



Volvo Construction Equipment

EC220E

VOLVO EXCAVATORS 20.6-25.1 t / 45,350 - 55,360 lb 173 hp



Volvo EC220E in detail.

Engine

The latest generation, Volvo engine Tier 4f / Stage IV emissions compliant diesel engine fully meets the demands of the latest, emissions regulations. Featuring Volvo Advanced Combustion Technology (V-ACT), it is designed to deliver superior performance and fuel efficiency. The engine uses precise, high pressure fuel injectors, turbo charger and air-to-air intercooler, and electronic engine controls to optimize machine performance.

Air Filter: 3-stage with pre-cleaner

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		D6J	
Max power at	r/s / r/min			30 / 1 800	
Net, ISO 9249/SAE J1349	kW / hp			128 / 172	
Gross, ISO 14396/SAE J1995	kW / hp			129 / 173	
Max torque at	Nm / r/min	lbf ft / r/min	849 / 1 350	626 / 1,350	
No. of cylinders	6				
Displacement	l	cu.in	5.7	348	
Bore	m	in	98	3.86	
Stroke	m	in	126	4.96	

Electrical system

Well protected high-capacity electrical system. 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.

Contronics provides advanced monitoring of machine functions and important diagnostic information.

Voltage	V		24	
Batteries	V / Ah	2 x 12 / 140		
Alternator	V / Ah	28 / 80		
Start motor	V / kW	24 x 5.5		

Swing system

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

Max. slew speed	r/min		11.1	
Max. slew torque	kNm	lbf ft	83	61,220

Drive

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	lbf	183	41,150
Max. travel speed	km/h	mph	3.5 / 5.7	2.2 / 3.5
Gradeability	°			35

Undercarriage

Robust X-shaped frame with greased and sealed track chains as standard

Track shoe	2 x 49			
Link pitch	mm	in	190	7.5
Shoe width, triple grouser	mm	in	700	

Bottom rollers	2 x 8			
Top rollers	2 x 2			

Service refill capacities

Fuel tank	l	gal	320	85
Hydraulic system, total	l	gal	290	77
Hydraulic tank	l	gal	140	37
DEF tank	l	gal	27	7
Engine oil	l	gal	25	7
Engine coolant	l	gal	35	9
Swing reduction unit	l	gal	6	2
Travel reduction unit	l	gal	2 x 5.8	2 x 2

Hydraulic system

The hydraulics system, combined with the fully electronic control system and advanced ECO mode, has been optimized to work in harmony with engine to match the engine power, reduce power loss and improve controllability and response time.

The following important functions are included in the system:

Summation system: Combines the flow of both hydraulic pumps to ensure quick cycle times and high productivity.

Arm priority: Gives priority to the arm operation for faster cycle times in leveling and for increased bucket filling when digging.

Swing priority: Gives priority to swing functions for faster simultaneous operations.

Regeneration system: Prevents cavitation and provides flow to other movements during simultaneous operations for maximum productivity.

Power boost: All digging and lifting forces are increased.

Holding valves: Boom and arm holding valves prevent the digging equipment from creeping.

Main pump

Type	2 x variable displacement axial piston pumps			
Maximum flow	l/min	gpm	2 x 207	2 x 55

Pilot pump

Type	Gear pump			
Maximum flow	l/min	gpm	1 x 18	1 x 5

Relief valve setting

Implement	Mpa	psi	34.3 / 36.3	4,980 / 5,260
Travel circuit	Mpa	psi	34.3	4,980
Slew circuit	Mpa	psi	27.9	4,050
Pilot circuit	Mpa	psi	3.9	570

Travel: Variable displacement axial piston motor with mechanical brake

Slew: Fixed displacement axial piston motor with mechanical brake

Hydraulic cylinders

Mono boom	2			
Bore x Stroke	ø x mm	ø x in	125 x 1 235	4.9 x 48.6
2 piece boom	1			
Bore x Stroke	ø x mm	ø x in	160 x 1 070	6.3 x 42.1
Arm	1			
Bore x Stroke	ø x mm	ø x in	135 x 1 540	5.3 x 60.6
Bucket	1			
Bore x Stroke	ø x mm	ø x in	120 x 1 065	4.7 x 41.9
Bucket for LR boom	1			
Bore x Stroke	ø x mm	ø x in	100 x 865	3.9 x 34.1

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 14 vents.

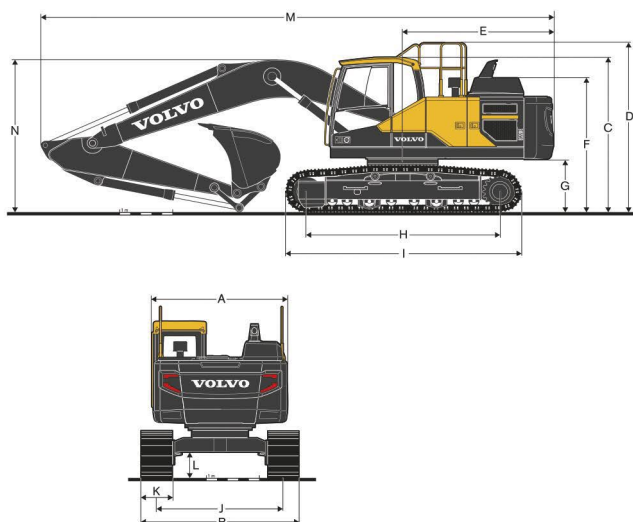
Ergonomic operator's seat: The adjustable seat and joystick console move independently to accommodate the operator. The seat has nine different adjustments plus a seat belt for the operator's comfort and safety.

Sound Level

Sound level in cab according to ISO 6396		
LpA (standard)	dB(A)	69
LpA (tropical)	dB(A)	70
External sound level according to ISO 6395, EU Noise Directive (2000/14/EC)		
LwA (standard)	dB(A)	102
LwA (tropical)	dB(A)	103

Specifications.

DIMENSIONS



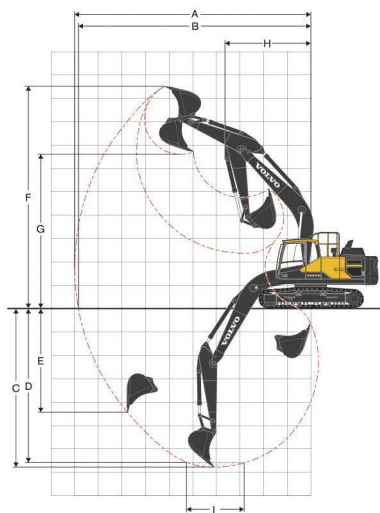
Description	Unit		EC220EL
Boom	m, ft in		5.7 (18' 8") mono and 5.57 (18' 3") 2-piece
Arm	m	ft in	2.9
A. Overall width of upper structure	mm	ft in	2 540
B. Overall width	mm	ft in	3 090
C. Overall height of cab	mm	ft in	2 955
D. Overall height of guard rail	mm	ft in	3 270
E. Tail swing radius	mm	ft in	2 850
F. Overall height of engine hood	mm	ft in	2 600
G. Counterweight clearance *	mm	ft in	1 025
H. Tumbler length	mm	ft in	3 660
I. Track length	mm	ft in	4 460
J. Track gauge	mm	ft in	2 390
K. Shoe width	mm	ft in	700
L. Min. ground clearance *	mm	ft in	460
M. Overall length	mm	ft in	9 690
M'. Overall length	mm	ft in	9 570
N. Overall height of boom	mm	ft in	2 940
N'. Overall height of boom	mm	ft in	2 960

Specifications.

MACHINE WEIGHTS AND GROUND PRESSURE

Description	Shoe width		Operating weight		Ground pressure		Overall width	
	mm	ft in	kg	lb	kPa	psi	mm	ft in
	EC220EL 5.7 m (18' 8") boom, 2.9 m (9' 6") arm, 820 kg / 0.92 t (1,810 lb) bucket, 4 200 kg (9,260 lb) counterweight							
Triple grouser	700	28	22 160	48,860	39.2	5.7	3 090	10' 2"

WORKING RANGES



Description	Unit	EC220EL	
Boom	m ft in	5.7 (18' 8") mono	
Arm	m ft in	2.9	9' 6"
A. Max. digging reach	mm ft in	9 930	32' 7"
B. Max. digging reach on ground	mm ft in	9 770	32' 1"
C. Max. digging depth	mm ft in	6 730	22' 1"
D. Max. digging depth (2.44 m / 8' level)	mm ft in	6 540	21' 5"
E. Max. vertical wall digging depth	mm ft in	6 090	20' 0"
F. Max. cutting height	mm ft in	9 460	31' 0"
G. Max. dumping height	mm ft in	6 650	21' 10"
H. Min. front swing radius	mm ft in	3 640	11' 11"

Specifications.

LIFTING CAPACITY EC220EL

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 hook related to ground level		1.5 m (5')				3.0 m (10')				4.5 m (15')				6.0 m (20')			
			Along UC		Across UC		Along UC		Across UC		Along UC		Across UC		Along UC		Across UC	
	m	in	t	lb	t	lb	t	lb	t	lb	t	lb	t	lb	t	lb	t	lb
Boom: 5.7 m (18' 8")	7.5	25	-	-	-	-	-	-	-	-	-	-	-	-	*5.2	-	*5.2	-
Arm: 2.9 m (9' 6")	6.0	20	-	-	-	-	-	-	-	-	-	-	-	-	*5.1	*11,170	*5.1	*11,170
Shoe: 800 mm (32")	4.5	15	-	-	-	-	-	-	-	-	-	-	-	-	*5.7	*12,330	*5.7	12,310
CWT: 4,200 kg (9,260 lb)	3.0	10	-	-	-	-	-	-	-	-	*8.4	*18,180	8.3	17,980	*6.6	*14,300	5.5	11,780
	1.5	5	-	-	-	-	-	-	-	-	*10.4	*22,370	7.8	16,830	*7.6	*16,400	5.2	11,240
	0.0	0	-	-	-	-	*5.4	*12,560	*5.4	*12,560	*11.4	*24,740	7.5	16,210	8.0	17,270	5.0	10,860
	-1.5	-5	*6.3	*14,060	*6.3	*14,060	*10.3	*23,490	*10.3	*23,490	*11.6	*25,120	7.4	16,030	7.9	17,090	5.0	10,700
	-3.0	-10	*11.4	*25,580	*11.4	*25,580	*15.7	*33,940	14.6	31,310	*10.9	*23,640	7.5	16,180	8.0	17,190	5.0	10,790
	-4.5	-15	-	-	-	-	*12.7	*27,330	*12.7	*27,330	*9.1	*19,310	7.7	16,680	-	-	-	-

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 EQUIPMENT

Engine

Turbocharged, 4 stroke diesel engine with water cooling, direct injection and charged air cooler that meets Tier 4f EU (Stage IV) requirements
Air filter with indicator
Air intake heater
Cyclone pre-cleaner
Electric engine shut-off
Fuel filter and water separator
Alternator, 80 A
High capacity cooling system (50° C, 122° F)

Electric/Electronic control system

Contronics
Advanced mode control system
Self-diagnostic system
Satellite Caretrack and 6 yr-Caretrack subscription
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
High-capacity halogen or LED lights:
Frame-mounted 2
Boom-mounted 1
Travel alarm
Batteries, 2 x 12 V / 140 Ah
Start motor, 24 V / 5.5 kW

Hydraulic system

Boom float function without HRV
Automatic sensing hydraulic system
Summation system
Arm priority
Swing priority
Pilot control pattern change
ECO mode fuel saving technology
Boom, arm and bucket regeneration valves
Swing anti-rebound valves
Boom and arm holding valves
Multi-stage filtering system
Boom cylinders (x2)
Cylinder cushioning
Cylinder contamination seals
Auxiliary hydraulic valve
Automatic two-speed travel motors
Hydraulic oil, longlife oil 46

Frame

Access way with handrail
Tool storage area
Punched metal anti-slip plates
Undercover (heavy-duty)
Full height counterweight:
4 200 kg (9,260 lb) - Long Crawler (L)
5 000 kg (11,030 lb) - Long Reach (LR)

Cab and interior

ROPS (ISO12117-2) certified cab
Silicon oil and rubber mounts with spring
Opening top hatch
Control lock out lever
Travel pedals and hand levers
Adjustable operator seat with heater and joystick control console
Control joysticks with 4 switches each
Straight travel pedal
Heater & air-conditioner, automatic
Flexible antenna
Radio with MP3 and USB Jack with bluetooth
Cab, all-weather sound suppressed, includes:
Cup holders
Door locks
Tinted glass
Floor mat
Horn
Large storage area
Pull-up type front window
Removable lower windshield
Seat belt
Safety glass
Sun screens, front, roof, rear
Windshield wiper with intermittent feature
Rear view camera
Master key

Undercarriage

Undercover
Hydraulic track adjusters
Greased and sealed track link
Track Guard

Digging equipment

Boom: monoblock 5.7 m (18' 8"), Long Reach 8.85 m (29' 0")
Arm: 2.9 m (9' 6"), Long Reach 6.25 m (20' 6")
Manual centralized lubrication
Linkage without lifting eye