



Volvo Excavators

EC300E NORRDIGI MCC HYBRID



Welcome to our world

Welcome to a world of industry leading machinery. A world where imagination, hard work and technological innovation will lead the way towards developing a future which is cleaner, smarter, and more connected. A world supported by the enduring values of the Volvo Group. A world of stability, sustainability and innovation. A world which we put our customers at the heart of.

Welcome to the world of Volvo Construction Equipment – we think you're going to like it here.

Working harder, working smarter

For over 180 years Volvo has been a pioneer in the design and manufacture of machines which set the standard for efficiency, performance and uptime. Across our range of excavators, wheel loaders and haulers, our reputation for engineering excellence is unrivalled, which means whatever your operation or application, we can provide a total fleet solution to help you succeed.

Building on our proud history, the Volvo Concept Lab continues to create cutting-edge ideas and innovative concepts, to ensure we offer customers machines which work harder and smarter long into the future.



Solutions for you

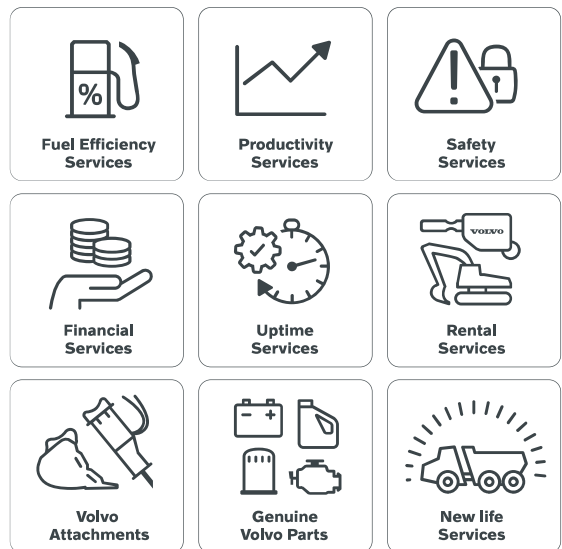
Our industry leading machines are just the start of your relationship with Volvo. As your partner, we have developed an extensive range of additional solutions to help you improve uptime, boost productivity and reduce costs.

Designed for your business

Structured across nine blocks, our portfolio of products and services are designed to complement your machine's performance and boost your profitability. Simply put, we offer some of the best guarantees, warranties and technological solutions in the industry today.

There when you need us

Whether you're buying new or used, our global network of dealers and technicians offer around-the-clock support, including machine monitoring and world-class parts availability. It's the basis of everything offered by Volvo Services, so you can be confident we've got you covered right from the start.



BUILDING TOMORROW



EC300E NORRDIGI MCC HYBRID

**A sustainable solution
for radically reduced
fuel consumption***

Introducing the upgraded EC300E Norrdigi MCC Hybrid. Featuring unique hydraulic technology based on intelligent multi chamber cylinder controls. The excavator utilizes motion to charge the high pressure accumulators. The recovered energy is then used to drive the system more efficiently.

*Field tests conducted in spring 2024 show less than -50% fuel consumption in heavy duty dig & dump work while delivering all the performance of a conventional EC300E excavator.



45-60%
greater fuel
efficiency*



50%
lower fuel
consumption*



50%
reduction in CO₂
emissions*



6-12%
improved
productivity



Combining Extraordinary Energy Efficiency and Precise Movement Control

NorrDigi Multi Chamber Cylinder (MCC) technology is patented by Norrhydro and Volvo Construction Equipment. It is based on energy efficiency through energy recovery, optimized components to enhance performance and improved motion control.

Energy recovery

The NorrDigi MCC system will automatically recover energy as the chambers are directly connected to the common pressure rails, which are connected to the piston accumulators. In a conventional hydraulic system, the recoverable energy is converted to heat. The level of recovery will depend on work cycle and accumulator capacity. NorrDigi can reach 60-70% recovery levels using heavier workloads in a work cycle.

Motion control

Advanced software and valve control improve the response times in NorrDigi MCC system (i.e. start movement time) compared to conventional hydraulic system. The system can be programmed to control movement avoiding unwanted motions, reducing oscillation and protecting structure from peak forces. Overall the movement becomes more reliable and safe.

Optimised components

Critical components such as motors and pumps can be reduced in size and they are chosen to optimize the machine performance of NorrDigi MCC system. Engine will be driven to mean load (with lower RPM) and not to peak load as in conventional system. The cost of components can therefore be reduced with better performance.

EC300E NorrDigi Hybrid in detail

Engine

The next-generation Volvo diesel engine uses Volvo Advanced Combustion Technology (V-ACT) to deliver lower emissions, superior performance and fuel efficiency. The engine uses precise, highpressure fuel injectors, turbo charger and intercooler, and electronic engine controls to optimize machine performance.

| | | |
|----------------------------|-------|-------|
| Engine | Volvo | D8M |
| Max power at | r/min | 1 600 |
| Net, ISO 9249/SAE J1349 | kW | 188 |
| | hp | 256 |
| Gross, ISO 14396/SAE J1995 | kW | 189 |
| | hp | 257 |
| Max torque | Nm | 1 290 |
| at engine speed | r/min | 1 400 |
| No. of cylinders | | 6 |
| Displacement | l | 7.7 |
| Bore | mm | 110 |
| Stroke | mm | 135 |

Hybrid

The NorrDigi MCC, Multichamber Cylinder solution, a novel hydraulic system that harvests 'free' energy generated by the down motion of the excavator's cylinders and uses it to supercharge the hydraulic system. The regular motions charge pressured accumulators, which then delivers energy to drive the motor that helps to power the engine system. There are improved levels of controllability and performance as the standard EC300E.

Accumulator

| | |
|--------------------|------|
| No. of accumulator | 4 |
| Displacement | l 60 |

Electrical System

High-capacity electrical system that is well protected. Waterproof double-lock harness plugs are used to secure corrosion-free connections. The main relays and solenoid valves are shielded to prevent damage. The master switch is standard.

| | | |
|------------------|--------|----------|
| Voltage | V | 24 |
| Batteries | V | 2 x 12 |
| Battery capacity | Ah | 170 |
| Alternator | V/A | 28 / 120 |
| Start motor | V - kW | 24 - 5.5 |

Undercarriage

The undercarriage has a robust X-shaped frame. Greased and sealed track chains are standard.

| | | |
|---------------------------------|----|-----------------------|
| Track shoes | | 2 x 50 |
| Link pitch | mm | 203.2 |
| Shoe width | mm | 600 / 700 / 800 / 900 |
| Shoe width, triple grouser | mm | 600 / 700 / 800 / 900 |
| Shoe width, triple grouser (HD) | mm | 600 |
| Shoe width, double grouser | mm | 700 |
| Bottom rollers | | 2 x 9 |
| Top rollers | | 2 x 2 |

Cab

The operator's cab has easy access via a wide door opening. The cab is supported on hydraulic dampening mounts to reduce shock and vibration levels. These along with sound absorbing lining provide low noise levels. The cab has excellent all-round visibility. The front windshield can easily slide up into the ceiling, and the lower front glass can be removed and stored in the side door.

Refrigerant of the type R134a is used when this machine is equipped with air conditioning. Contains fluorinated greenhouse gas R134a, Global Warming Potential 1,430 t CO₂-eq.

Swing system

The swing system uses an axial piston motors, driving a planetary gearbox for maximum torque. An automatic holding brake and anti-rebound valve are standard.

| | | |
|------------------|-------|-------|
| Max. slew speed | r/min | 11 |
| Max. slew torque | kNm | 114.8 |

Travel System

Each track is powered by an automatic two-speed shift travel motor. The track brakes are multi-disc, spring-applied and hydraulic released. The travel motor, brake and planetary gears are well protected within the track frame.

| | | |
|--------------------------|------|-----|
| Max. drawbar pull | kN | 248 |
| Max. travel speed (low) | km/h | 3.6 |
| Max. travel speed (high) | km/h | 5.4 |
| Gradeability | ° | 35 |

Sound Level

Sound pressure level in cab according to ISO 6396

| | | |
|-----------------|----|----|
| L _{pA} | dB | 70 |
|-----------------|----|----|

External sound level according to ISO 6395 and EU Noise Directive 2000/14/EC

| | | |
|-----------------|----|-----|
| L _{WA} | dB | 104 |
|-----------------|----|-----|

Hydraulic system

The hydraulic system, also known as NorrDigi MCC "Multichamber Cylinder" system is designed for high-productivity, high-digging capacity, high-maneuvering precision and excellent fuel economy. The summation system, boom, arm and swing priority along with boom, arm and bucket regeneration provides optimum performance.

Main pump, Type 2 x Variable displacement axial piston pumps

Maximum flow l/min 2 x 276

Pilot pump, Type Gear Pump

Maximum flow l/min 20.3

Relief value setting pressure

Implement MPa 33.3 / 36.3

Travel circuit MPa 36.3

Slew circuit MPa 28.9

Pilot circuit MPa 3.9

Hydraulic Motors

Travel: Variable displacement axial piston motor with mechanical brake

Swing: Fixed displacement piston motor with mechanical brake

Hydraulic Cylinders

Mono boom MCC 2

Bore x Stroke ø x mm 140 x 1 480

Arm MCC 1

Bore x Stroke ø x mm 150 x 1 745

Bucket MCC 1

Bore x Stroke ø x mm 140 x 1 140

Service Refill

Fuel tank l 472

DEF/AdBlue® tank l 50

Hydraulic system, total l 385

Hydraulic tank l 215

Engine oil l 30

Engine coolant l 44

Slew reduction unit l 6:1

Travel reduction unit l 2 x 6

Hydraulic Accumulators

High pressure piston accumulator l 2 x 61

Low pressure piston accumulator l 2 x 61

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