



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.

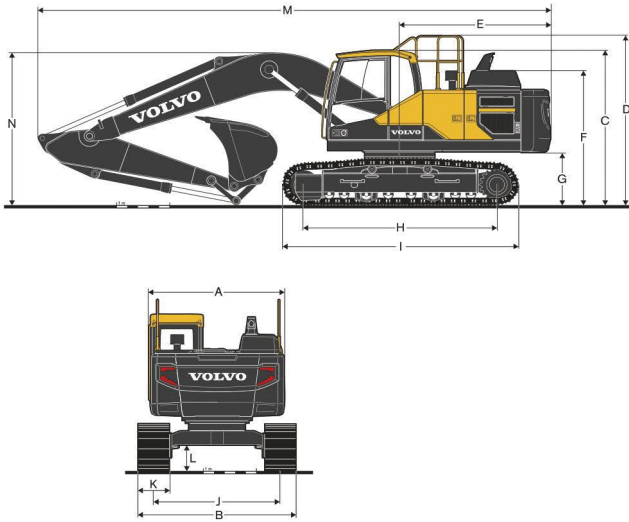
**Ergonomic operator's seat:** The adjustable seat and joystick console move independently to accommodate the operator. The seat has nine different adjustments plus a seat belt for the operator's comfort and safety.

## 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
<b>Boom</b>	<b>m, ft in</b>		<b>5.7 (18' 8") mono and 5.57 (18' 3") 2-piece</b>
<b>Arm</b>	<b>m</b>	<b>ft in</b>	<b>2.9</b>
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 <sup>1</sup> . Overall length	mm	ft in	9 570
N. Overall height of boom	mm	ft in	2 940
N <sup>1</sup> . Overall height of boom	mm	ft in	2 960

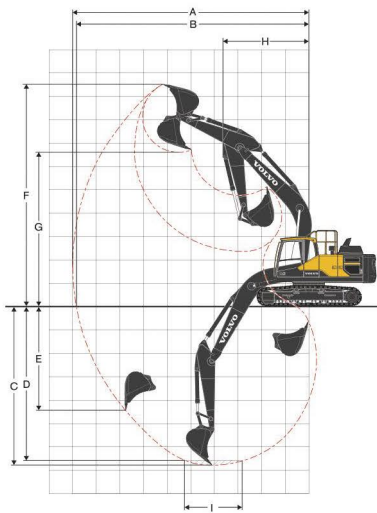


# Specifications.

## MACHINE WEIGHTS AND GROUND PRESSURE

Description	Shoe width		Operating weight		Ground pressure		Overall width	
	mm	ft in	kg	lb	kPa	psi	mm	ft in
	<b>EC220EL</b>							
	<b>5.7 m (18' 8") boom, 2.9 m (9' 6") arm, 820 kg / 0.92 l (1,810 lb) bucket, 4 200 kg (9,260 lb) counterweight</b>							
Triple grouser	700	28	22 160	48,860	39.2	5.7	3 090	10' 2"

## WORKING RANGES



Description	Unit	EC220EL	
<b>Boom</b>	<b>m ft in</b>	<b>5.7 (18' 8") mono</b>	
<b>Arm</b>	<b>m ft in</b>	<b>2.9</b>	<b>9' 6"</b>
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