

V O L V O



Volvo Excavators 63.6 t 435 hp

EC650

Volvo Construction Equipment

EC650

The EC650 is your perfect partner when it comes productivity, durability, reliability and efficiency. This is a machine designed to deliver optimum results and a lower cost of ownership in the toughest of applications.



Superb durability



- Ultra durable / robust 70T Class large undercarriage
- Best Ground Clearance in the 65T class for handling the toughest tasks
- Heavy duty undercovers for the upper frame & undercarriage provides protection for the machine in challenging situations
- New design Flat Edges large track sprockets
- Heavy Duty Boom & Arm with large size pins

Maximum fuel efficiency



- Intelligent Electronic control for measured hydraulic flow controls compared with conventional hydraulic systems delivers high fuel efficiency
- Advanced Engine/Pump Optimization, lowers the engine rpm while optimizing the power
- Automatic Engine Idling
- Automatic Engine Shutdown

Raise the bar further

Lower your cost per tonne with the Volvo EC650, delivering the efficiency of 65-tonner combined with the type of performance, more commonly associated with a 70+ tonne machine. Designed to do more for less, the EC650 combines class-leading comfort, excellent fuel efficiency and proven uptime to keep productivity high and operating costs low.



Outstanding productivity

- Ideal match for 40–45T trucks, Optimum fleet efficiency
- Faster truck loading in 6 passes with the 4.6 m³ bucket (largest in the industry in 60-65T class)
- Volvo D13 engine delivering an impressive 435 hp power at just 1 600 rpm
- Unmatched engine torque of 2 071 Nm achieved at 1 350 rpm
- Highest swing torque of 197 kNm in the industry



Operator comfort and control

- Class-leading cab comfort
- Ergonomically designed customizable seats with 9 seat adjustments, keeping operator comfort & well-being in mind
- Automatic climate control system with 12 air vents
- Smooth, precise & responsive joystick controls
- Silicon Oil & Rubber antivibration seat mounts for operator comfort



Safety and peace of mind

- Improved visibility through the Rearview camera, 10 LED lights positioned throughout the machine
- Swing Lock system to prevent swinging of machine during travel
- Boom accumulator for safe lowering of the boom in case of emergency
- Pull up type openable front windshield & Removable lower windshield (can help during emergency evacuation)



Reliability / Uptime

- Volvo D13 engine, the most reliable engine in its class
- Dual oil bath pre-cleaner
- 3 stage air filtration
- Delayed engine shutdown
- Tropical Cooling

Durability in the most demanding conditions

- Highest coverage area in the industry offers exceptional stability
- Wide Mechanically Retractable undercarriage offers stability during operations & flexibility during shifting
- Double Grouser track shoes provide the best tractive forces
- Large Size Hydraulic cylinders

Maximum fuel efficiency

- Advanced Electro-hydraulic Main Control Valve (MCV) with Independent Metering Valve Technology (IMVT)
- Electric Joystick provides instant command

Outstanding productivity

- Designed for highest performance in heavy duty / mass excavation requirements
- Superior digging & lifting forces with the large hydraulic cylinders
- 2 pump flow bucket circuit & auto power boost for faster digging
- 10 work modes provide flexibility to meet site requirements
- Boom down speed & Boom/Swing priority customization options for improved productivity

Operator comfort and control

- Total control with the new generation EH system
- Boom / Arm Bounce reduction function for low vibration
- Operators perform at their best even at shift ends
- Low noise levels

Operator safety and peace of mind

- Hydraulic cut-off lever stops machine controls when lowered
- Viewing mirrors for optimal visibility all around the machine
- Travel Alarm for alert during travel operation
- 3 Point seat belt





Reliability / Uptime

- No Hydraulic pilot lines, less oil & couplings
- Electric connectors exceed ingress protection 6K9K water-proofing standards, ensuring long component life
- CARETRACK telematics with complimentary subscription
- Optional Active Care subscription: 24/7 machine monitoring, weekly reports

Quick, safe and easy servicing

- Grouped filters
- Battery cut-off switch
- High visibility guardrails and handrails
- 3-point right-hand access to the upper structure, bolted anti-slip plates and walkway

Volvo EC650 in detail

Engine

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

Air Filter: 3-stage and precleaner.

Automatic Idling System: Reduces engine speed to idle when the levers and pedals are not activated resulting in less fuel consumption and low cab noise levels.

Engine	Volvo	Volvo D13E
Max power at	rpm	1 600
Net, ISO 9249/SAE J1349	kW	319
	hp (met)	434
Gross, ISO 14396/SAE J1995	kW	320
	hp (met)	435
Max torque	Nm	2 071
at engine speed	rpm	1 350
No. of cylinders		6
Displacement	l	12.8
Bore	mm	131
Stroke	mm	158

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	200
Alternator	V/A	28/130

Undercarriage

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

Track shoe		2 x 46
Link pitch	mm	260
Shoe width, double grouser	mm	600
Bottom rollers		2 x 8
Top rollers		2 x 3

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	rpm	9.5
Max. slew torque	kN/m	197

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	410
Max. travel speed (low)	km/h	2.99
Max. travel speed (high)	km/h	4.63
Gradeability	°	35

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.

Integrated air-conditioning and heating system: The pressurized and filtered cab air is supplied by an automatically-controlled fan. The air is distributed throughout the cab from 12 vents.

Ergonomic operator's seat: The adjustable seat and joystick console move independently to accommodate the operator. The seat has nine different adjustments plus a seat belt for the operator's comfort and safety.

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.

Sound Level

Sound level in cab according to ISO 6396

L _{pA}	dB	71
External sound level according to ISO 6395 and EU Noise Directive 2000/14/EC		
L _{WA}	dB	107

Hydraulic System

Main pump: 2 x Variable displacement axial piston pumps

Maximum flow	l/min	2 x 416
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Pilot pump: Gear pump

Maximum flow	l/min	16
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Max. pressure

Implement	MPa	33.8 / 36.3
Travel circuit	MPa	34.3
Slew circuit	MPa	27.9
Pilot circuit	MPa	3.9

Hydraulic Motors

Travel: Variable displacement axial piston motor with mechanical brake.

Slew: Fixed displacement piston motor with mechanical brake.

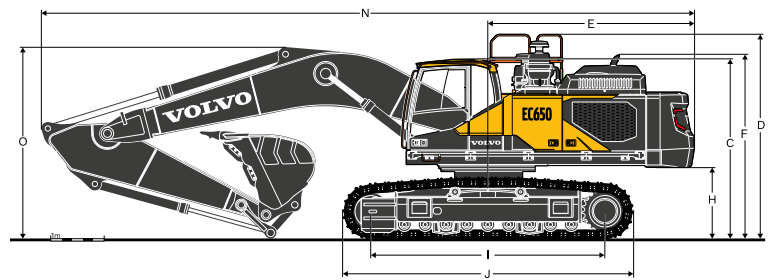
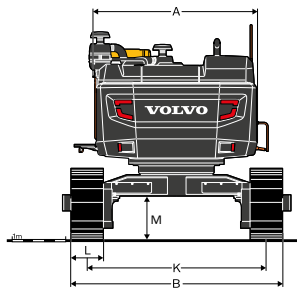
Hydraulic Cylinders

Mono boom		2
Bore x Stroke	ø x mm	190 x 1 590
Arm		1
Bore x Stroke	ø x mm	200 x 1 942
ME Bucket		1
Bore x Stroke	ø x mm	190 x 1 335

Service Refill

Fuel tank	l	680
Hydraulic system, total	l	590
Hydraulic tank	l	270
Engine oil	l	55
Engine coolant	l	66
Slew reduction unit	l	2 x 6.4
Travel reduction unit	l	2 x 8.0

Specifications

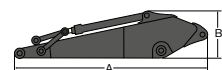
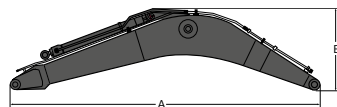


DIMENSIONS

Description	Unit	EC650
Boom	m	6.5
Arm	m	3.0
A. Overall width of upper structure*	mm	2 990
B. Overall width, Extended	mm	3 950
B. Overall width, Retracted	mm	3 550
C. Overall height of cab	mm	3 600
D. Overall height of guardrail	mm	3 805
E. Tail swing radius	mm	3 880
F. Overall height of engine hood	mm	3 460
H. Counterweight clearance **	mm	1 540
I. Tumbler length	mm	4 550
J. Track length	mm	5 735
K. Track gauge, Extended	mm	3 350
K. Track gauge, Retracted	mm	2 950
L. Shoe width	mm	600
M. Min. ground clearance **	mm	845
N. Overall length	mm	11 740
O. Overall height of boom	mm	4 380

* Exclude walkway, handrail

** Without shoe grouser



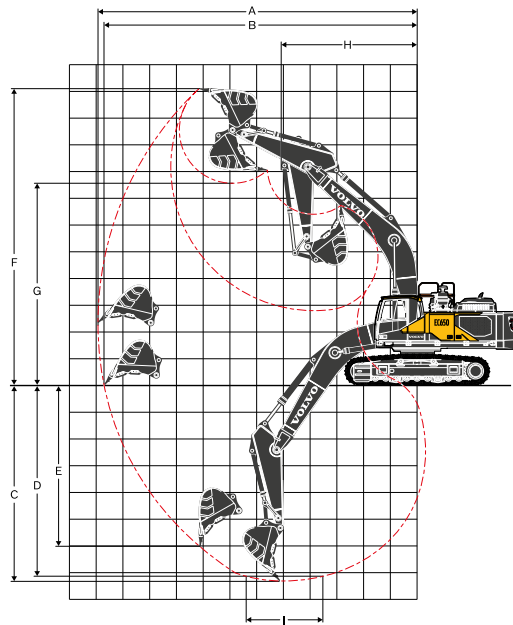
DIMENSIONS

		Boom		Arm	
Description	Unit	6.5 m ME	Description	Unit	3.0 m
A. Length	mm	6 800	A. Length	mm	4 275
B. Height	mm	1 930	B. Height	mm	1 300
Width	mm	906	Width	mm	650
Weight	kg	5 685	Weight	kg	3 385

Includes cylinder, piping and pin

Includes cylinder, linkage and pin

Specifications



WORKING RANGES

Description	Unit	EC650
Boom	m	6.5
Arm	m	3.0
A. Max. digging reach	mm	11 535
B. Max. digging reach on ground	mm	11 240
C. Max. digging depth	mm	6 990
D. Max. digging depth (l=2 440 m level)	mm	6 770
E. Max. vertical wall digging depth	mm	5 750
F. Max. cutting height	mm	10 980
G. Max. dumping height	mm	7 070
H. Min. front swing radius	mm	4 810

DIGGING FORCES WITH DIRECT FIT BUCKET

Breakout force (bucket)	Normal	SAE J1179	kN	267
	Power boost	SAE J1179	kN	286
	Normal	ISO 6015	kN	293
	Power boost	ISO 6015	kN	315
Tearout force (arm)	Normal	SAE J1179	kN	239
	Power boost	SAE J1179	kN	256
	Normal	ISO 6015	kN	243
	Power boost	ISO 6015	kN	261
Rotation angle, bucket			°	168

MACHINE WEIGHTS AND GROUND PRESSURE			
		6.5 m boom, 3.0 m arm, 3 800 kg bucket, 11 600 kg counterweight	
Description	Shoe width	Operating weight	Ground pressure
	mm	kg	kPa
Double grouser	600	63 560	93.4

SUPERSTRUCTURE WITH BOOM CYLINDERS, WEIGHT		
Description	Unit	Supperstructure
Weight	kg	12 950

LOWER STRUCTURE, WEIGHT		
Description	Unit	Supperstructure
600 mm (double grouser)	kg	26 205

BUCKET SELECTION GUIDE						
Bucket type		Capacity	Cutting width	Weight	Teeth	EC650 L wide retractable undercarriage
						600 mm shoe, 11 600 kg counterweight
		L	mm	kg	EA	6.5 m ME boom
						3.0 m
Direct fit Buckets	General Purpose	4 600	2 150	3 880	5	C
	Heavy duty	3 900	1 985	3 555	5	D

Please consult with your Volvo dealer for the proper match of buckets and attachments to suit the application. The recommendations are given as a guide only, based on typical operation conditions.
Bucket capacity based on ISO 7451, heaped material with a 1:1 angle of repose.

Max. permitted bucket:
A: 1 200 kg/m³
B: 1 500 kg/m³
C: 1 800 kg/m³
D: 2 100 kg/m³
X: Not recommended

Specifications

LIFTING CAPACITY EC650

Lifting capacity at the arm end without bucket.

For lifting capacity including bucket, simply subtract actual weight of the direct fit bucket or the bucket with quick coupler from the following values.

	Lifting Point		1.5 m		3.0 m		4.5 m		6.0 m		7.5 m		9.0 m		10.5 m		Max. reach		m
			Along UC	Across UC	Along UC	Across UC	Along UC	Across UC	Along UC	Across UC	Along UC	Across UC	Along UC	Across UC	Along UC	Across UC	Along UC	Across UC	
Boom: 6.5 m ME Arm: 3.0 m Shoe: 600 mm CWT: 11 600 kg	9.0 m	kg															*12880	*12880	6.71
	7.5 m	kg									*15200	*15200					*11990	*11990	7.91
	6.0 m	kg							*17200	*17200	*15700	*15700					*11720	*11720	8.68
	4.5 m	kg					*25930	*25930	*19870	*19870	*16970	*16970	*14130	12910			*11880	*11880	9.14
	3.0 m	kg					*31830	*31830	*22750	*22750	*18480	16620	*16140	12670			*12420	11980	9.33
	1.5 m	kg					*28730	*28730	*24950	22340	*19750	16150	*16680	12440			*13400	11900	9.28
	0 m	kg					*35040	34500	*25920	21880	*20390	15850					*15070	12360	8.97
	-1.5 m	kg			*25260	*25260	*33790	*33790	*25490	21760	*19970	15780					*17210	13570	8.39
	-3.0 m	kg			*40710	*40710	*30420	*30420	*23270	21960							*17540	16160	7.46
	-4.5 m	kg					*23900	*23900	*17160	*17160							*17080	*17080	6.02

Notes: 1. Machine in "Fine Mode-F" (Power Boost) for lifting capacities.

2. The above loads are in compliance with SAE J1097 and ISO 10567 Hydraulic Excavator Lifting Capacity Standards.

3. Rated loads do not exceed 87% of hydraulic lifting capacity or 75% of tipping load.

4. Rated loads marked with an asterisk (*) are limited by hydraulic capacity rather than tipping load.



Equipment

STANDARD & OPTIONAL EQUIPMENT	
• = Standard / o = Optional	
Engine	
Turbocharged, 4 stroke diesel engine with water cooling, direct injection and charged air cooler that meets local requirements	•
Air filter with indicator	•
Air intake heater	•
Oil bath pre-cleaner	•
Fuel filter and combined water separator	•
Auto engine shutdown	•
Delayed engine Shutdown	•
Alternator, 130 A	•
Electric / Electronic control system	
Advanced mode control system	•
Self-diagnostic system	•
Machine status indication	•
Engine speed sensing power control	•
Automatic idling system	•
One-touch power boost	•
Safety stop/start function	•
Adjustable LCD color monitor	•
Master electrical disconnect switch	•
Engine restart prevention circuit	•
Batteries, 2 x 12 V / 200 Ah	•
Start motor, 24 V / 7 kW	•
Travel alarm	•
Work light, LED	•
- Frame-mounted 2	•
- Cab-mounted 3	•
- Boom-mounted 4	•
- Counterweight-mounted 1	•
Flashing beacon, LED	o
Undercarriage and structures	
3-point right-hand side access	•
Tool storage area	•
Service walk way	•
Punched metal anti-slip plates	•
Full height, handrail and guard rail, fixed	•
Mechanically retractable wide width track gauge	•
Hydraulic track adjusters	•
Greased and sealed track link	•
Track shoes 600 mm with double grousers	•
Superstructure Undercover (heavy-duty)	•
Lower frame Undercover (heavy-duty)	•
STD Track Guard	•
Full Track Guard	o

STANDARD & OPTIONAL EQUIPMENT	
• = Standard / o = Optional	
Hydraulic system	
New electro-hydraulic system with IMVT	•
2-pump flow bucket circuit	•
Swing anti-rebound valves	•
Multi-stage filtering system	•
Cylinder cushioning	•
Cylinder contamination seals	•
Automatic two-speed travel motors	•
Boom and arm regeneration valves	•
Hydraulic oil mineral 68	•
Automatic hydraulic oil warm-up	•
Overload warning device	o
Cab and Interior	
Silicon oil and rubber mounts with spring	•
Travel pedals and hand levers	•
Joystick control console	•
Control Joystick, Semi-long each	•
Heater & air-conditioner, automatic	•
Flexible antenna	•
Radio with MP3 & USB Jack with bluetooth	•
Hydraulic safety lock lever	•
Cab with fixed hatch and reinforcement	•
Cab, all-weather sound suppressed, includes:	•
- Cup holders	•
- Door locks	•
- Tinted glass	•
- Floor mat	•
- Horn	•
- Large storage area	•
- Pull-up type front window	•
- 3-point seat belt	•
- Safety glass	•
- Removable lower windshield	•
- Windshield wiper with intermittent feature	•
- Master key	•
- Adjustable fabric seat with 9 adjustment settings	•
- Sun screens, front, roof, rear	•
- Rear view camera	•
- Swing lock system	•
Creep travel speed	•
Cab-mounted falling object protective structure (FOPS)	o
- Safety Net	o
Sun shield, roof hatch	o
Falling object guard (FOG) :	o
- Cab-mounted	o
Specific key	o
Digging equipment	
Boom: 6.5 m ME	•
Arm: 3.0 m HD	•
Manual centralized lubrication	•
Service and maintenance	
Tool kit, full scale	•
Caretrack	•

Not all products are available in all markets. Under our policy of continuous improvement, we reserve the right to change specifications and design without prior notice. The illustrations do not necessarily show the standard version of the machine.

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