FE 450

Receiving multiple technical upgrades for 2024 to maintain its high performance, the FE 450 remains at the pinnacle of Husqvarna Motorcycles enduro line-up. Its new engine produces a broader spread of controllable power and by positioning the engine shaft arrangements at the ideal centre of gravity, manoeuvrability is vastly improved. Aiding this agile feel is the new chassis, which has been developed and manufactured using advanced engineering techniques. Together with new WP suspension enhanced comfort across rough terrain is assured. Complete with the latest technological advancements and high-quality components throughout, the FE 450 is finished with new functional bodywork adorned with white, yellow, and blue graphics that are inspired by the Swedish heritage of the brand.

Engine

The SOHC engine is the perfect example of the advanced engineering techniques used by Husqvarna Motorcycles, offering higher peak power at an overall weight of just 29 kg (- 200g compared to previous generation).

Mass-centralisation is key in the engine design. Chassis engineers positioned the engine closer to the centre of gravity for greatly improved handling and manoeuvrability. This was achieved by tilting the engine 2° backwards and repositioning the sprocket 3 mm lower. Together with the benefits of mass centralization and reduced weight the anti-squat behaviour of the chassis was significantly improved.

Another focus was put on the serviceability of the new FE 450. Service markers on the engine (▲) clearly show where to use washers, making maintenance and servicing easier than in the past.

- Light and compact engine design for optimised mass-centralisation
  - Weight of 2024 engine 29 kg
  - Weight of 2023 engine 29.2 kg
    - Including clutch slave master cylinder, oil, shift lever, sprocket, and vent hose
- Improved performance of engine with rev-limit at 10,500 rpm.
- Engine tilted 2° backwards with repositioned sprocket (3 mm lower) for improved mass centralisation and better anti-squat behaviour
- Improved serviceability of engine internals with added service markers and draining noses for liquids

Cylinder head

The redesigned SOHC cylinder head is incredibly compact and lightweight using a short profile with the camshaft located as close to the centre of gravity as possible. The frame mounts significantly improve handling and agility (now unified among 4-stroke models, only 500cc needs different frame mounts due to the cylinder size).

The lightweight valves are actuated via a rocker arm and feature optimized timing, specifically designed to deliver precise levels of torque and throttle response. The diameter of the intake valves is 40 mm, while on the exhaust it is 33 mm. Redesigned intake ports allow higher flow coefficients, resulting in a more efficient and powerful engine.

A new valve cover reduces the number of mounting screws (only 2 needed), and a single oil spray jet guarantees efficient cooling while keeping weight low.

A new fine punched cam chain and the low-friction DLC coating on the rocker arm offers optimum efficiency, reliability, and durability.

Another focus was put on maintenance work. Added lock positions for the cam chain improve the serviceability of the valve train.

- Redesigned SOHC cylinder head with compact design, featuring a camshaft close to centre of gravity
- Redesigned Intake ports for higher flow coefficients
- DLC coating on rocker arms for optimum efficiency reliability, and durability
- Optimized valve timings for improved torque and throttle response
- New lightweight valve cover with reduced number of mounting screws (only 2) and only one oil spray jet for cooling
- New, fine punched cam chain adding durability and reduced friction

- Improved serviceability of valve train through added lock positions for cam chain

Cylinder and piston

The lightweight aluminium cylinder features a 95 mm bore and a CP bridged-box-type piston optimized for low weight and a high-power character. The piston features anodized annular grooves, adding durability and longer service intervals. The compression ratio has stayed unchanged at 12.75:1 while gaining power.

The piston bolt is no longer DLC coated but comes with a cube bushing offering similar performance and reliability.

- Lightweight aluminium cylinder with 95 mm bore / 63.40 mm stroke
- Lightweight, high-performance CP forged bridged-box-type piston reducing oscillating masses
- Unchanged compression ratio (12.75:1) but significantly increased peak performance
- Anodized annular groove, adding durability, and guaranteeing longer service intervals
- Piston bolt with cube bushing

Crankshaft

The inertia produced by the crankshaft has been carefully calculated to deliver optimal traction and ride-ability from the powerful 450 4-stroke enduro engine. The crankshaft is specifically positioned to harness the rotating mass in the ideal centre of gravity, resulting in a lightweight and agile handling feel. A plain big end bearing comprising of two force-fitted bearing shells, which ensure maximum reliability and durability. On top, the oil scrapper design has been significantly improved.

- Crankshaft position with ideal centre of gravity, improving handling
- Plain big end bearing and force-fitted bearing shells for advanced durability and longer service intervals
- Significantly improved oil scraper design on the crankcase (crankshaft)

Crankcases

The crankcases are designed to house the shaft arrangements and internals of the engine in the position that offers the best possible handling. A new steel oil pump gear, repositioned oil jets and an increased overall oil pressure, result in increased resistance against clutch overheating and improved durability. The counter balancer shaft has been revised with a slight increase in weight reducing engine vibration.

High-pressure die cast production processes keep the overall weight to a minimum, resulting in thin wall thickness while retaining reliability. The Husqvarna crown logo gives the bronze powder coated enduro specific and noise reducing clutch cover a premium and durable look. Additional oil scrappers on the ignition cover round off the package.

- Design featuring optimised mass-centralisation and increased efficiency
- High pressure die-cast production process with thin walls for reduced weight, while maintaining strength
- New, steel oil pump gear and repositioned oil jets improve durability
- Higher oil pressure for increased resistance against clutch overheating
- New oil scrappers on the ignition cover
- Increased side balancer shaft counter mass (higher vibration comfort)
- Enduro specific clutch cover (noise reduction compared to FC models)

Gearbox

The redesigned lightweight 6-speed gearbox is produced by Pankl Racing Systems ensuring the highest level of durability and reliability. The redesign focused on a weight optimized shift shaft, reducing the operating force of gear changes. The gearbox also features a revised transmission ratio, as well as a revised primary gear ratio (29:72).

The gear lever features a design that prevents dirt build-up and keeps the lever tip in its original position even in the toughest conditions. An advanced gear sensor selects a specific engine map tailored for each gear.
The above-mentioned gear sensor is positioned on the shift drum and is now also used for the new Quickshift function, allowing clutch less upshifts (from 2nd gear up). The function can be activated/deactivated via the new QS button on the Map Select Switch, located on the left side of the handlebar.

- Redesigned 6-speed gearbox with revised transmission ratio
- Weight optimized shift shaft, reducing operating force of gear changes for smooth and precise shifting
- Quickshift sensor positioned on the shift drum allows clutchless upshifts, the function can be activated/deactivated via the QS button on the map-select switch on the left side of the handlebar
- Integrated gear sensor for specific engine maps for each gear

DDS clutch

The FE 450 features a Dampened Diaphragm Steel (DDS) clutch. The exclusive characteristics of this system include a single diaphragm steel pressure plate instead of traditional coil springs. It integrates a damping system for better traction and durability. The clutch basket is a single-piece CNC machined steel component that allows the use of thin steel liners and contributes to the compact design of the engine.
The main improvement includes a better clutch cooling from the pressure lubrication, reducing clutch fade in high stress usage. The clutch basket has been redesigned and adapted for the new 6-speed transmission.

- Lightweight DDS clutch featuring consistent action and exceptional durability
- Improved clutch cooling from pressure lubrication, reducing clutch fade from high stress
- Redesigned clutch basket for adapted 6-speed transmission ratio
- Enduro specific clutch cover for reduced noise output

Exhaust

The diameter of the header pipe is now the same as on the FC 450 model. It's a reduced diameter compared to the old model, allowing for more engine response in lower rpms but also increased peak power.

- New header pipe diameter for increased engine response and peak power