

FC 450

Engine

The SOHC engine is the perfect example of the advanced engineering techniques used by Husqvarna Motorcycles. Offering peak power of more than 63 hp and with an overall weight of just 26.8 kg, a combined weight reduction of approximately 300 g is achieved when compared to the previous generation.

Mass centralisation is key to the engine design, enabling chassis engineers to position the engine closer to the centre of gravity for greatly improved handling and manoeuvrability. This was achieved by tilting the engine 2° backwards which positioned the sprocket 3 mm lower when compared to the previous generation. Together with the benefits of mass centralisation and reduced weight, the anti-squat behaviour of the chassis was significantly improved.

Attention was paid to the serviceability of the FC 450 engine. Drain bosses for fluids and added service markers on the engine (▲) clearly show where to use washers, making maintenance and service easier than before.

- Engine design → optimized mass centralisation and anti-squat behaviour
- Peak performance and minimal weight → 63 hp and only 26.8 kg
- Easy serviceability of engine internals → added service markers and drain bosses for liquids

Cylinder head

The SOHC cylinder head is incredibly compact and lightweight with a short profile and positions the camshaft as close to the centre of gravity as possible. Parallel frame mounts provide exceptional handling and agility.

Lightweight valves are actuated via a rocker arm and feature timing specifically designed to deliver precise levels of torque and throttle response. The diameter of each intake valve is 40 mm while the exhaust valves are 33 mm. A valve cover reduces the number of mounting screws (only two needed) and a single oil-spray jet guarantees efficient cooling while keeping weight to a minimum.

A fine punched cam chain, low-friction chain guides, and the low-friction DLC rocker arm coating offers optimum efficiency, reliability, and durability. Attention was paid to maintenance tasks with lock positions for the cam chain to provide easy serviceability of the valve train.

- SOHC cylinder head → more compact design, parallel frame mounts, and the camshaft positioned closer to centre of gravity
- Lightweight valve cover → only two mounting screws and one oil-spray jet for cooling
- Fine punched cam chain for added durability
- DLC coating and low-friction chain guides → optimum efficiency, reliability, and durability
- Easy serviceability of valve train → lock positions for cam chain

Cylinder and piston

The lightweight aluminium cylinder is an engineering masterpiece and features a 95 mm bore. The CP bridged-box-type piston features anodised annular grooves, adding durability and

longer service intervals while weighing only 327 g. The compression ratio of 13.6:1 provides an outstanding peak performance of more than 63 hp.

- Lightweight aluminium cylinder → 95 mm bore / 63.4 mm stroke
- Lightweight, high-performance CP forged bridged-box-type piston → reduced oscillating masses
- Compression ratio of 13.6:1 → outstanding peak performance
- Anodised annular groove → added durability and longer service intervals

Crankshaft

The inertia produced by the crankshaft has been carefully calculated to deliver optimal traction and rideability from the powerful 450cc engine. The crankshaft is specifically positioned to harness the rotational mass at the ideal centre of gravity resulting in a lightweight, agile handling feel. A plain big-end bearing comprising two force-fitted bearing shells ensure maximum reliability and durability, guaranteeing long service intervals of 90 hours.

- Crankshaft position → ideal centre of gravity, improved handling
- Plain big-end bearing and force-fitted bearing shells → increased durability and service intervals

Crankcases

The crankcases are designed to arrange the shafts and engine internals in the ideal positions to offer the best-possible handling. Additionally, the position of the clutch shaft keeps the clutch above the oil level resulting in decreased drag and increased efficiency. A steel oil pump gear and oil jet increase the overall oil pressure to prevent overheating and aids the outstanding durability of the FC 450.

High-pressure die-cast production processes keep overall weight to a minimum, resulting in thin wall thickness while retaining reliability.

- Design → optimised mass centralisation and increased efficiency
- Steel oil pump gear and increased oil pressure → outstanding durability and resistance to overheating
- High pressure die-cast production process → thin walls for reduced weight while maintaining strength

Gearbox

The lightweight 5-speed gearbox is produced by Pankl Racing Systems and ensures the highest level of durability and reliability. A weight-optimised shift shaft reduces the operating force required for gear changes and the gearbox also features a transmission ratio of 29:72. A Quickshifter is positioned on the shift drum to ensure smooth, clutchless upshifts. The function can be activated/deactivated via the QS marked button on the Map Select Switch, located on the left side on the handlebar.

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.

- 5-speed gearbox → optimised transmission ratio of 29:72 with smooth and precise shifting
- Weight-optimised shift shaft → reduced operating force required for gear changes
- Integrated Quickshift sensor positioned on the shift drum allows clutchless upshifts → seamless shifting function can be activated/deactivated with Map Select Switch
- Integrated gear sensor → specific engine maps for each gear

DDS clutch

The FC 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 pressure lubrication provides exceptional clutch cooling, reducing clutch fade from frequent usage while the clutch basket has been optimized for the 5-speed transmission.

- DDS clutch → lightweight with consistent modulation and exceptional durability
- Advanced clutch cooling from pressure lubrication → reduced clutch fade from frequent use
- Optimized clutch basket → adapted for 5-speed transmission ratio