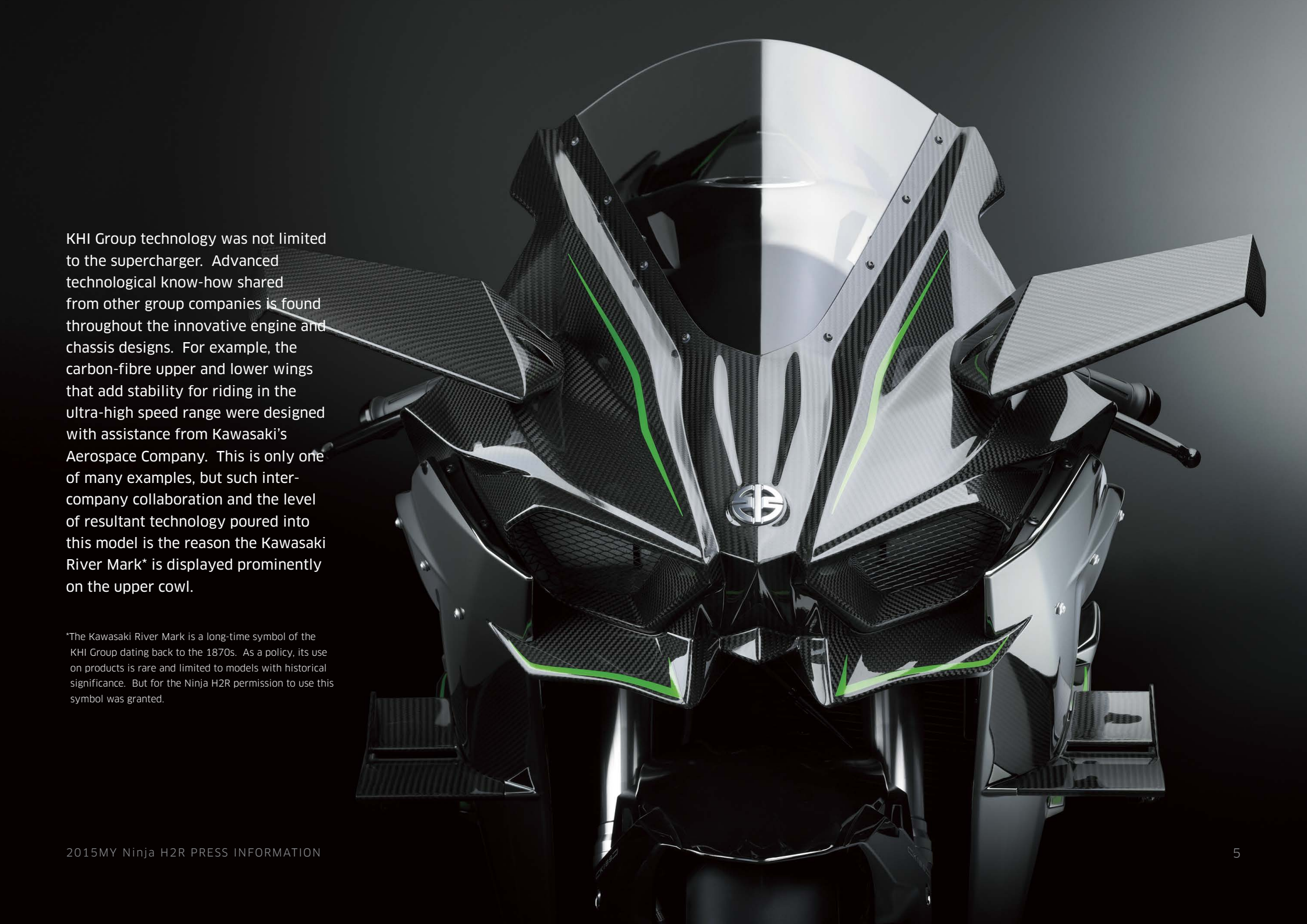
The launching point for the development of the Ninja H2R was a strong desire to offer riders something they had never before experienced. Convinced that a truly extraordinary riding experience would not be found on a motorcycle that merely built on the performance of existing models, the design team committed to developing the “ultimate” motorcycle from a clean slate. The bike needed to deliver intense acceleration and an ultra-high top speed, coupled with supersport-level circuit performance. To realise this goal, help was enlisted from other companies in the Kawasaki Heavy Industries (KHI) Group, precipitating an unprecedented level of inter-company collaboration.

Developing the Ninja H2R as a closed-course model allowed an unadulterated pursuit of performance free of the limitations that street riding would impose. The result was incredible, with the new model offering a sensory experience surpassing anything that riders can find today.

The Ninja H2R is powered by a supercharged engine with an output exceeding 300 PS, and a compact design on par with power units found in supersport litre-class models. The key to achieving this incredible performance lies in the engine's supercharger—a motorcycle-specific unit designed completely in-house with technology from the Gas Turbine & Machinery Company, Aerospace Company and Corporate Technology Division.

KHI Group technology was not limited to the supercharger. Advanced technological know-how shared from other group companies is found throughout the innovative engine and chassis designs. For example, the carbon-fibre upper and lower wings that add stability for riding in the ultra-high speed range were designed with assistance from Kawasaki's Aerospace Company. This is only one of many examples, but such inter-company collaboration and the level of resultant technology poured into this model is the reason the Kawasaki River Mark* is displayed prominently on the upper cowl.

*The Kawasaki River Mark is a long-time symbol of the KHI Group dating back to the 1870s. As a policy, its use on products is rare and limited to models with historical significance. But for the Ninja H2R permission to use this symbol was granted.



When it came time to name this model, using “Ninja”—a name synonymous with Kawasaki performance and shared by many legendary models over the years—was an obvious choice. But it is also named for another epoch-making model: the “H2” (also known as the 750SS Mach IV), powered by a 2-stroke 748 cm^3 Triple, had an intense acceleration that made it a worldwide sensation. For a model that delivers supersport-level handling coupled with the kind of acceleration no rider has experienced before, we can think of no better name.

With the Ninja H2R, Kawasaki is once again ready to unleash a new sensation upon the world.

KEY DEVELOPMENT HURDLES

THE QUEST FOR POWER

In order to be able to offer intense acceleration and a top speed in a range that most riders have never experienced, it was essential that the engine be able to produce big power. While a large-displacement engine could easily provide a high engine output, to ensure a lightweight, compact overall package a compact engine was also desired. Using a supercharged engine enabled both of these engine design requirements to be met: maximum power output exceeds 300 PS, and the engine size is on par with other supersport litre-class power units. Designed in-house, the immense potential of the highly compact, highly efficient engine is a testament to the technology possessed by the KHI Group.

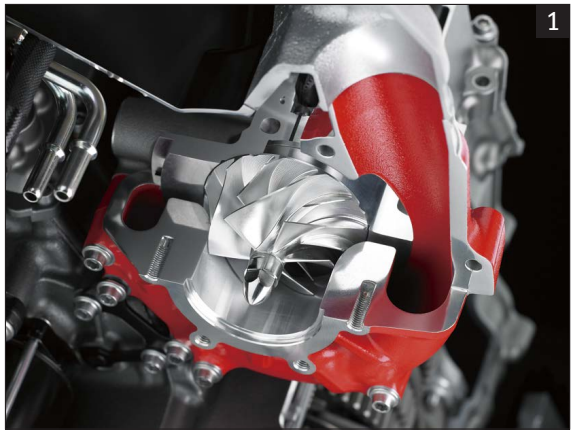
Supercharged 998 cm³ In-Line Four

In-house-designed Supercharger

The supercharger used in the Ninja H2R was designed by Kawasaki motorcycle engine designers with assistance from other companies within the KHI Group, namely the Gas Turbine & Machinery Company, Aerospace Company, and Corporate Technology Division. Designing the supercharger in-house allowed it to be developed to perfectly match the engine characteristics of the Ninja H2R. The highly efficient, motorcycle-specific supercharger was the key to achieving the maximum power and the intense acceleration that engineers wanted to offer.

* One of the greatest benefits of designing the supercharger in-house and tailoring its design to match the character of the Ninja H2R engine was that engineers were able to achieve high-efficiency operation over a wide range of conditions—something that would not have been possible by simply dropping in or trying to adapt an aftermarket automotive supercharger.
* The importance of high efficiency in a supercharger is that, as the air is compressed, power-robbing heat gain is minimal. And while many superchargers are able to offer high-efficiency operation in a very limited range of conditions, the supercharger designed for the Ninja H2R offers high efficiency over a wide range of pressure ratios and flow rates—meaning over a wide range of engine speeds and vehicle speeds. This wide range of efficient operation (similar to having a wide power band) easily translates to strong acceleration.
* The supercharger's high efficiency and minimal heat gain meant that an intercooler was unnecessary, which greatly saves weight and space.

* The supercharger the engineers designed is a centrifugal-type unit—ideal for high-rpm performance—with a cast aluminium housing. (Photo 1)



* The unit is located centrally, behind the cylinder bank, which is the best position to efficiently provide compressed air to all four cylinders evenly.

* The supercharger uses engine oil for lubrication. Not requiring an independent oil source contributed to a highly compact, lightweight design.

* Supercharger is driven by a planetary gear train, which runs off the crankshaft. Designing the gear train using technology from Kawasaki's Aerospace Company resulted in a very compact unit, with minimal power loss. (Photo 2)

* Gear train increases the impeller speed to 9.2x the crank speed (1.15x step gear x 8x planetary gear). This means that at maximum engine speed (approximately 14,000 min^{-1}), the impeller shaft is spinning at almost 130,000 min^{-1}. (Photo 3)

* Impeller is formed from a forged aluminium block using a 5-axis CNC machining centre to ensure high precision and high durability. The 69 mm impeller features 6 blades at the tip, expanding to 12 blades at the base. Grooves etched into the blade surfaces help direct the airflow. (Photo 4)

* Impeller's pumping capacity is over 200 litres/second (measured at atmospheric pressure), with intake air reaching speeds of up to 100 m/s. After passing through the supercharger, air pressure is increased to as much as 2.4 times atmospheric pressure.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Power Unit Designed to Withstand 300 PS Output

Despite it's familiar In-Line Four configuration, the Ninja H2R power unit is loaded with technology developed specifically for this supercharged engine: some new, others with know-how from the Kawasaki Group. Every component of the engine was chosen to achieve a certain function. In order to accommodate the higher air pressure from the supercharger as well as ensure a high reliability with the over 300 PS output, the whole engine was designed to be able to handle stresses 1.5x to 2x greater than on a naturally aspirated litre-class engine.

* The combustion chamber design is complemented by a flat piston crown design. Its shape, inspired by the pistons used in the Green Gas Engine developed by Kawasaki's Gas Turbine & Machinery Company, also contributes to the engine's anti-knock performance. (Photo 5)


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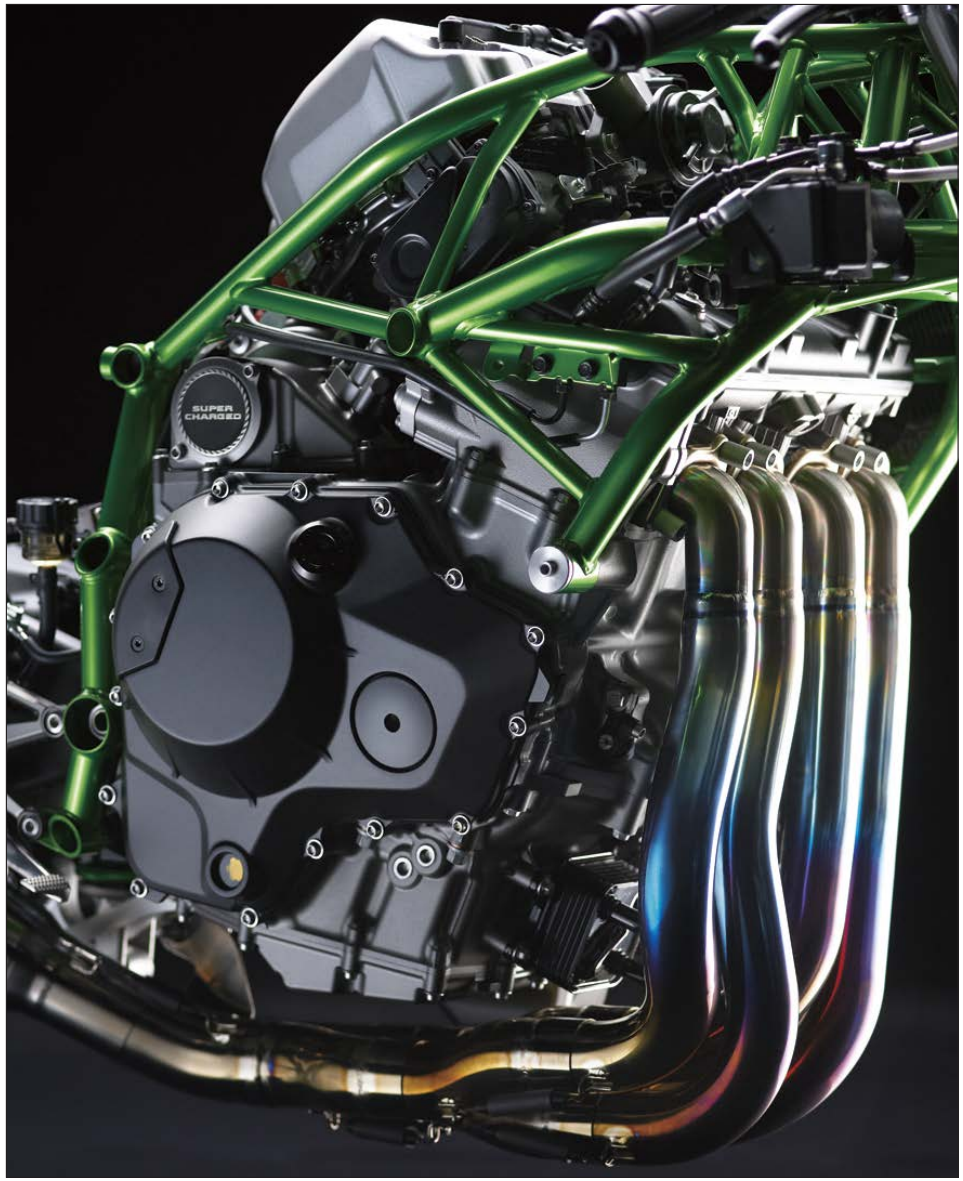

* While the intake valves are stainless steel, the exhaust valves needed to be able to handle the supercharged engine's high-temperature exhaust gases. They are formed from two materials, friction-welded at the centre: inconel—an extremely heat-resistant alloy—is used for the head and lower half of the stem; heat-resistant steel is used for the upper half. The stems are tapered, varying in diameter from ø4.5-5 mm. (Photo 6)


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* A dummy head is used during the cylinder honing process. The more precise circularity and cylindricity that result allow the use of low-tension piston rings, which helps reduce mechanical loss.

* Pistons are cast pieces—cast pistons offer better strength than forged pistons for the very high temperatures generated by the high-performance engine. A unique casting process (similar to forging process) sees unnecessary material removed and hollows created to achieve the ideal thickness. This enables a light weight on par with forged pistons. (Photo 7)


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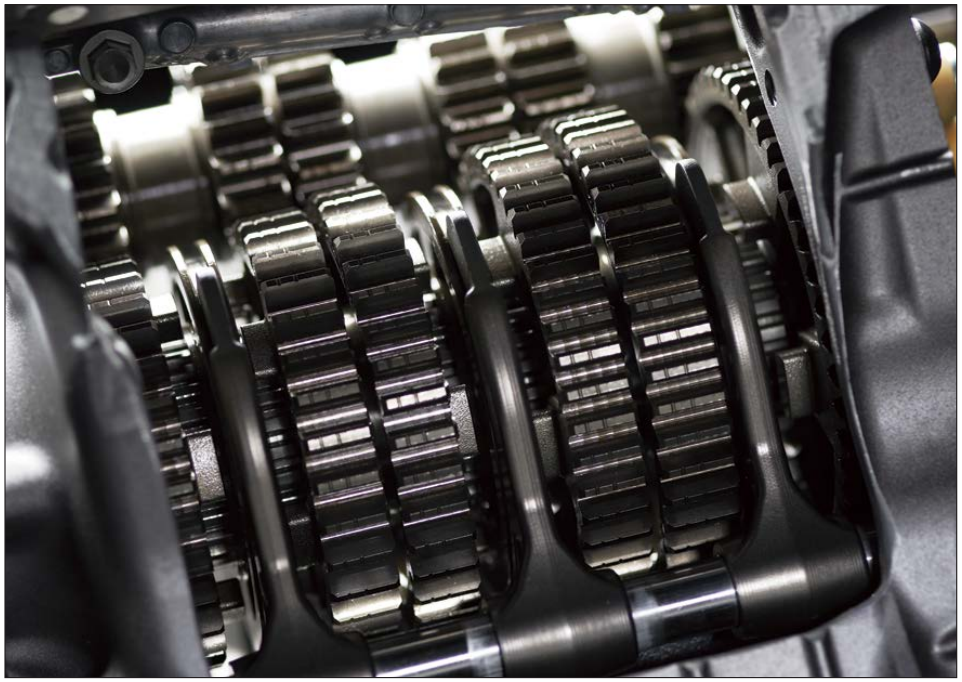
Dog-ring Transmission

To facilitate smooth, quick shifting, a dog-ring type transmission was selected. This is the kind of transmission commonly found in MotoGP or Formula 1, and was developed with feedback from the Kawasaki Racing Team.



* Unlike a standard motorcycle transmission in which shift forks slide the gears into position, with a dog-ring transmission the gears all stay in place. Only the dog rings move, sliding into position to engage the desired gear.
* Because the dog rings are much lighter than transmission gears, this type of transmission offers a much lighter shift effort. Shift touch is also improved, and a much shorter shift time is possible—which facilitates quick acceleration.

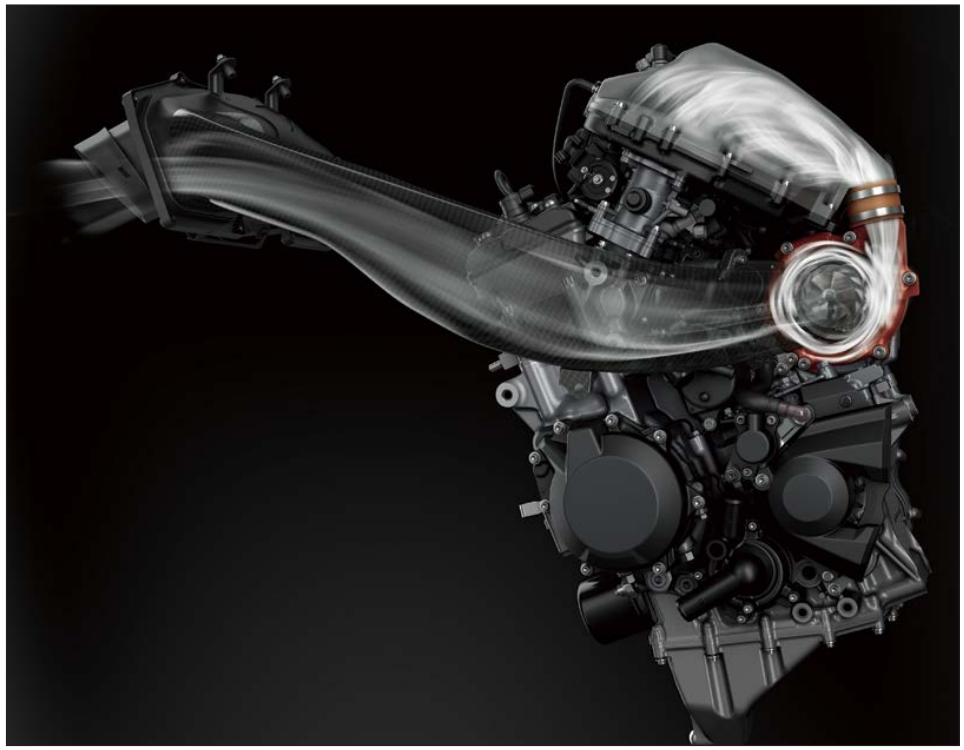
Hydraulic Clutch & Back-torque Limiter

A high-quality hydraulic clutch offers less maintenance, ensuring the initial touch condition can be maintained. And with Brembo components, superb linearity and smooth actuation are also benefits.

* Brembo parts are used for both the clutch lever's radial-pump master cylinder, and the clutch release mechanism. They receive extra attention from Brembo before being shipped to Kawasaki. Each part is examined and adjusted to eliminate any ineffective (idle) stroke, resulting in superb controllability.
* Back-torque limiter contributes to good stability by helping to prevent wheel hop when downshifting. The back-torque limiter is also adjustable.

Maximising Airflow Efficiency

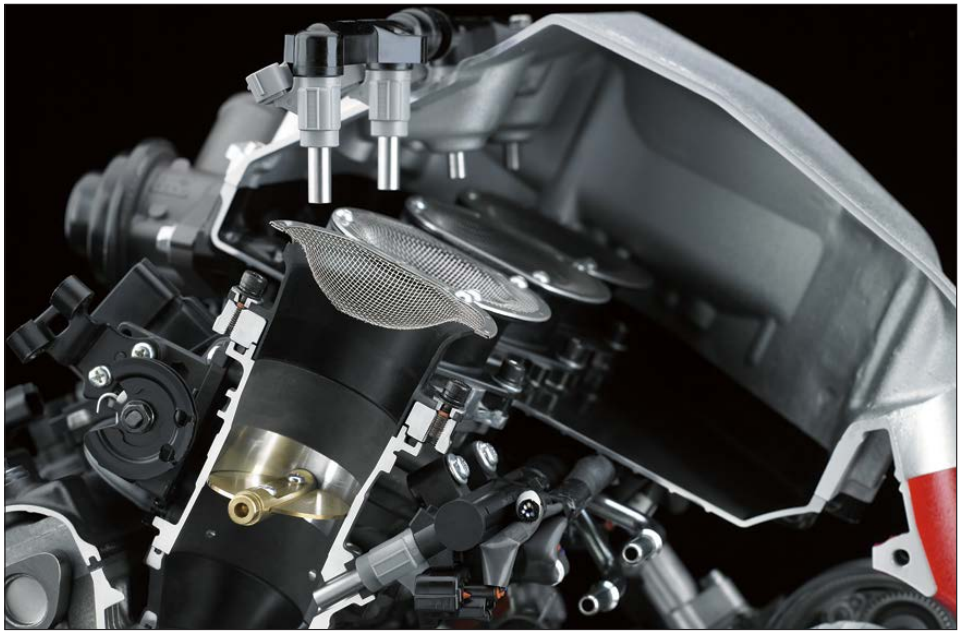
All engines need to breathe. To achieve an engine output exceeding 300 PS, the volume of air the engine needs is significantly greater than with a standard engine of similar displacement. Then, in addition to ensuring the engine has sufficient air, how the air is supplied is another concern. To maximise performance of the supercharged engine, airflow efficiency was of paramount importance. How air enters the supercharger, how the compressed air enters the engine, and then how the combusted fuel-air mixture is discharged were all carefully analysed for maximum efficiency and to ensure the airflow characteristics that would best match the desired engine character.



Ram Air Intake

* Air supplied to the supercharger enters via dual Ram Air intakes in the upper cowl. Their total frontal area is approximately 13,000 mm^2—illustrating just how much air is needed to achieve the over 300 PS output.
* Ram Air duct was designed to take the fresh air to the supercharger in as straight a line as possible. Its shape was derived to match the impeller characteristics, further contributing to the engine's high output.
* The duct is constructed of highly rigid, lightweight CFRP (carbon-fibre reinforced polymer) to ensure the optimised shape is maintained. (Photo 8)

Aluminium Intake Chamber



* Intake chamber has a large volume (6 litres), and is ideally shaped for high efficiency and high engine output.

* Being constructed of highly rigid aluminium offers two advantages: 1) aluminium offers excellent surface heat dissipation, helping to keep the intake air cool; 2) the rigid structure helps to ensure airtight performance with the supercharged air pressure (approximately 2 atm). (Photo 9)

* Inside the intake chamber, newly developed Kawasaki technology contributes to the engine's high performance. The top injectors spray fuel onto stainless steel nets positioned over the intake funnels (patent pending). This has an ordering effect, creating a more uniform fuel-air mixture as the fuel is sucked into the intake funnel. The net also promotes fuel misting, which helps to cool the intake air and increases filling efficiency. (Photo 10)

Electronic Throttle Valves

Kawasaki's fully electronic throttle actuation system enables the ECU to control the volume of both the fuel (via fuel injectors) and the air (via throttle valves) delivered to the engine. Ideal fuel injection and throttle valve position results in smooth, natural engine response and the ideal engine output. The system also makes a significant contribution to reduced emissions.

* The simple system enables more precise control of KTRC, and facilitates implementation of other electronic systems like KLCM and KEBC (please see below).

Intake & Exhaust Ports, Cam Profiles

* Intake ports are polished to ensure smooth flow and minimise resistance.
* Straight exhaust ports—one for each exhaust valve—do not converge in the cylinder head. The straight-line design enables the most efficient egress of air from the combustion chamber, and also contributes to efficient chamber filling.
* Designed for high-output performance, camshaft profiles optimised for the more than 300 PS engine feature high lift and a wide overlap. The high lift helps large volumes of air enter and exit the combustion chamber quickly. And with the wide overlap, intake air is used to help expel the spent fuel-air mixture out the exhaust ports.

Exhaust System

* Entrance to the header pipes is ovular to match the dual exhaust ports per cylinder. Partly formed by hydroforming, each header pipe tapers from an ovular to a round cross-section. The collector pipes are also hydroformed. (Photo 11)

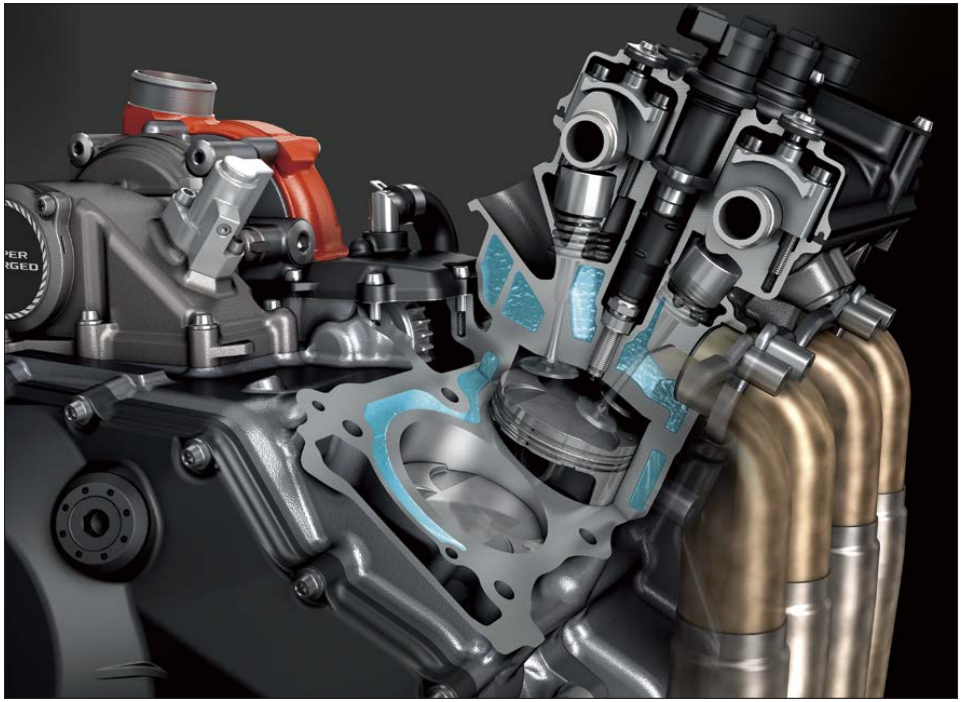
* All-titanium exhaust system has a very simple design consisting of the header and collector pipes, a joint pipe, and a straight-pipe megaphone-style silencer. (Photo 12)

Keeping the Engine Cool

Cooling performance can be a substantial limiting factor for engine output, so maximising cooling efficiency was a key consideration when designing the engine. In addition to ensuring that intake air remain as cool as possible, the heat generated by the high-output engine needed to dissipated and engine components themselves needed to be kept cool to ensure efficient operation. The thorough pursuit of cooling performance led to a highly complex engine layout, both for the lubrication system (oil is used for cooling as well as lubrication) and the cooling system.

Cylinder Head

A number of considerations were given to the cylinder head design to ensure the cooling performance needed for the supercharged engine. The large coolant passageways result in the ideal cooling for the combustion chamber.



* Water jacket extending between the twin exhaust ports of each cylinder, and large coolant passageways around the spark plug holes and the valve seat areas offer superior cooling. Spark plugs and valve seats, made of steel, have a greater tendency to retain heat than the aluminium cylinder head, so cooling them has a great effect.

Oil Jets

In the interest of keeping the engine compact and simple, a single lubrication system provides cooling oil for the engine components, supercharger and transmission.

* Oil jets lubricate the supercharger chain at the contact points (two places) where the chain meets the upper and lower gears.
* In addition to the two oil jets, the supercharger drive train's lower gear has an oil passage.
* Inside the engine, there are two oil jets per cylinder to ensure the hot pistons are effectively cooled.
* Transmission oil jets (first use in a Kawasaki motorcycle) enable a compact transmission with high durability.

Lubrication System Components

Because the lubrication system is servicing so many components, oil volume is 5.0 litres—about 35% greater than that usually seen in an engine of the same displacement.

Radiator

* Radiator's size and capacity are on par with those found on current litre-class supersport models, but it offers superior cooling performance because it flows approximately 1.5x more air than other bikes. This was found to be more effective than simply increasing the size of the radiator.
* Airflow is facilitated by the compact side-cowl design, and having the lower part of the engine open to the air was designed to pull hot air out

Liquid-cooled Oil Cooler

* A liquid-cooled oil cooler adds to the extremely high cooling performance necessary for the high output engine.

HIGH-SPEED STABILITY & LIGHT HANDLING

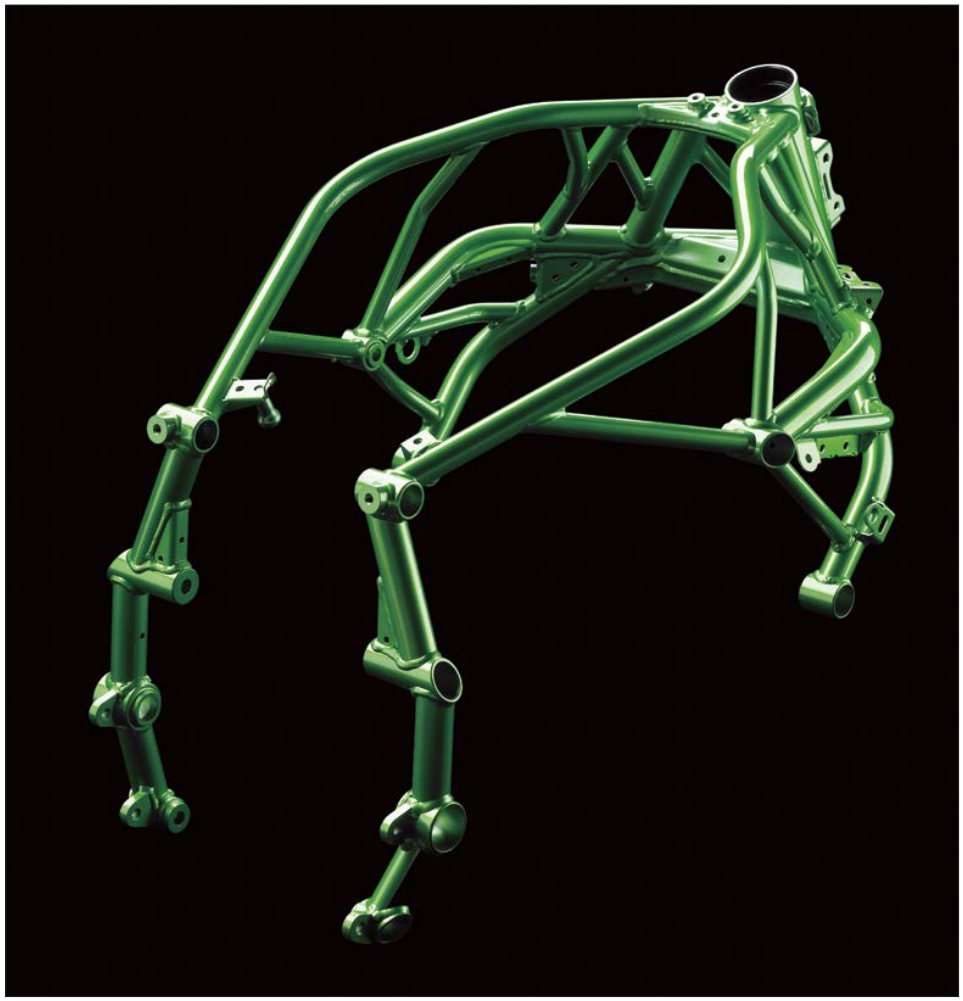
The objectives for the Ninja H2R's chassis were to ensure unflappable composure at ultra-high speeds, offer cornering performance to be able to enjoy riding on a circuit, and finally to have a highly accommodating character. Ordinarily, high-speed stability can easily be achieved with a long wheelbase, but a shorter wheelbase was selected to achieve the compact overall package and sharp handling that were also desired. The frame needed not only to be stiff, but also to be able to absorb external disturbances, which, when encountered while riding in the ultra-high speed range, could easily unsettle the chassis. A new trellis frame provided both the strength to harness the incredible power of the supercharged engine, and the balanced flex to achieve the stability and pliability for high-speed riding.

Innovative Chassis Design

Trellis Frame

Using a trellis frame construction offered an elegant, lightweight solution to meeting the performance requirements for the chassis. Able to harness the massive power of the more than 300 PS engine, it has a balance of stiffness and flexibility that enables a very high level of stability while being able to handle external disturbances at ultra-high speeds. Its open design also helps effectively dissipate heat generated by the supercharged engine.

* Development of the trellis frame made good use of the latest analysis technology and substantial test rider feedback.
* Pipe diameter, thickness and bend of each piece of the trellis frame were carefully selected to obtain the necessary stiffness for that part of the frame. The trellis pieces are made primarily from high-tensile steel.



Swingarm Mounting Plate

This innovative new chassis mechanism allows the engine to act as part of the frame.

* Swingarm Mounting Plate bolts to the back of the engine. The swingarm pivot shaft goes through this plate, essentially allowing the swingarm to be mounted directly to the engine.
* Thanks to the Swingarm Mounting Plate, the frame does not need to use cross members for stability. This contributes to the frame's light weight.

Single-sided Swingarm

The Ninja H2R features Kawasaki's first single-sided swingarm.

* Having a single-sided swingarm allows the exhaust silencer to be mounted closer to the bike centreline, ensuring a high bank angle for sporty cornering.

Chassis Geometry

To ensure fun high-speed riding as well as circuit riding, a compact package was desired. Chassis geometry is very similar to that of a litre-class supersport model.

Stopping, Going & Turning

Front Suspension

KYB AOS-II racing suspension makes its asphalt debut.

* Based on the Air-Oil Separate cartridge fork developed for motocross racing, this is the industry's first appearance of this high-performance racing suspension for asphalt use.
* Designed for low friction, the ø43 mm front fork offers superb action: smooth initial action is followed by strong damping at the end of the stroke.
* As the suspension works, a large ø32 mm free-floating piston at the bottom of the oil-damping cartridge pumps oil up to a sealed area between the inner and outer tubes. The oil in this area provides a friction-reducing film on which the tubes can slide against each other, resulting in extremely smooth action.

Rear Suspension

KYB fully adjustable mono-shock rear suspension offers superb stability.

* Top of the rear shock mounts to the Swingarm Mounting Plate. (Again, no need for frame cross-members.)
* The bottom of the rear shock is mounted via revised Uni-Trak linkage that offers excellent feedback regarding the rear tyre's grip condition to the rider. The new linkage, situated below the swingarm also mounts to the Swingarm Mounting Plate. (Photo 13)

Brakes

Given the ultra-high speed range that the Ninja H2R was designed for, the brakes chosen were the best available for a mass-production model. Special tuning then ensured that all play was removed from the system, so that when the brakes were called for they would respond immediately.

* A pair of massive ø330 mm Brembo semi-floating discs with a thickness of t5.5 mm deliver superb braking force.
* Grooves running down the centre of the outer edge of the discs increase their surface area for greater heat dissipation.
* Dual radial-mount Brembo cast aluminium monobloc calipers grip the front discs. The highly rigid opposed 4-piston calipers with ø30 mm pistons contribute to the Ninja H2R's superb braking force, as well as a high-quality image.
* Brembo radial-pump master cylinder and reservoir receive extra attention before being shipped to Kawasaki. Each part is examined and adjusted to eliminate any ineffective (idle) stroke.
* A large ø250 mm disc generates strong braking force at the rear.

Original-design Wheels

Cast aluminium wheels were designed specifically for the Ninja H2R.

* Star-pattern 5-spoke wheel design was selected based on analysis and testing to determine the optimum rigidity balance for ultra-high speed performance.
* The analysis technology used in their development comes from World Superbike.

* Knurling on the inside of the rear wheel rim helps prevent the tyre from slipping on the wheel due to the massive torque generated by the engine. (Photo 14)

High-speed Tyres

To ensure sufficient tyre durability when riding in the ultra-high speed range for which the Ninja H2R was designed, high-performance tyres must be used.

* The Ninja H2R is equipped with slick tyres. The Bridgestone RACING BATTLAX V01 commercially available superbike racing tyres are rated for ultra-high speed operation.

SHAPED FOR SPEED

As speed increases, wind resistance increases exponentially. To be able to operate in the ultra-high speed range, a combination of high power and slippery aerodynamics was needed. With power requirements taken care of by the supercharged engine, the next step was to design bodywork that both minimised drag and added control when riding at ultra-high speed. Assistance from Kawasaki's Aerospace Company was enlisted in creating the aerodynamically sculpted bodywork to ensure maximum aerodynamic efficiency.

Aerodynamics

Aerodynamically-designed Bodywork

It is no accident that when viewed from the side, the Ninja H2R does not seem to have the aggressive forward-canted stance of most modern supersport models. While supersport bikes use their front-leaning attitude to aid in quick steering, at the speeds for which the Ninja H2R was designed, such a posture would create drag that would hinder top speed aspirations. Instead, the stance is very neutral, almost flat—think Formula 1 car—to make the body as aerodynamically sleek as possible.

* Aerodynamically shaped upper cowl uses lips and lines to help direct airflow over its surface.
* Upper cowl positions the Ram Air intakes in the most efficient position.
* The cowl is formed from lightweight CFRP and is designed to afford wind protection at ultra-high speed: its tall screen is designed to help create a wind-free pocket for the rider.
* Compact side cowls were designed to assist with heat dissipation.
* The rear cowl has an extremely compact three-piece design. The centre portion is taller, creating an aerodynamic form that helps smooth airflow as it passes the rider. Wind is also able to pass between the centre and side pieces, reducing air resistance.

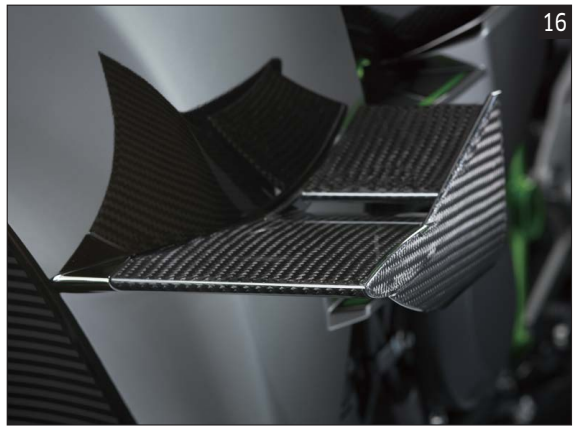
Downforce Generation

In order to maintain both straight-line stability and the control to change direction while running at ultra-high speed, a number of aerodynamic devices ensure the front wheel has strong contact with the ground.

* Design of the upper cowl incorporates a chin spoiler. This is not a cosmetic flourish; the downforce it creates contributes to high-speed stability.

* In place of mirrors, the Ninja H2R features CFRP wings mounted on the upper cowl. Designed by Kawasaki's Aerospace company, they feature winglets to help smooth airflow near the wingtip by reducing the strength of the wingtip vortices that would otherwise cause turbulence or disturb the laminar flow needed for the wings to effectively generate downforce. (Photo 15)

* Two-blade wings are also featured on its side cowls. These wings also feature winglets and further add to the downforce generated by the chin spoiler and upper wings. (Photo 16)



MAN-MACHINE INTERFACE

Although the Ninja H2R's high performance cannot be denied, since it was not intended to be a race bike designed to turn quick lap times as efficiently as possible, it did not need the spartan accommodation found on most purpose-built supersport models. The man-machine interface enables riders to enjoy the bike's performance with a modicum of comfort. While the riding position, ergonomics and cockpit layout were all designed first and foremost to put the rider in the best position to control this amazing machine, the impression from the rider's perspective is one not of austerity, but rather plush quality, high-tech control, and an impeccable fit and finish.

Seating for One

Riding Position & Ergonomics

The kind of riding for which the Ninja H2R was designed, and a desire for a compact overall package resulted in a riding position similar to that of a supersport without being quite as aggressive. As enjoyment of the intense acceleration and ultra-high speed capabilities was the first priority, a solo seat for the rider is the only seating provided.

* The riding position was designed for riding at ultra-high speed and circuit riding. The rider triangle is similar to that of the Ninja ZX-10R, but more relaxed.

* To help support the rider during intense acceleration, hip-supporting pads flank the rear of the seat. The hip support is adjustable 15 mm backward to suit rider size. (Photo 17)

Instrumentation & Controls

The advanced, high-tech design of the instrumentation conveys the image of piloting a jet fighter aircraft. Handle control switches put all mode selection and display options at the rider's fingertips.

* The new instrumentation design combines a full digital LCD screen with an analogue-style tachometer.

* LCD screen uses a black/white reverse display (white characters on a black background), contributing to the high-quality image. In addition to the digital speedometer and gear position indicator, display functions include: odometer, dual trip meters, current mileage, average mileage, fuel consumption, coolant temperature, boost indicator, boost (intake air chamber) temperature, stopwatch (lap timer), clock and the Economical Riding Indicator.

* Tachometer design uses an actual needle, but the black dial "face" looks blank until the engine speed increases. Backlit rpm numbers light up to chase the tachometer needle as it moves around the dial.

* Compact new handle switch design allows all instrument functions to be controlled from the handles.

ELECTRONIC RIDER SUPPORT

Complementing the Ninja H2R's incredible engine and chassis performance, advanced electronics work behind the scenes to provide rider support. Depending on rider preference, many of the systems may be turned off. And while the over 300 PS engine was designed to be accommodating even without the benefit of electronic assistance, when electing to fully experience the Ninja H2R's intense acceleration or ultra-high speed potential, these systems are available to provide an extra degree of rider reassurance.

Engine & Chassis Management Systems

KTRC (Kawasaki TRaction Control)

The new KTRC system used on the Ninja H2R combines the best elements of Kawasaki's earlier traction control systems. Multi-level modes offer riders a greater number of settings to choose from, with each mode providing a different level of intrusion to suit riding conditions and rider preference, and all modes designed to manage output when a sudden slip occurs. The new system offers both enhanced sport riding performance and the peace of mind to negotiate slippery surfaces with confidence.

* Riders can choose from three modes, each offering a progressively greater level of intrusion. Each mode has three rider-selectable levels, adding more or less intrusion (rider preferences for each mode are programmable for on-the-move selection), for a total of nine possible settings. Riders may also elect to turn the system off.
* Modes 1 and 2 are tailored for circuit riding, while Mode 3 settings were optimised for street-like conditions.
* Using complex analysis, the system is able to predict when traction conditions are about to become unfavourable. By acting before slippage exceeds the range for optimum traction, drops in power can be minimised, resulting in ultra-smooth operation.

KLCM (Kawasaki Launch Control Mode)

Designed to assist the rider by optimising acceleration from a stop, KLCM electronically controls engine output to prevent wheelspin and minimise wheelies when launching.

* Riders can choose from three modes, each offering a progressively greater level of intrusion. Each mode allows the rider to launch from a stop with the throttle held wide open.

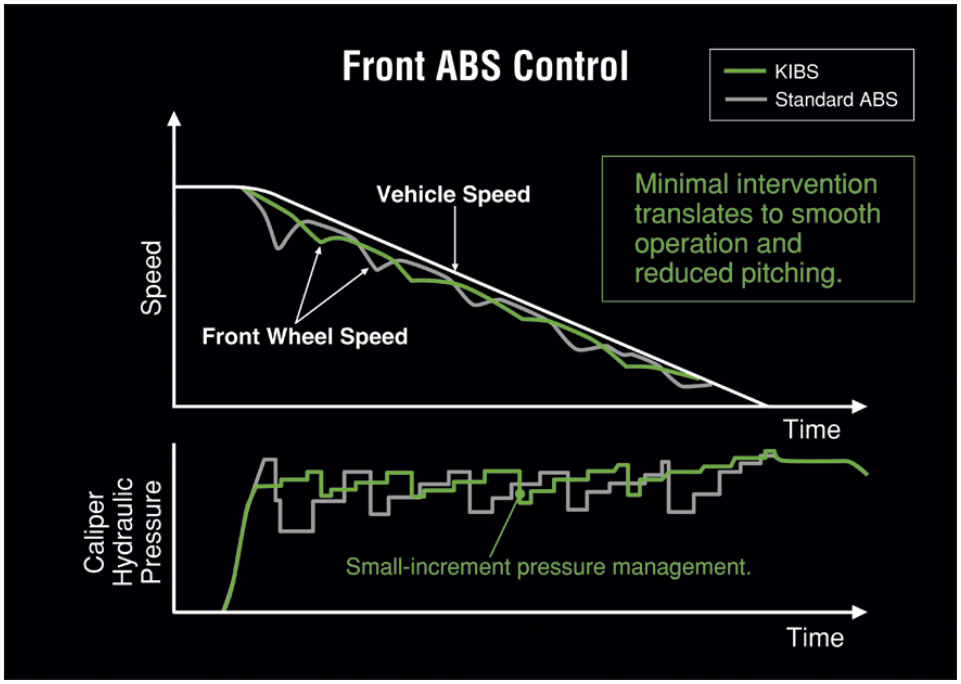
KEBC (Kawasaki Engine Brake Control)

The KEBC system allows riders to select the amount of engine braking they prefer.

* When KEBC is activated (by selecting "LIGHT" in the KEBC settings), the engine braking effect is reduced, providing less interference when riding on the circuit.

KIBS (Kawasaki Intelligent anti-lock Brake System)

Kawasaki's supersport-style ABS is standard equipment on the Ninja H2R. This is the same base system used on the Ninja ZX-10R, with programming and settings revised to suit the performance parameters of the Ninja H2R.



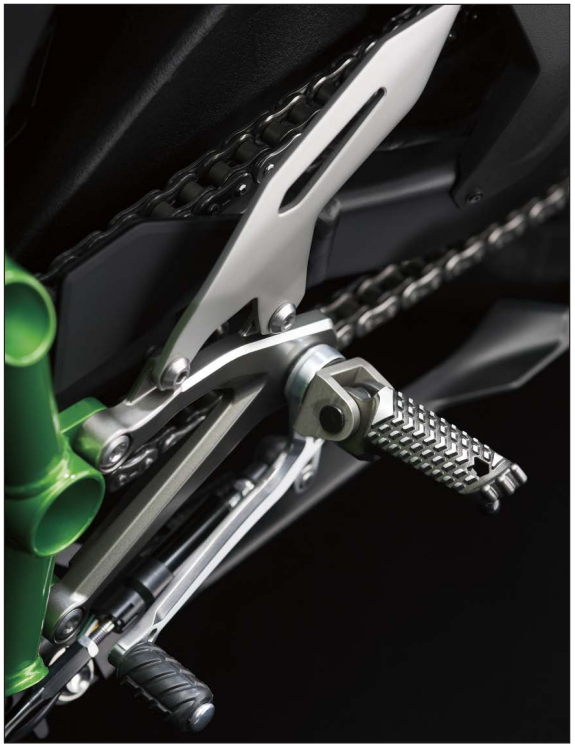
* High-precision brake pressure control enables the system to avoid reduced brake performance due to excessive pressure drops, allows lever feel to be maintained when KIBS is active, and ensures ABS pulses feel smooth (not heavy).

* High-precision brake pressure control also offers a number of sport riding benefits:
    1. Rear lift suppression
    2. Minimal kickback during operation
    3. Accounting for back-torque

* Riders have the option to deactivate the system.
  There are three possible settings:
  ON – KIBS affects both front and rear brakes
  R OFF – KIBS affects only the front brakes
  OFF – KIBS is deactivated

KQS (Kawasaki Quick Shifter)

The Ninja H2R is the first Kawasaki motorcycle to be fit standard with a quick shifter.



* Complementing the engine's strong power and the dog-ring transmission, a contactless-type quick shifter enables quick upshifts for seamless acceleration.

Öhlins Electronic Steering Damper

Unlike a mechanical steering damper—in which the settings, once fixed, must cover all riding conditions and speeds—the damping characteristics are changed electronically according to vehicle speed, and the degree of acceleration or deceleration. At low speeds, the settings were chosen such that damping does not interfere with the bike's intrinsic lightweight handling. At high speeds, damping increases to provide enhanced stability.

* Kawasaki's electronic steering damper was jointly developed with Öhlins, one of the most popular and respected manufacturers of steering dampers.

* Electronic steering damper provides just the right amount of damping based on what the bike is doing. Using input from the rear wheel speed sensor (provided via the engine ECU), the electronic steering damper's ECU determines the vehicle's speed as well as the degree the bike is accelerating or decelerating.

STYLING & CRAFTSMANSHIP

Wanting to ensure a bold design worthy of a model that carried both the “Ninja” and “H2” names, the prime styling concept chosen for the Ninja H2R was “Intense Force Design.” As a flagship for the Kawasaki brand, it required presence, and a styling that reflected its incredible performance. But the design is much more than cosmetic. While its edged styling certainly looks the part, the Ninja H2R also possesses a functional beauty: each piece of its bodywork was aerodynamically sculpted to enhance stability at ultra-high speeds; the cowling design also maximises cooling performance and heat dissipation, aiding in achieving the engine’s more than 300 PS output; and the Ram Air duct is ideally positioned to bring fresh air to the supercharger. More than any motorcycle Kawasaki has built to date, the Ninja H2R is a showcase of craftsmanship, build quality and superb fit and finish—right down to the high-tech mirrored-finish black chrome paint specially developed for this model.

*Please see Introduction for the Ninja H2R naming story

Intense Force Design

Styling & Craftsmanship Details

* Machined surfaces on the wheel spokes and painted rims contribute to a high-quality finish.
* High-level attention to detail is evident in the numerous machined bolt and nut designs (e.g. the steering stem and rear hub nuts).
* High-quality materials are used throughout. For example, the inner cowl surrounding the instrument cluster is made from CFRP.
* Elegant taillight design (required by some circuits) contributes to the aggressive appearance of the rear.
* Welding bead quality for the trellis frame is uniformly very high, contributing to the Ninja H2R's superb fit and finish. Depending on the weld, some are efficiently and precisely welded by Kawasaki robots, while others are welded by expert Kawasaki craftsmen.

High-tech Paint

The mirrored-finish black chrome paint used on the Ninja H2R was developed by Kawasaki specifically for motorcycles. The highly reflective surface adds to the bike's stunning design.

* In the shade the paint appears black, but once in the sunlight its highly reflective surface takes on the appearance of the surrounding scenery.
* While this kind of paint may be found in custom circles, this is its first use on a mass-production vehicle in either the automotive or motorcycle industries.
* A layer of pure silver in the paint creates the mirrored finish. Each layer of the paint is carefully finished by the hands of Kawasaki craftsmen.

Kawasaki River Mark

Special permission was obtained to use the River Mark on the Ninja H2R. Usually, its use on a product is reserved for models of historical significance.

High-precision Production

Unlike a standard mass-production model, the high-precision production of the Ninja H2R requires greater hands-on participation by skilled Kawasaki craftsmen. Each step, from metalworking, treatment, welding, painting to assembly, fine-tuning and inspection is carefully attended to in order to create a product of superior quality. Within Kawasaki's Akashi Factory, production takes place in an area dedicated exclusively to the Ninja H2R.

SPECIFICATIONS

Ninja H2R (ZX1000P)

ENGINE	
Type	Liquid-cooled, 4-stroke In-Line Four
Displacement	998 cm^3
Bore and Stroke	76.0 x 55.0 mm
Compression ratio	8.3:1
Valve system	DOHC, 16 valves
Fuel system	Fuel injection: ø50 mm x 4 with dual injection
Intake system	Kawasaki Supercharger
Ignition	Digital
Starting	Electric
Lubrication	Forced lubrication, wet sump with oil cooler

DRIVETRAIN	
Transmission	6-speed, return, dog-ring
Final drive	Chain
Primary reduction ratio	1.551 (76/49)
Gear ratios: 1st	3.188 (51/16)
2nd	2.526 (48/19)
3rd	2.045 (45/22)
4th	1.727 (38/22)
5th	1.524 (32/21)
6th	1.348 (31/23)
Final reduction ratio	2.333 (42/18)
Clutch	Wet multi-disc, manual

FRAME	
Type	Trellis, high-tensile steel, with Swingarm Mounting Plate
Wheel travel: front	120 mm
rear	135 mm
Tyre: front	120/600 R17
rear	190/650 R17
Caster (rake)	25.1°
Trail	108 mm
Steering angle (left/right)	27° / 27°

SUSPENSION	
Front: Type	ø43 mm inverted fork with rebound and compression damping, spring preload adjustability and top-out springs
Rear: Type	New Uni-Trak with gas-charged shock, piggyback reservoir, dual-range (high/low-speed) compression damping, rebound damping and preload adjustability, and top-out spring

Ninja H2R (ZX1000P)

BRAKES	
Front: Type	Dual semi-floating ø330 mm discs
Caliper	Dual radial-mount, opposed 4-piston
Rear: Type	Single ø250 mm disc
Caliper	Opposed 2-piston

DIMENSIONS	
Overall length	2,070 mm
Overall width	770 mm
Overall height	1,160 mm
Wheelbase	1,450 mm
Ground clearance	130 mm
Seat height	830 mm
Curb mass	216 kg
Fuel capacity	17 litres

PERFORMANCE	
Maximum power	228 kW {310 PS} / 14,000 min^{-1}
Maximum power with Ram Air	240 kW {326 PS} / 14,000 min^{-1}
Maximum torque	165 N·m {16.8 kgf·m} / 12,500 min^{-1}

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.