**TECHNICAL INFORMATION BY MODEL**

**FC 250 Rockstar Edition**

Engine

The newly designed FC 250 Rockstar Edition engine is tilted 2° backwards and therefore comes with a repositioned sprocket which is 3 mm lower compared to the previous generation. The total engine height has been reduced by 8 mm to improve mass centralisation and reduce weight (approx. 60 g).

Added service markers on the engine (▲) clearly show where to use washers, making maintenance and service easier than in the past.

All major components and shaft arrangements are carefully designed and placed to best suit the performance and handling characteristics of the overall package, and an added benefit of this new design is improved anti-squat behaviour from the whole chassis.

The 250cc engine is not only light at 26.11 kg but also remarkably powerful with an overall output of more than 47 hp.

* New engine design → light and compact for optimised mass centralisation
  + Engine tilted 2° backwards with repositioned sprocket (3 mm lower)
  + Improved anti-squat chassis behaviour
* Engine height reduced by 8 mm for improved mass centralisation 🡪 reduced weight (approx. 60 g)
* Low-friction design → reduces overall drag and vibration
* Outstanding high-revving performance engine → over 47 hp peak power and 14,000 rpm rev limit
* Improved serviceability of engine internals with added service markers

Cylinder head

The fully redesigned DOHC cylinder head features finger followers with a DLC (diamond like carbon) coating resulting in minimal friction and optimal performance. These actuate large titanium valves (32.5 mm intake, 27.5 mm exhaust) which at the 14,000 rpm rev limit open and close multiple times every second introducing fuel/air mixture to the carefully designed combustion chamber to deliver efficient and optimal power throughout the rev-range.

The new 27.5 mm exhaust valve is a result of the new bore/stroke ratio, delivering an optimised gas flow. Valve timings have been adapted to the new valve measurements, working in perfect harmony with the redesigned camshaft.

For improved serviceability and maintenance work within the engine, the redesigned adjustment bush bridge is screwed and increases stiffness. Also, the head gasket comes with a new ‘stopper design’, reducing sealing gap oscillations caused by gas force.

* Fully redesigned cylinder head → improved durability and serviceability
* Finger followers with DLC coating → reduce friction and guarantee optimal performance
* Large titanium valves (32.5 mm intake, 27.5 mm exhaust) with new 27.5 mm exhaust valve → optimized gas flow with revised bore/stroke ratio
* Redesigned camshaft → adapted valve timing to new valve measurements
* New adjustment bush bridge increasing stiffness and improving serviceability (screwed design)
* New cylinder head gasket with stopper design → reducing sealing gap oscillations caused by gas force

Cylinder and piston

The new 81 mm bore cylinder houses a forged bridged-box-type piston made by CP with an extremely light weight of only 150 g. Both the cylinder and piston are professionally engineered from high-strength aluminium resulting in outstanding performance and reliability. The stroke has been adapted to 48.5 mm and the compression ratio has been increased to 14.5:1 for added torque and peak performance.

Thanks to the CFD optimised combustion chamber, the inlet port could be smaller in section resulting in improved engine responsiveness.

* New 81 mm bore and 48.5 mm stroke (MY22 = 78/52.3 mm)
* Larger 81 mm bore and larger diameter exhaust valves → high-revving, quick response
* CFD optimised combustion chamber → smaller inlet port for improved engine responsiveness
* Compression ratio increased to 14.5:1 → greater torque and peak power
* Forged bridged-box-type piston → high performance and reliability

Crankshaft

The crankshaft is designed to offer the best possible performance while being perfectly positioned in the engine cases to centralise oscillating masses for optimal handling. The plain big-end bearing features two force-fitted bearing shells ensuring maximum reliability and durability, guaranteeing long service intervals of 100 hours.

* Plain big-end bearing with force-fitted bearing shells → increased durability and service intervals
* Friction bearing on the counter-balancer shaft → increased durability

Crankcases

The FC 250 Rockstar Edition engine is designed with mass centralisation and weight reduction as main criteria. As a result, the crankcases have been redesigned to house the internal components of the engine in the perfect positions to achieve the ideal centre of gravity while adding the least possible weight. Engine mounting points are the same as on the FC 450 engine.

The casings are manufactured using a high-pressure die-cast production process, resulting in thin wall thickness while retaining exceptional reliability.

* Light and compact crankcases → optimised mass centralisation
* Redesigned engine mounting points (as on FC 450 Rockstar Edition)
* High-pressure die-cast production process → thin walls for reduced weight while maintaining strength

Gearbox

Produced by Pankl Racing Systems, the new 5-speed gearbox is designed to be extremely light and durable while featuring a 250 cc-specific ratio (24:72). A redesign of the shift shaft reduces the operating forces required for gear changes. A new Easy Shift sensor is positioned on the shift drum, allowing clutchless upshifts. The function can be activated/deactivated via the new QS marked button on the map select switch, located on the left side of the handlebar.

The shift fork has a low-friction coating for smoother shifting, while the new gear lever is designed to prevent dirt build-up and ensure perfect gear selection in all conditions. An advanced gear sensor allows for specific engine maps delivering the best possible performance in each gear.

* New 5-speed gearbox by Pankl Racing Sytems → 250-optimised transmission ratio (24:72) and exceptional durability and improved shifting
* Redesigned shift shaft → reduced operating force required for gear changes
* Integrated Easy Shift 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

DS clutch

The FC 250 features a DS (Diaphragm Steel) clutch. The exclusive characteristics of this system include a single diaphragm steel pressure plate instead of traditional coil springs.

The clutch basket has been revised and features the same design as on the FC 450, adapted to the new transmission ratio. It 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.

* New clutch basket with same design as FC 450 → adapted for new transmission ratio
* DS clutch → lightweight with consistent modulation and exceptional durability