

Husqvarna Motorcycles FC 250 / FC 450 Rockstar Edition – Model Year 2024

Media information

For 2024, Husqvarna Motorcycles' FC 250 Rockstar Edition and FC 450 Rockstar Edition come equipped with the new Connectivity Unit Offroad (CUO) and GPS sensor. These new components, when paired with the Ride Husqvarna Motorcycles app, give all riders complete control over the power delivery and handling characteristics of their machine. This ensures all riders benefit from riding with the very best set-up, as well as having the ability to analyse their on-track performance in order to reduce their lap times.

The new Connectivity Unit Offroad, which is fitted to the fork leg, behind the front number plate, together with the unique front-fender-mounted GPS sensor, provides riders with incredible insights into how their machine is running and how they are riding. Once the CUO is paired with the Ride Husqvarna Motorcycles app on a smartphone, and with the ENGINE feature on the app open, a choice of pre-set engine maps, based on track conditions, can be easily activated, customised, and saved within the engine section of the app.

In addition to offering the ability to create multiple engine map settings, the app includes suspension set-up recommendations that help achieve faster lap times and maximum rider comfort on every type of circuit. The GPS sensor records every track session automatically and allows riders to review their performance post-ride within the RIDER feature, which is powered by LITPro, inside the Ride Husqvarna Motorcycles app. This is particularly beneficial for racers looking to find the fastest lines and reduce their lap times.

New frames and updated suspension settings ensure next-level rideability with both the FC 250 Rockstar Edition and FC 450 Rockstar Edition machines assembled using a comprehensive list of race-tested Technical Accessories. Factory Racing wheels and triple clamps, together with an FMF Racing Factory 4.1 silencer headline the specifically chosen hardware found on each model. The finishing touch on both models are the latest Rockstar Energy Husqvarna Factory Racing graphics that are applied using in-mould technology for a quality, long-lasting finish.

2024 Technical Highlights

- New Rockstar Energy Husqvarna Factory Racing graphics applied using advanced in-mould technology
- Revised bodywork offers specifically tailored ergonomics for easier rider movement on the motorcycle
- Revised chromium molybdenum steel frame and rear shock linkage reduces chassis rigidity for increased cornering agility and rider comfort
- Updated suspension settings lead to optimal balance for each machine together with the updated frame
- New Connectivity Unit Offroad (CUO) and GPS allows for customization of engine mapping and detailed track performance analysis
- Topology optimized die-cast aluminium swingarm provides optimal rigidity at the lowest possible weight
- Quickshifter provides seamless upward gear changes
- High performance Brembo hydraulic clutch and brake systems
- Aluminium-polyamide hybrid subframe construction provides specifically calculated rigidity and advanced durability

- WP XACT 48 mm front forks with AER technology offer more progressive end-of-stroke damping
- WP XACT rear shock design with CFD optimized main piston and tool free adjusters
- Multifunctional Map Switch houses the Quickshifter, Traction Control, and Launch Control buttons
- FMF Racing Factory 4.1 silencer
- Factory Racing CNC-machined triple clamps with adjustable offset [20 – 22 mm]
- Factory Racing wheel set features EXCEL Takasago rims and black anodised CNC machined hubs
- 2K Carbon composite skid plate for advanced protection and durability
- 2K Carbon composite front brake disc guard for added protection
- Factory Racing holeshot device fitted as standard
- Soft, grey ODI lock-on grips for the highest level of comfort
- GUTS Factory high grip seat cover
- Premium-quality ProTaper handlebar and bar pad
- Electric starter powered by a lightweight Li-Ion 2.0 Ah battery

Features and benefits

Frame

The hydro-formed, laser-cut and robot-welded frame is expertly crafted. Constructed with specifically calculated parameters of longitudinal and torsional flex, the frame provides exceptional rider feedback, energy absorption, and straight-line stability. Additionally, the frame features forged brackets for mounting the standard skid plate.

Rotational masses in the frame and the forged steering head connection have been specifically positioned to reduce chassis squat. Together with the shock mounting, which is not connected to the main tube, the anti-squat of the chassis has been optimised for exceptional balance on acceleration and turning. Also, the wall thickness of the frame has been optimised to achieve exceptional reliability and specific rigidity in high stress areas such as the steering head and the shock mount. New engine mounts (with visible cut-outs for 2024) improve the chassis flex characteristics and reduce weight, while keeping stability characteristics at an unrivalled level.

For the 2024 Rockstar Editions, the shock mount on the frame has been updated with material removed. Additionally, the front area of the frame is updated with a slimmer wall thickness when compared to the previous model year.

The effects of these changes are an improved flex of the chassis combined with lower weight (approx. -300 g). On track, the benefit is noticeable by the improved cornering behaviour, particularly at corner entry, and riders from every level should benefit from these changes. This updated frame has been tested in MXGP throughout the 2023 season by NESTAAN Husqvarna Factory Racing's MX2 riders.

Another highlight of the frame topology is that the footrest mounts are positioned inwards, resulting in less susceptibility to hooking on deep ruts or when scrubbing jumps. The footrests have been designed with the help of state-of-the-art Computational Fluid Dynamics (CFD) to provide the optimal contact area for the rider. The one-piece steering head seal allows easier mounting in case of replacement or service and offers improved reliability.

The frame of the Rockstar Edition is finished off in a premium white powder coating. The standard Factory Racing frame protectors feature a specific topology, guaranteeing superior protection, durability, and advanced grip in any condition. Mounted with four screws, using the integrated frame brackets, the 2K carbon composite skid plate offers superior protection against dirt and hard impacts on the frame and engine.

- Specifically engineered longitudinal rigidity → exceptional rider feedback, energy absorption, and stability
- Specifically positioned rotational masses and the shock no longer mounted to the main tube → significantly improved anti-squat of chassis
- Topology-optimised frame wall thickness for specific rigidity and improved reliability in high-stress areas (e.g., steering head, shock mount)
 - Significant weight reduction (approx. -300 g over 2023) and improved flex
- New engine mounts with cut-outs for improved flex characteristic and lower weight
- Inward footrest mounting position for reduced risk of hooking on deep ruts or when scrubbing
- Service friendly one-piece steering head seal → easier mounting, improved reliability

- Durable powder coated finish with standard Factory Racing frame protectors and 2K carbon composite skid plate

Polyamide-reinforced aluminium subframe

Using 60% polyamide and 40% aluminium, the two-piece subframe has a total weight of just 1.8 kg. With the help of computational dynamics, specific rigidity was engineered into the light and robust subframe, delivering outstanding handling and rider comfort.

The lower subframe spars and frame mounts are made from cast aluminium to guarantee robustness and reliability. The upper subframe is made from injection-moulded polyamide, enabling specific flex characteristics and allowing a lightweight construction.

- Topology-optimised polyamide/aluminium hybrid construction
- Lower subframe spars and frame mounts made from cast aluminium → extremely robust and reliable (no weld joints)
- Upper subframe made from injection-moulded polyamide → specific rigidity and flex benefit handling and comfort

Swingarm

The hollow die-cast aluminium swingarm is designed to offer optimal stiffness and reliability at the lowest possible weight. The topology has been optimised for optimal rigidity while an improved casting process reduces weight. A 22 mm rear axle is fitted to match the chassis flex characteristics.

Additionally, the chain guard and chain slider have been specifically designed for improved durability and less susceptibility to hooking on external objects. This design helps with reducing dirt build up around the swingarm and chain guard, especially in extreme muddy conditions.

Chain adjustment markings are also visible from above to make for simpler adjustment.

- Die-cast swingarm → topology-optimised for optimal rigidity
- Optimised casting process for minimal weight
- 22 mm rear axle optimised to match chassis flex characteristics
- Chain guard and chain slider
 - Transitions aligned with swingarm surface, spring-steel mounted for improved durability
- Overall, less susceptible to hooking on external objects

WP XACT front fork with AER technology

The 48 mm split air forks feature a capsulated air spring and pressurised oil chamber for progressive and consistent damping. Oil and air bypasses reduce pressure peaks and, in combination with a mid-valve damping system, the forks provide exceptional feedback and rider comfort. The hydrostop improves bottoming resistance through more progressive damping force in the last 40 mm of travel. Additionally, rebound speed is slowed down which leads to the forks staying lower when accelerating after a hard landing.

Settings are easily adjusted via a single air-pressure preload valve, as well as via easy access click adjusters for compression and rebound. The forks dust seals increase protection against dirt

intrusion on the fork seals. Additionally, the air pump needed to adjust the fork's air pressure is provided as standard.

- Updated suspension settings → to work perfectly with the updated frame (less weight, more flex) and rear linkage changes (weight, stiffness)
- WP XACT front forks → 48 mm air type with split damping function
- Mid-valve damping system → exceptional damping and consistent performance
- Capsulated air spring and pressurized oil chamber → progressive and consistent damping
- Hydrostop in the fork legs → improved bottoming resistance and slower rebound
 - More progressive damping in last 40 mm of travel (total 310 mm) → previous generation hydrostop only effective in 10 mm of travel
 - Reduced rebound → forks stay lower on initial acceleration after hard landing
- Easy access clicker dials → simple and fast clicker settings
- Redesigned fork dust seals → increased protection against dirt intrusion

CNC machined triple clamps

Made from high-grade aluminium, the CNC-machined Factory Racing triple clamps feature optimally tuned steering stem stiffness, perfect alignment of the fork tubes, and precise geometry of the clamps to ensure a highly responsive and smooth fork action. Maximum gains in handling are provided by simple offset adjustment of 20 mm or 22 mm.

The topology-optimised handlebar mounts provide maximised grip surface for less handlebar twist at minimal weight. Additionally, they allow for both rubber-damped and fixed mounting for customisable handlebar flex.

- Rubber damped → less vibration, less precise front-end feel (OE)
- Fixed → increased vibrations, more precise front-end feel

The front number plate integrates a lower triple clamp protector which guards it from roost.

- CNC-machined aluminium with anodized surface → finest quality and reliability
- Perfect clamping and alignment → smooth fork action
- Topology optimized handlebar mounts → Optimized grip surface for less handlebar twist
- Rubber damping on top clamp → reduced vibration, increased comfort
- Adjustable handlebar position → adjustable ergonomics

WP XACT rear shock

The Computational Fluid Dynamics (CFD) optimised main piston in the shock improves initial comfort and provides strong hold-up. Differently sized flow holes allow the shims to open more easily and reduce the overall stress of oil flow and pressure on the shims. Reduced weight also means less moving mass, resulting in lower forces on the main piston. A pressure balance inside the shock ensures consistent damping, resulting in superior rider comfort and feel.

A fully hand-adjustable dual compression control concept allows high and low speed settings to be changed by hand. Together with the rebound adjuster, which is hand or tool adjustable, riders are able to adjust their shock settings without tools and without the help of a mechanic at the racetrack.

On top of the tool-free setting adjustment possibilities, the preload adjuster is optimised for increased resistance to dirt intrusion. The two-piece spring retainer allows for quick shock spring changes without splitting the shock.

The rear linkage geometry has been updated for 2024 and the linkage seals have been revised over 2023.

Additionally, the new linkage bolt has a smaller diameter to save weight. The overall linkage set-up was developed with Husqvarna Factory Racing to achieve the ideal stiffness.

- Updated suspension settings → focus on optimal bike balance with updated frame (less weight, more flex) and rear linkage changes (weight, stiffness)
- CFD-optimised main piston increases initial comfort and guarantees strong hold-up
- Dual compression control allows high and low speed settings to be adjusted by hand
- Rebound adjuster allows setting changes to be made by hand or with a tool
- Preload adjuster optimised for reduced dirt intrusion and quick mounting concept
- New linkage seals for refined rear shock performance and advanced damping characteristics
- Smaller diameter linkage bolt reduces weight and refines overall stiffness
- Pressure balance inside the shock body → consistent damping
- Two-piece spring retainer allows for quick mounting of alternative springs and assembly of preload adjuster and shock

Brembo hydraulic clutch

The high-performance Brembo hydraulic clutch system guarantees even wear, near maintenance-free operation, and perfect action in every condition. Free play is constantly compensated so that the pressure point and function of the clutch remains identical in cold or hot conditions, as well as over time. Countless hours of race focused testing has helped create a high-quality, Italian-made Brembo hydraulic system, which offers exceptional reliability.

- Brembo hydraulic clutch system → perfect action and outstanding reliability in all conditions

Brakes

The highest level of quality is guaranteed thanks to the class leading Brembo calipers and controls. The 260 mm floating front and 220 mm wave rear discs deliver superior stopping power, instilling confidence in all conditions. A 2K carbon composite front disc protector is fitted as standard for added protection.

For 2024 the aluminium rear brake pedal tip has been strengthened to be more durable and less susceptible to bending after impact.

- Brembo brake calipers and high-performance discs → superior stopping power with greater control and confidence
- 2K carbon composite front disc protector → added protection and reduced weight
- New aluminium rear brake pedal tip → increased stiffness, less susceptible to bending

ProTaper handlebar

The ProTaper handlebar is second to none for function and style. Manufactured to exacting standards, the handlebar features class-leading fatigue resistance at a minimal weight. The handlebar bend further increases comfort with reduced pressure points on the rider's hands.

- ProTaper handlebar → class-leading function and style
- Husqvarna bend → optimal comfort

Grips and throttle assembly

The ODI lock-on grip on the left side does not require gluing, while on the right, the vulcanised grip features an innovative integrated throttle mechanism. The assembly has easy free-play adjustment and, by changing a cam, throttle progression can be altered. The ODI lock-on grips come standard in a softer, grey compound on the Rockstar Edition models.

- Throttle assembly and ODI grips → easily alter throttle progression; easy grip mounting without glue

Footrests

The Computational Fluid Dynamics (CFD) designed footrests offer a bigger surface for boot soles while being less susceptible to catching on deep ruts, take-offs when scrubbing, or trackside barriers. This was achieved by utilising a narrower mounting concept which reduces overall weight with the design offering better control of the machine in all conditions.

- Topology-optimised, die-cast footrests → reduced weight and less susceptible to dirt build-up
- Footrest mount integrated into the frame → narrower profile is less susceptible to hook on deep ruts

Map Select Switch, Traction and Launch Control

Designed for easy and intuitive operation, the Map Select Switch comes as standard. It activates Traction and Launch Control, selects between two engine maps and activates the Quickshifter on 4-stroke models. Map 1 is the standard map for linear, predictable power, while Map 2 is an aggressive map for added throttle response and a more explosive power output.

The Quickshifter can be activated or deactivated via the Map Select Switch. The function works only when upshifting, interrupting the ignition for a fraction of a second. This allows for smooth gear changes, even with the throttle fully open and without using the clutch. The Quickshifter works by a sensor on the shift drum registering the force from the shift lever and sending a signal to the ECU to interrupt the ignition timing. To prevent unintended shifts and false neutrals, the function is only active from second to fifth gears.

With the engine at idle, Launch Control is engaged by pressing the Traction Control and Quickshifter buttons simultaneously. Both symbols will start flashing to indicate that Launch Control is active. This function limits the amount of power to the rear wheel, improving traction, and preventing loss of control under hard acceleration. Once the rider shifts up a gear, the launch control will deactivate automatically. Additionally, the Quickshift function is deactivated while Launch Control mode is engaged.

Traction Control on 4-stroke models is engaged by a switch marked 'TC' and functions by analysing throttle input from the rider and the rate at which engine RPM increases. If the RPM increases too quickly, the Engine Management System (EMS) registers a loss of grip and reduces the amount of power to the rear wheel for maximum traction. This is a distinct advantage in wet or muddy conditions.

- Handlebar Map Select Switch → alters engine characteristics according to conditions and rider preference
- Quickshift function → clutch-free upshifting
- Traction Control → optimal traction in all conditions
- Launch Control → maximum traction for perfect starts

Start/Stop switch

The combined start/stop switch on right side of handlebar allows for easy, intuitive start and stop of the engine.

Engine Management System (EMS)

The Keihin EMS is specifically designed to be small, light, and fast at processing data. It integrates Launch Control for perfect starts, selectable engine maps via the Map Select Switch on the handlebar, as well as the Quickshift function. Combined with the gear sensor, power delivery is tailored for each gear.

A Rollover Sensor (ROS) cuts the ignition in the event of extreme crashes, adding another level of safety to the Rockstar Edition machines. Additionally, the hour meter comes with an integrated FI status LED and a fuel level indicator.

- Keihin EMS → small, light and fast at processing engine data for more efficient engine management
- Rollover Sensor (ROS) → automatic cuts the ignition during extreme crashes
- Hour meter with integrated FI status LED and fuel level indicator
- Gear sensor → specific engine maps for each gear

44 mm throttle body

The FC 250 and FC 450 Rockstar Edition models feature a 44 mm Keihin throttle body. The injector is positioned to ensure the most efficient flow into the combustion chamber while to ensure optimal throttle response, the throttle cable is mounted directly without a throttle linkage for a more immediate throttle response and feeling.

- Throttle body → 44 mm, injector positioned for optimal flow, more immediate throttle response thanks to direct cable mounting

Exhaust system

Both Rockstar Edition models are equipped with an exhaust system that is expertly designed to deliver leading performance at the lowest possible weight. The header pipe features a flow designed resonance chamber that is integrated into the header pipe and is manufactured in two pieces to be as compact as possible. The joining position allows it to be removed without having to remove the rear shock.

- Compact exhaust → lightweight and engineered for optimal performance
- Header pipe mounted directly onto engine mount for improved serviceability
- Header joining position → removal of exhaust without removing rear shock

FMF Factory 4.1 RCT silencer

The Factory 4.1 RCT silencer features a blue anodised titanium body with a carbon end cap. In addition, it offers a shorter overall length that is less susceptible to damage and moves the muffler closer to the engine to centralise mass. The Factory 4.1 RCT is constructed from aerospace grade materials that meet exacting specifications.

- FMF Factory 4.1 RCT silencer → light weight, optimal performance
- Shorter overall length → centralised mass, less susceptible to damage

Electric start and Li-Ion battery

Along with the benefit of an easy electric starting system, a Li-Ion 2.0 Ah battery is fitted to the Rockstar Edition models. The Li-Ion battery weighs approximately 1 kg less than a conventional lead battery meaning the convenience of electric starting is delivered while keeping overall weight to a minimum.

- Electric starter → easy starting when time is critical
- Li-Ion battery → lightweight, 1 kg lighter than a conventional battery

Integrated cooling system and radiators

The radiators are expertly crafted from high strength aluminium. CFD optimisation is used to channel air through the radiators more efficiently and provide optimal cooling in all conditions. The cooling system is channelled through the frame, which eliminates the need for additional hoses. A large centre tube running through the frame reduces pressure at this point in the system, which ensures a consistent coolant flow. An internal thermostat adds reliability.

Additionally, the radiators are mounted close to the centre of gravity for improved handling.

- Coolant hoses channelled through the frame → maximum cooling efficiency
- Bayonet closure on radiator
- WP radiators → efficient for optimal cooling
- Large central tube → consistent coolant flow

Fuel tank

The 7.2 litre polythene fuel tank incorporates a threaded filler cap and an internal one-piece fuel pump with integrated filter. This provides improved fuel supply and allows the tank to be emptied further. The external fuel line is specifically positioned to make it less exposed and susceptible to damage.

New and updated is the fuel tank roll (fuel tank holder) for 2024. This holds the tank more securely in place and prevents the tank from chafing the frame.

- New fuel tank roll secures the tank in place while preventing it from chafing the frame
- 7.2 litre polythene fuel tanks → larger capacity for extended running times
- One-piece fuel pump and filter for improved fuel supply → tank can be emptied further

- External fuel line routing → less exposed and susceptible to damage

Airbox and tool-less air filter access

The Computational Fluid Dynamics (CFD) optimised airbox is designed with precisely positioned inlet ducts to prevent air deformation and ensure maximum airflow and filter protection. The air filter is easily accessed, without tools, by removing the left side panel. Easy maintenance is guaranteed by the Twin Air filter element and filter cage design, which offers a simple fail-proof mounting system for safe and accurate filter installation. New for the 2024 is the updated design of the air inlet sleeve and snorkel. This is now a one-piece part to prevent deformation thanks to its more robust design.

- CFD optimised airbox → exceptional air flow and maximised filter protection
- Intuitive filter mounting system → safe and accurate protection against dirt
- Tool-less filter access → quick and easy maintenance
- High-flow airbox cover in the by-pack → added customisability of the engine response
- CFD optimised Airbox → improved air flow and maximized filter protection
- Intuitive filter mounting system → safe and accurate protection against dirt
- Tool-less filter access → easy and fast maintenance
- High-flow airbox cover in the by-pack → added customisability of the engine response
- Updated air intake sleeve and snorkel → one-piece design preventing deformation

Factory Racing Wheel Set

Black high-strength anodised EXCEL Takasago rims are mounted to high quality black anodised and CNC-machined hubs using reinforced spokes and black anodised aluminium nipples to offer maximum weight savings and optimised handling and stability in the most extreme motocross conditions.

- Lightweight but strong and reliable construction → minimum unsprung weight

Tyres

Dunlop GEOMAX MX34 Motocross tyres feature the proven “block-within-a-block” design for more progressive cornering and superior grip are fitted as standard.

- Developed in top-level AMA Supercross and Motocross → enhanced handling, cornering and steering feel
- Wide range of application including sand, mud, loose surface, and hard pack
- Increased durability and crack resistance through innovative rubber compound

Bodywork

The FC 250 and FC 450 Rockstar Editions feature bodywork that clearly showcases Husqvarna Motorcycles progressive approach to offroad motorcycles.

The rider triangle provides exceptional knee contact, especially when riding in the standing position, inspires confidence for riders of every ability and enables them to perform at the highest level for extended periods of time. The slim contact surfaces on the bodywork allow the rider to more easily move the bike around on track and improve the overall handling and agility of the bike.

Revised tank shrouds add a fresh, progressive, and distinctive new look to both models. This visual design change highlights the many small but important technical changes for 2024. In terms of ergonomics, there are no considerable changes to the previous model years, but access to the rear shock adjusters has been improved by eliminating the shock cover. Additionally, the access for riders who fit a WP XACT Pro Components shock has also been considered with drill markings on the inside of the shroud, which can be used to create extra room for easy adjustability.

The seat profile has also been revised and is now 5 mm higher and wider at the lowest point. This reduces excessive rearward slipping under hard acceleration. Combined with the race engineered GUTS high grip seat cover, the seat delivers superior control in all conditions. A recessed grip pocket under the seat, just above the airbox, allows riders to grip the machine tighter with their legs.

For 2024, the front fender has been redesigned to incorporate the mounting of the GPS sensor, which works together with the new Connectivity Unit Offroad (CUO) and Ride Husqvarna Motorcycles app.

The graphics on the all-new Rockstar Editions closely resemble the look of Rockstar Energy Husqvarna Factory Racing's machines for the 2024 season. All of the graphics are applied using durable, in-mould technology for a long-lasting, high-quality finish.

- Progressive bodywork → distinctive looks, race team replica design, and graphics
- Rider triangle optimised for exceptional knee contact, especially when riding in the standing position
- Optimized contact surface → allows for easy gripping and movement of the bike
- Recessed grip pockets → allowing better grip to lift the bike
- Revised tank shrouds → fresh, progressive new look with single piece design on the right side
- Revised seat profile → heightened seat profile and high grip Factory Racing seat cover for exceptional control in all conditions
- Front fender features the mounting for the GPS sensor

Connectivity Unit Offroad - CUO

The wait is finally over. Husqvarna Motorcycles reintroduces the CUO, which is now fitted as standard on the 2024 FC 250 and FC 450 Rockstar Edition. This technology offers a wide range of functionalities and adjustability options through the Ride Husqvarna Motorcycles app. The hardware consists of two parts:

- 1) The CUO itself, mounted on the right upper fork between lower and upper triple clamp
- 2) The GPS sensor on the front fender.

Technical information by model

FC 250 Rockstar Edition

Engine

The 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.

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 machine, and an added benefit of this 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.

- Engine design → light and compact for optimised mass centralisation
- Low-friction design → reduces overall drag and vibration
- Outstanding high-revving performance engine → over 47 hp peak power and a 14,000 rpm rev limit
- Easy serviceability of engine internals with added service markers

Cylinder head

The 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 limit, open and close multiple times every second to deliver the fuel/air mixture into the combustion chamber for optimal power throughout the rev-range.

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

For easy serviceability and maintenance work within the engine, the camshaft bearing bridge is screwed and thus increases stiffness. Also, the head gasket comes with a 'stopper design', reducing sealing gap oscillations caused by gas force.

- DOHC cylinder head → Advanced 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 27.5 mm exhaust valve → optimized gas flow
- Camshaft → adapted valve timing to valve measurements
- Camshaft bearing bridge increasing stiffness and improving serviceability (screwed design)
- Cylinder head gasket with stopper design → reducing sealing gap oscillations caused by gas force

Cylinder and piston

The 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 48.5 mm stroke and the compression ratio of 14.5:1 provide added torque and peak performance.

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

- 81 mm bore and 48.5 mm stroke (2022 = 78/52.3 mm)
- Large 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 of 14.5:1 → outstanding 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 90 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 the two main criteria. As a result, the crankcases have been designed to house the internal components of the engine in the perfect positions to achieve the ideal centre of gravity at the lowest possible weight. Engine mounting points are the same as on the FC 450 Rockstar Edition engine.

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

- Light and compact crankcases → optimised mass centralisation
- Optimized 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 5-speed gearbox is designed to be extremely light and durable while featuring a 250cc-specific ratio (24:72). The optimized shift shaft reduces the operating forces required for gear changes with a Quickshift sensor on the shift drum ensuring smooth upshifts. The function can be activated/deactivated via the QS 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 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 to deliver the best possible performance in each gear.

- 5-speed gearbox by Pankl Racing Systems → 250cc-optimised transmission ratio (24:72) and exceptional durability and effortless shifting
- Optimized shift shaft → reduced operating force required for gear changes
- Integrated Quickshift sensor 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 Rockstar Edition features a Diaphragm Steel (DS) clutch. The exclusive characteristics of this system include a single diaphragm steel pressure plate instead of traditional coil springs.

The clutch basket features the same design as the FC 450 Rockstar Edition but adapted to the 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.

- Clutch basket with same design as FC 450 Rockstar Edition → adapted for transmission ratio
- DS clutch → lightweight with consistent action and exceptional durability

FC 450 Rockstar Edition

Engine

The SOHC engine is the perfect example of the advanced engineering techniques used by Husqvarna Motorcycles to create peak power of more than 63 hp with an overall weight of just 26.8 kg.

Mass centralisation is key to the engine design, enabling chassis engineers to position the engine closer to the centre of gravity for exceptional handling and manoeuvrability. Together with the benefits of mass centralisation and minimal weight, the chassis provides an exceptional anti-squat behaviour for outstanding balance on acceleration and turning.

Additionally, attention was paid to the serviceability of the FC 450 Rockstar Edition 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.

- Peak performance and minimal weight → 63 hp and only 26.8 kg
- Exceptional 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 → compact design, parallel frame mounts, and the camshaft is 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
- 13.6:1 compression ratio → exceptional peak performance
- Anodised annular grooves → 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 Rockstar Edition.

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 Rockstar Edition 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.

- DDS clutch → lightweight with consistent modulation and exceptional durability
- Advanced clutch cooling from pressure lubrication → reduced clutch fade from frequent use