New All-Round Motocross Bike: KX 450

Since its debut in 1973, the KX450 has consistently carried the philosophy of "Built to Win" for more than 50 years, and has evolved by incorporating advanced technologies that give riders the best chance of standing atop the podium.

The KX450 has won numerous races in the AMA Supercross Championship, which is the highest-profile off-road motorbike racing championship. We have developed its latest incarnation under the concept of "all-round," with the aim of achieving the highest levels in the industry for both machine performance and components, and it has received high praise in the market.

Introduction

People around the world are familiar with motocross through international racing championships, such as the AMA Supercross Championship and the FIM Motocross World Championship (MXGP). The AMA Supercross Championship races held in urban areas and large arenas in the US are very popular spectacles that excite large numbers of fans. Unpredictable developments, such as technical, high-impact jumps, fierce battles at corners involving contact between riders and bikes, and crashes following starts where everyone speeds away in a straight line, deliver tension and drama that captivate the spectators. All this and more has transformed motocross into a unique, appealing motorsport.

Recent years have seen many new manufacturers join the racing series and making the competition hotter, so we need to keep setting the benchmark.

1 Background

The KX's history began in 1973 when the first model debuted, and development has never ceased since then, even to one year ago today when the KX marked its 50th anniversary. As for racing victories, KX machines won AMA Supercross Championships for four years running from 2011 to 2014, in addition to many other titles — proof of their outstanding performance. The KX has been developed based on the philosophy of "Built to Win," where we aim at producing machines that win races. As a motocross bikes for experts, we have been evolving the KX450 by upgrading it for several decades with advanced technologies to give riders the best chance of stand on top of the podium every time.

2 Development concept

To embody this development philosophy, under the development concept of "all-rounder" we aimed to improve performance in every aspects so our rider can win races. With the goal of developing easy-to-handle machines, in particular, we set the goal at developing machines that would be able to be skillfully driven even in situations where the road conditions are bad and thereby controlling the machines is difficult.

In addition, we have upgraded components to the highest levels in the industry to support riders from various aspects, with the intent to that Kawasaki machines can win races throughout the season in the runup to the championship.

3 Features

Compared with the previous model, which earned itself a reputation for its responsive engine and agile chassis, the new one comes a new engine with better control and new a chassis with greater frontal stability.

(1) Frame performance

By focusing on the partial stiffness of the front part of

the frame, separating the stiffness that contributes to nimbleness and stability, and optimizing the stiffness of the other parts while retaining the nimbleness that was highly valued in the previous model, as shown on **Fig. 1**. This significantly improves the stability of the front section when the bike corners. Achieving these mutually contradictory properties at high levels increase the speed when a bike enters a corner, making it possible to turn a corner faster and more stably, which helps to cut lap time. In addition, the stable frame reduces the risk of rollover and also mitigates rider fatigue.

(2) Engine performance

The new engine delivers brisk acceleration in the mid- to high-speed range and smooth handling due to the flat torque characteristic and higher output at high speed, as **Fig. 2** shows. Adopting a straightened intake and exhaust and taking advantage of the down draft shown in **Fig. 3** played a role in improving acceleration and handling because they boost charging and exhaust efficiency. To achieve this, we employed various layout techniques such as dramatically altering the layouts of components, altering the locations of the air intake duct and frame

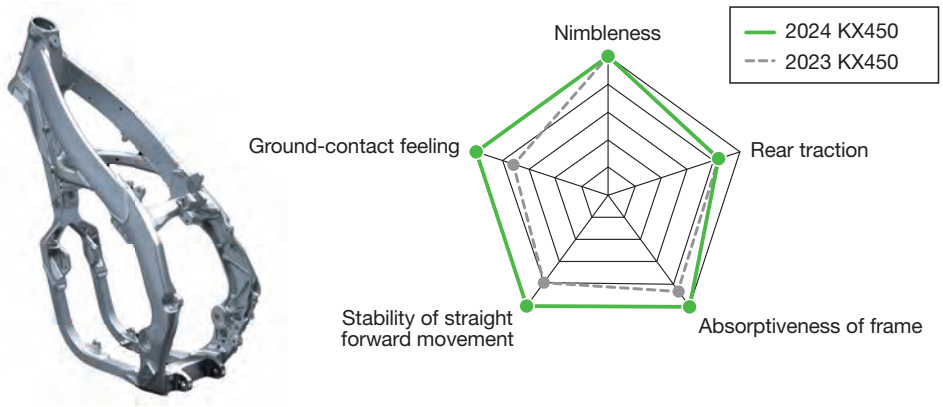

Fig. 1 Chassis performance radar chart

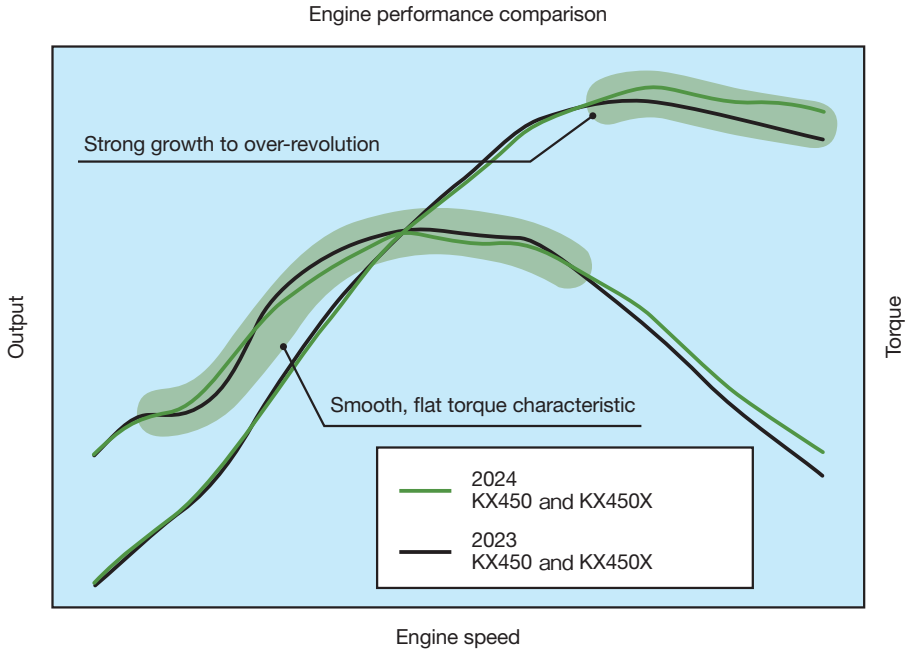

Fig. 2 Engine performance comparison

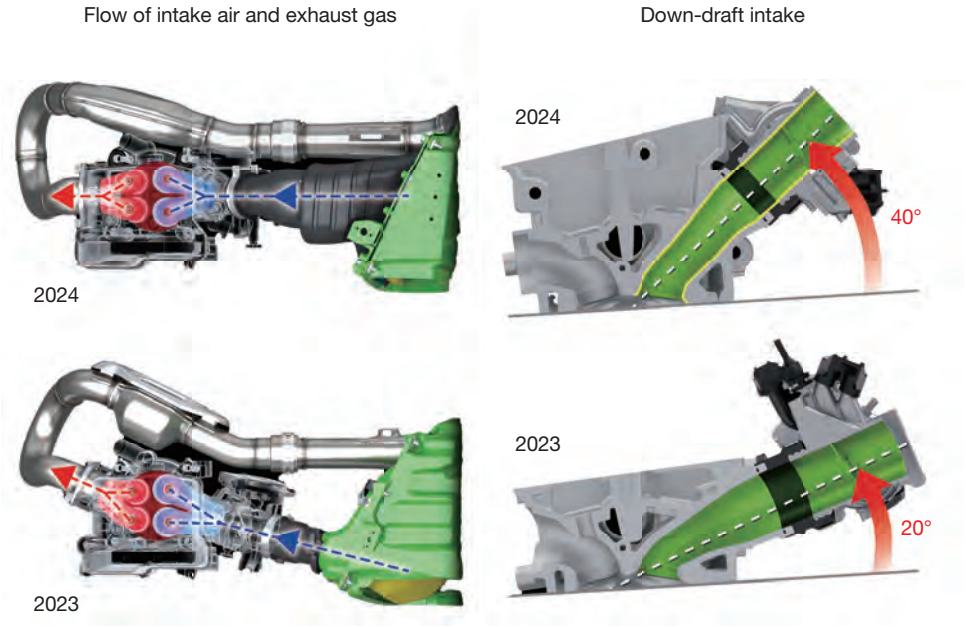

Fig. 3 Comparison of intake and exhaust layouts

parts, and adjusting the locations of the shocks.

(3) Smartphone connectivity

The smartphone application RIDEOLOGY THE APP KX enables riders to adjust the engine mapping (injection quantity and ignition timing) to change engine characteristics via smartphone. The KX FI calibration kit, which used to come as an optional accessory with the previous model, now comes as standard and can be operated by radio. This makes it easier and more convenient than ever before. Thanks to the simple, user-friendly interface, even users who have never made settings before can now match engine characteristics to their preferences and changes in road conditions.

In addition, the engine monitoring and maintenance and setup logs can be recorded.

Fig. 4 Other cutting-edge components

(4) Other

On top of boosting performance, we have added refinements that improve the riding experience and offer high market appeal as shown in **Fig. 4**.

- Brembo brakes with high control performance
- Quick-change ODI lock-on grips
- Traction control for stable acceleration

Conclusion

We are especially grateful to our business acquaintances who became involved in the development, and to related parties including Kawasaki Motors Corp., USA. Thanks to their efforts and cooperation, this development was completed with success.

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