

FSA

Volvo Construction Equipment



John Edwards  
Governmental Sales Manager  
850-685-7055  
[jedwards@cowin.com](mailto:jedwards@cowin.com)

# EC160E

VOLVO EXCAVATORS 16.5-20.7 t / 36,266-45,592 lb 148 hp



# Volvo EC160E in detail.

## Engine

The latest generation of Volvo Tier 4 Final diesel engines 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. The 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		D4J	
Max power at	r/min		2,000	
Net, ISO 9249/SAE J1349	kW	hp	109	146
Gross, ISO 14396/SAE J1995	kW	hp	110	148
Max power	Nm	lbf ft	609	449
at engine speed	r/min		1,600	
No. of cylinders			4	
Displacement	l	in <sup>3</sup>	4.04	247
Bore	mm	in	101	3.98
Stroke	mm	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		2 x 12	
Battery capacity	Ah		100	
Alternator	V / Ah		28 / 80	

## Service refill capacities

Fuel tank	l	gal	250	66
Hydraulic system, total	l	gal	255	67
Hydraulic tank	l	gal	110	29
DEF tank	l	gal	20	5
Engine oil	l	gal	16	4
Engine coolant	l	gal	27	7
Swing reduction unit	l	gal	2.6	0.7
Travel reduction unit	l	gal	2 x 5.8	2 x 2

## 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		12.5	
Max. slew torque	kNm	lbf ft	51.7	38,130

## 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	152	34,180
Max. travel speed	km/h	mph	3.1 / 5.6	1.9 / 3.5
Gradeability	°		35	

## Undercarriage

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

Track shoe			2 x 44	
Link pitch	mm	in	190	7.5
			500	20
			600	24
Shoe width, triple grouser	mm	in	700	28
			800	32
			900	36

Bottom rollers			2 x 7	
Top rollers			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 152	2 x 40
--------------	-------	-----	---------	--------

### Pilot pump

Type	Gear pump			
------	-----------	--	--	--

Maximum flow	l/min	gpm	1 x 20	1 x 5
--------------	-------	-----	--------	-------

### Relief valve setting

Implement				
Standard	MPa	psi	34.3	4,980
Power Boost	MPa	psi	36.3	5,260
Travel circuit	MPa	psi	34.3	4,980
Slew circuit	MPa	psi	26.5	3,840
Pilot circuit	MPa	psi	3.9	570

## Hydraulic motors

**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	115 x 1 165
	ø x in	4.5 x 45.9
Arm		1
Bore x Stroke	ø x mm	120 x 1 345
	ø x in	4.7 x 53.0
Bucket		1
Bore x Stroke	ø x mm	105 x 1 000
	ø x in	4.1 x 39.4
Dozer blade		2
Bore x Stroke	ø x mm	140 x 320
	ø x in	5.5 x 12.6

## 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 a 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

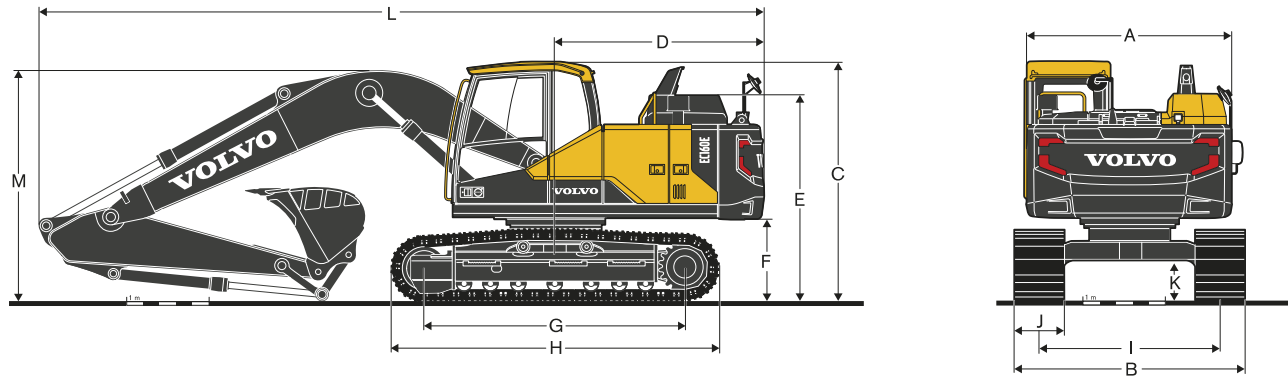
LpA (standard)	dB(A)	69
LpA (tropical)	dB(A)	70

External sound level according to ISO 6395, EU Noise Directive (2000/14/EC)

LwA (standard)	dB(A)	101
LwA (tropical)	dB(A)	102

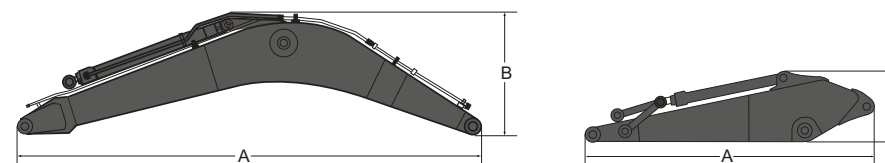
# Specifications.

## DIMENSIONS



Description		Unit		EC160EL					
Mono boom		m, ft in		5.2, 17' 1"					
Arm		m	ft in	2.3	7' 7"	2.6	8' 6"	3.0	9' 10"
A	Overall width of upper structure	mm	ft in	2 490	8' 2"	2 490	8' 2"	2 490	8' 2"
B	Overall width	mm	ft in	2 590	8' 6"	2 590	8' 6"	2 590	8' 6"
C	Overall height of cab	mm	ft in	2 900	9' 6"	2 900	9' 6"	2 900	9' 6"
D	Tail swing radius	mm	ft in	2 550	8' 4"	2 550	8' 4"	2 550	8' 4"
E	Overall height of engine hood	mm	ft in	2 510	8' 3"	2 510	8' 3"	2 510	8' 3"
F	Counterweight clearance*	mm	ft in	1 010	3' 4"	1 010	3' 4"	1 010	3' 4"
G	Tumbler length	mm	ft in	3 180	10' 5"	3 180	10' 5"	3 180	10' 5"
H	Track length	mm	ft in	3 980	13' 1"	3 980	13' 1"	3 980	13' 1"
I	Track gauge	mm	ft in	1 990	6' 6"	1 990	6' 6"	1 990	6' 6"
J	Shoe width	mm	ft in	600	2' 0"	600	2' 0"	600	2' 0"
K	Min. ground clearance*	mm	ft in	460	1' 6"	460	1' 6"	460	1' 6"
L	Overall length	mm	ft in	8 880	29' 2"	8 770	28' 9"	8 810	28' 11"
M	Overall height of boom	mm	ft in	2 980	9' 9"	2 900	9' 6"	3 020	9' 11"

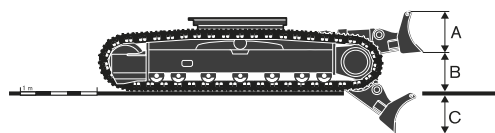
\* Without shoe grouser



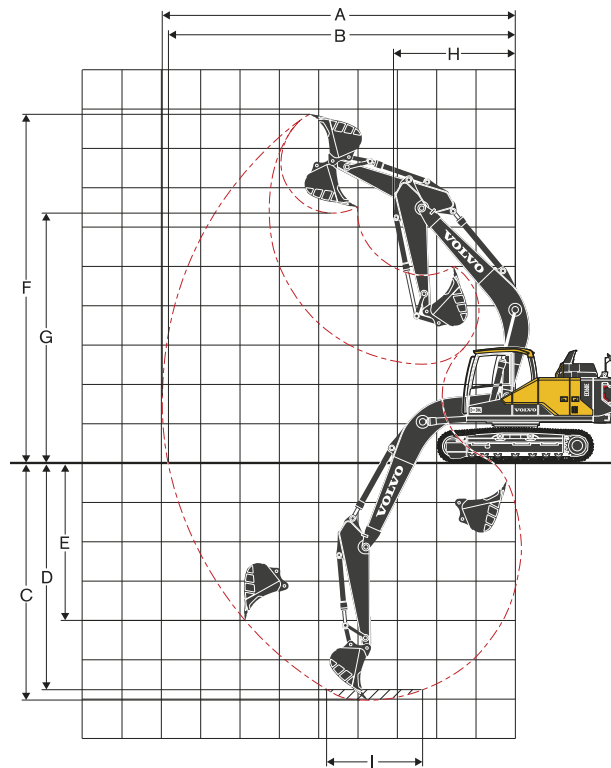
Description	Unit		mono		Description	Unit							
Boom	m	ft in	5.2	17' 1"	Arm	m	ft in	2.3	7' 7"	2.6	8' 6"	3.0	9' 10"
A Length	mm	ft in	5 400	17' 9"	A Length	mm	ft in	3 240	10' 8"	3 500	11' 6"	3 900	12' 10"
B Height	mm	ft in	1 640	5' 5"	B Height	mm	ft in	855	2' 10"	855	2' 10"	845	2' 9"
Width	mm	ft in	565	1' 10"	Width	mm	ft in	395	1' 4"	395	1' 4"	395	1' 4"
Weight	kg	lb	1 370	3,020	Weight	kg	lb	790	1,740	800	1,760	860	1,900

\* Includes cylinder, piping and pin, excludes boom cylinder pin \* Includes cylinder, linkage and pin

Front dozer blade		Unit			
A Height	mm	ft in	452	1' 6"	
Width	mm	ft in	2 590	8' 6"	
Weight	kg	lb	553	1,220	
B Lift height	mm	ft in	571	1' 10"	
C Digging depth	mm	ft in	735	2' 5"	



## WORKING RANGES



Description			Unit		EC160EL					
Boom			m, ft in		5.2, 17' 1" mono					
Arm			m ft in		2.3	7' 7"	2.6	8' 6"	3.0	9' 10"
A	Max. digging reach		mm	ft in	8 660	28' 5"	8 980	29' 6"	9 350	30' 8"
B	Max. digging reach on ground		mm	ft in	8 500	27' 11"	8 820	28' 11"	9 200	30' 2"
C	Max. digging depth		mm	ft in	5 770	18' 11"	6 070	19' 11"	6 470	21' 3"
D	Max. digging depth (2.44 m / 8' level)		mm	ft in	5 470	17' 11"	5 810	19' 1"	6 240	20' 6"
E	Max. vertical wall digging depth		mm	ft in	4 510	14' 10"	4 990	16' 4"	5 410	17' 9"
F	Max. cutting height		mm	ft in	8 560	28' 1"	8 820	28' 11"	9 030	29' 8"
G	Max. dumping height		mm	ft in	6 080	19' 11"	6 310	20' 8"	6 510	21' 4"
H	Min. front swing radius		mm	ft in	3 070	10' 1"	3 070	10' 1"	3 070	10' 1"
DIGGING FORCES WITH DIRECT FIT BUCKET										
Bucket radius			mm	ft in	1 319	4' 4"	1 319	4' 4"	1 319	4' 4"
Breakout force - bucket	Normal	SAE J1179	kN	lbf	101.5	22,810	101.5	22,810	101.5	22,820
	Power boost	SAE J1179	kN	lbf	107.3	24,110	107.3	24,120	107.3	24,130
	Normal	ISO 6015	kN	lbf	115.3	25,910	115.3	25,920	115.3	25,930
	Power boost	ISO 6015	kN	lbf	121.9	27,390	121.9	27,400	121.9	27,410
Tearout force - dipper arm	Normal	SAE J1179	kN	lbf	90.0	20,230	80.0	17,980	72.5	16,290
	Power boost	SAE J1179	kN	lbf	95.1	21,390	84.6	19,010	76.6	17,220
	Normal	ISO 6015	kN	lbf	92.2	20,730	81.7	18,370	73.8	16,600
	Power boost	ISO 6015	kN	lbf	97.5	21,910	86.4	19,420	78.1	17,550
Rotation angle, bucket			°		183		183		183	



# 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
Tropical cooling system
Alternator, 80 A

### Electric/Electronic control system

Contronics
Advanced mode control system
Self-diagnostic system
Machine status indication
Satellite Caretrack and Caretrack subscription
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
Travel alarm
High-capacity halogen lights:
Frame-mounted: 2, Boom-mounted: 1
Batteries, 2 x 12 V / 100 Ah
Start motor, 24 V / 5.5 kW

### Hydraulic system

Boom float function without HRV
Automatic sensing hydraulic system
Summation system
Boom priority
Arm priority
Swing priority
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
Pilot control pattern change
Hydraulic oil, ISO oil 46

### Frame

Access way with handrail
Tool storage area
Punched metal anti-slip plates
Heavy duty lower cover plates
3 200 kg, 7,060 lb counterweight

### Cab and interior

ROPS (ISO12117-2) certified cab with openable roof hatch
Silicon oil and rubber mounts with spring
Control lock out lever
Travel pedals and hand levers
Straight travel pedal
Adjustable operator seat with heater
Control joysticks with 4 switches each
Heater & air-conditioner, automatic with pressurized cab
Flexible antenna
Radio with AUX, USB Jack and 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

Heavy Duty belly cover plates
Hydraulic track adjusters
Greased and sealed track link
Track Guard

### Digging equipment

5.2 m / 17' 1" mono boom
2.6 m / 8' 6" arm
Reinforced linkage
Manual centralized lubrication

## OPTIONAL EQUIPMENT

### Engine

Block heater: 120 V
Diesel coolant heater, 5 kW
Water separator with heater
Auto engine shutdown
Standard cooling system
Fuel filler pump: 35 l/min / 9 gpm

### Electric

High-capacity LED lights:
Frame-mounted: 2, Boom-mounted: 1
Extra work lights (Halogen or LED):
Boom-mounted 1
Cab-mounted 3
Counterweight-mounted 1
Anti-theft system
Rotating warning beacon

## OPTIONAL EQUIPMENT

### Hydraulic system

Boom hose rupture valve with overload warning device

Arm hose rupture valve

Boom float function with HRV

Hydraulic piping:

Work tool management system (up to 20 programmable memorized settings)

Breaker & shear, 1 or 2 pump flow

Slope & rotator (40 lpm, 11 gpm or 60 lpm, 16 gpm)

Extra for slope & rotator

Grapple

Oil leak (drain) line

Quick coupler

Additional return filter

Breaker & shear pressure pre-setting

Volvo hydraulic quick coupler S1, S6

Volvo hydraulic quick coupler VQC-HU, DR16

Hydraulic oil, biodegradable 46

Hydraulic oil, longlife oil 32, 68

### Cab and interior

ROPS (ISO12117-2) certified cab with fixed hatch

Fabric seat without heater

Fabric seat with heater and air suspension

Control joysticks with semi-long

Control joysticks with 3 switch & 1 proportional

Cab-mounted falling object guard (FOG)

Cab-mounted falling object protective structure (FOPS)

Anti-vandalism kit

Safety net for front window

Side view camera

Smoker kit (ashtray and lighter)

Sunlight protection, roof (steel)

Lower wiper with intermittent control

Rain shield

Specific key

### Undercarriage

Dozer blade

500 mm, 20"/600 mm, 24"/700 mm, 28"/800 mm, 32"/900 mm, 36" shoe with triple grousers

### Digging equipment

2.3 m/7' 7" , 3.0 m/9' 10" arm

Linkage with lifting eye

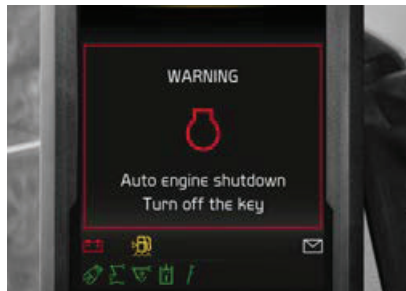
### Service

Tool kit, daily maintenance

Tool kit, full scale

## Selection of Volvo optional equipment

### Auto engine shutdown



### Two-piece boom



### Diesel coolant heater



### LED lights



### Fuel filler pump



### Falling Objects Guard (FOG)



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.

**VOLVO**

**Volvo Construction Equipment**

[www.volvoce.com](http://www.volvoce.com)