

Volvo Construction Equipment
Building Tomorrow



ECR40D

Volvo Excavators 3.9 t / 8,550 lb 24.8 hp



Courtesy of Machine.Market

Short swing, big power

The ECR40D short swing radius machine is designed to work with power and precision in tight spaces, improving safety and performance in all applications. Featuring a comfortable cab, excellent hydraulics, easy-to-use controls and outstanding serviceability, you will achieve a lot with this small machine.

Optimized efficiency

For lower costs, increased productivity and maximum uptime a number of efficient features combine on the ECR40D. ECO mode allows you to choose the right machine setting for the job at hand for impressive fuel efficiency. Robust design and quality digging equipment delivers durability and long term machine value. Auto idle and auto engine shut down reduce noise disturbance, fuel consumption, maintenance costs and slow down depreciation of your machine.



Superior serviceability

The ECR40D is built to ensure servicing is safe, quick and easy, featuring easy service access with wide-opening hoods, centralized lubrication and ground-level greasing points. The patented multifunction transparent hydraulic filter and extended greasing intervals of 50 hours, enhance machine availability and uptime.



Easy to use

The machine's state-of-the-art hydraulic system is perfectly matched to the Volvo engine delivering high performance, fast response times and smooth operation. The ergonomic, comfortable controls are easy to understand and make it simple to switch between operators. Responsive fingertip controls enhance ease of operation, reduce fatigue and improve fluency.



Short swing radius

This compact excavator is designed and built to work in tight spaces and can be used on more jobsites while reducing risk of damage to the machine and its surroundings. Short swing radius design and boom cylinder position on the left make the ECR40D the number one choice for working in confined areas. Slew and offset movements are controlled simultaneously for easy and fast positioning of the machine.





OPERATOR ENVIRONMENT

Operate in a best-in-class cab for superior operator comfort and less fatigue. The ECR40D is equipped with a spacious operator environment offering excellent all-around visibility and an adjustable suspended seat and console. Most machine functions and settings can be quickly be accessed through keypad and monitor for maximum control of your machine.



BUILT READY

Get the most out of your machine. The ECR40D is a perfect match with Volvo attachments allowing you to change hydraulic settings directly and easily from the keypad. For increased versatility and uptime, Volvo has a durable range of attachments so you can access more applications and effectively perform a variety of jobs.

More than a machine

Tailored to your business and operations, choose from a wide range of Volvo attachments and Customer Solutions to improve your performance, productivity and versatility. Volvo offers a complete range of robust attachments for all working conditions and can offer a long-term partnership, protect your revenue and provide a full range of services using Genuine Volvo parts, delivered by passionate people.

Quick Couplers

The mechanical and hydraulic universal quick coupler allow attachments to be changed quickly and efficiently. The hydraulic quick coupler's design allows it to be used for matched Volvo attachments as well as a broad range of offerings from different brands.



Advanced attachment solutions

The machine is compatible with a range of hydraulic attachments, including thumb, breaker and tiltable ditching bucket for more advanced and specialist applications. Available from the factory or aftermarket, do not hesitate to contact your local Volvo dealer and benefit from leading expertise and advanced attachment solutions.



Dealer support

For less downtime and expert care, Volvo proactively respond to your requirements faster and fully support your service and maintenance needs through its local workshops and on-site service vans. Your attentive Volvo dealer offers professional expertise and preventative maintenance solutions to keep you working and ensure more uptime.



Genuine Volvo Parts

Our attention to detail is what makes us stand out and our leading parts availability ensures maximum uptime of your machine. For a long life, parts are extensively tested and approved because every part is vital for machine longevity and uptime.



Short swing, big power

Automatic travel speed

Automatic two speed travel allows the operator to continually drive the machine at high speed. Speed is automatically reduced when traction is needed.

ECO mode

By simply pressing a button, the unique Volvo ECO mode reduces fuel consumption by up to 10%.

BUILT READY

Volvo's durable attachments have been purpose-built to deliver maximum productivity and long service life in combination with Volvo machines.

50 hour greasing interval

The greasing interval is 50 hours – therefore there is no need to re-grease between jobs.

In-track boom swing

The swing post and cylinder stay within the tracks when in an offset position, avoiding the risk of damage to your machine when working alongside obstacles.



Automatic engine shutdown

This function automatically turns the engine off to reduce fuel consumption and cut engine operating hours when the machine is inactive for a pre-set amount of time.

OPERATOR ENVIRONMENT

The industry-leading, spacious Volvo FOPS1 on top, TOPS and ROPS cab boasts all around visibility, ergonomically positioned controls and excellent vibration and noise insulation.

Suspended seat and console

The multi-adjustable seat and console are mounted on the same suspension and therefore move together – providing excellent shock and vibration absorption.

Patented hydraulic filter

Filtration occurs when the tank is filled or topped up and before the oil returns via the drain lines. The transparent bowl enables easy oil level and contamination checks.

Service access

The side position of the engine together with two, wide-opening hoods ensures safe and easy access to all components and service check points from ground level.

Short swing radius

Short front and rear radius ensures safe and easy operation within a confined space.

Customer Solutions

Volvo provides the right solutions throughout the entire life cycle of your machine to lower total cost of ownership.



Volvo ECR40D in detail

Engine		
Engine		Volvo D1.7A
Max. power at	r/min (r/s)	2,200 (36.7)
Gross	kW (hp)	18.5 (24.8)
According to ISO 2534 / SAE J1995		
Max. torque	Nm (ft lbf)	97 (71.8)
at engine speed	r/min	1,600
No. of cylinders		3
Displacement	cm ³ (in ³)	1,647 (100.5)
Bore	mm (in)	87 (3.4)
Stroke	mm (in)	92.4 (3.6)
Compression ratio		20.5

Electrical system		
Voltage	V	12
Battery	V	1 x 12
Battery capacity	Ah	74
Alternator	V/Ah	12/60

Swing system		
Max, slew speed	r/min	9
Max, slew torque	daNm (ft lbf)	710 (5,235)

Undercarriage		
Rubber track width	mm (in)	300 (11.8)
Steel track width	mm (in)	300 (11.8)
Bottom/top rollers per side		4/1
Track tension	by grease piston	
Blade (width x height)	mm (in)	1 780 x 368 (70.1 x 14.5)

Digging Performances		
Standard bucket width (blade, W/O side cutter)	mm (in)	600 (23.6)
Standard bucket mass	kg (lb)	90 (198)
Standard bucket rated capacity	l (ft ³)	114 (4)
Bucket rotation	°	199
Bucket breakout force (ISO)	daN (lbf)	3,289 (7,394)
Short arm tearout force (ISO)	daN (lbf)	2,371 (5,330)
With short arm	mm (ft.in)	1,400 (4'7")
Long arm tearout force (ISO)	daN (lbf)	2,060 (4,631)
With long arm	mm (ft.in)	1,700 (5'7")

Weight and Ground Pressure		
Operating weight according to ISO 6016	kg (lb)	3,880 (8,554)
Ground pressure (cab)	kPa (psi)	36 (5.2)
Ground pressure (canopy)	kPa (psi)	34.8 (5)
Transport weight	kg (lb)	3,805 (8,389)
With heated cab		
With direct-fit bucket		
With rubber tracks	mm (in)	300 (11.8)
With short arm	mm (in)	1,400 (55.1)
With fuel tank capacity	%	100
With thumb	+kg (+lb)	64 (141)
With canopy	-kg (-lb)	135 (298)
With extra counterweight	+kg (+lb)	80 (176)
With long arm and additional counterweight	+kg (+lb)	95 (210)
With steel tracks	+kg (+lb)	130 (287)
Steel tracks	mm (in)	300 (12)

Hydraulic system		
Pump type	Variable displacement piston pump	
Maximum system flow	l/min (gal/min)	103 (27.2)
Maximum flow for accessories	l/min (gal/min)	65 (17.2)
Maximum pressure for accessories	MPa (psi)	22 (3,191)
Maximum flow for 2nd accessory circuit (option)	l/min (gal/min)	23 (6.1)
Maximum operating pressure	MPa (psi)	24 (3,481)

Travel System		
Max, drawbar pull	daN (lbf)	3,100 (6,969)
Max. travel speed low	km/h (mi/h)	2.7 (1.7)
Max. travel speed high	km/h (mi/h)	4.5 (2.8)
Gradeability	°	20

Service Refill		
Fuel tank	l (gal)	64 (16.9)
Hydraulic system, total	l (gal)	62 (16.3)
Hydraulic tank	l (gal)	32 (8.5)
Engine oil	l (gal)	7 (1.8)
Engine coolant	l (gal)	7 (1.8)
Travel reduction unit	l (gal)	2 x 0.7 (2 x 0.185)

Sound Level		
Interior sound level according to ISO 6396		
L _{pA}	dB	78
External sound level according to ISO 6395 and EU Noise Directive (2000/14/EC) and 474-1:2006 +A1:2009		
L _{WA}	dB	94

LIFTING CAPACITY ECR40D

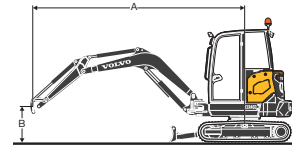
These capacities are given for a machine equipped with a cabin, 300 mm (1'0") rubber tracks and without a bucket or quick-coupler.

The below values are in compliance with ISO standard 10567. They do not exceed 75% of the tipping load or 87% of the hydraulic limit with the machine on firm level ground.

Loads marked with an asterisk (*) are limited by machine's hydraulic lifting capacity rather than tipping load.

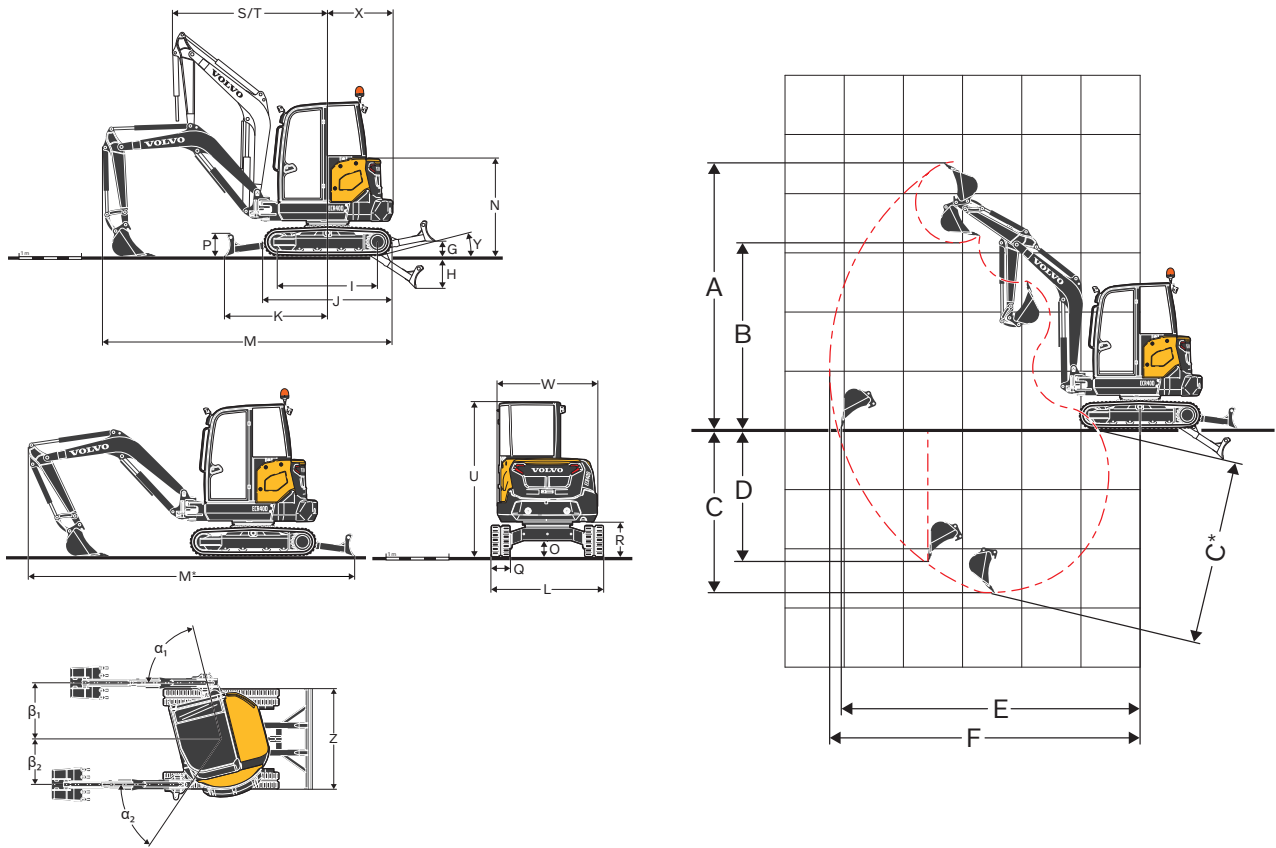
Caution: In accordance with standard EN 474-5, the machine must be equipped to carry out handling operations.

It is the operator's obligation to know and follow the applicable national and local safety regulations.



	Lifting point height (B) m (ft)	Lifting point radius (A)									
		2.0 m (6.5 ft)		3.0 m (9.8 ft)		4.0 m (13.1 ft)		Max. reach		Max.	
Arm: 1400 mm (4'7") + Dozer blade up	3 (9.8)	kg (lb)					609 (1,343)	579 (1,276)	544 (1,199)	517 (1,140)	4.27 (14.0)
	2 (6.6)	kg (lb)		932 (2,055)	878 (1,936)	595 (1,312)	564 (1,243)	457 (1,008)	434 (957)	4.71 (15.5)	
	1 (3.3)	kg (lb)		864 (1,905)	812 (1,790)	569 (1,254)	539 (1,188)	428 (944)	407 (897)	4.84 (15.9)	
	0 (0)	kg (lb)		825 (1,819)	774 (1,706)	549 (1,210)	520 (1,146)	439 (968)	417 (919)	4.69 (15.4)	
	-1 (-3.3)	kg (lb)	1,590 (3,505)	1,457 (3,212)	820 (1,808)	769 (1,695)	545 (1,202)	516 (1,138)	506 (1,116)	479 (1,056)	4.24 (13.9)
-2 (-6.6)	kg (lb)	1,630 (3,594)	1,495 (3,296)	842 (1,856)	791 (1,744)			745 (1,642)	702 (1,548)	3.27 (10.7)	
Arm: 1700 mm (5'7") + Additional counterweight + Dozer blade up	3 (9.8)	kg (lb)					617* (1,360*)	616 (1,358)	513 (1,131)	487 (1,074)	4.60 (15.1)
	2 (6.6)	kg (lb)					629 (1,387)	596 (1,314)	439 (968)	417 (919)	5.00 (16.4)
	1 (3.3)	kg (lb)		909 (2,004)	854 (1,883)	597 (1,316)	565 (1,246)	413 (911)	392 (864)	5.12 (16.8)	
	0 (0)	kg (lb)	1,122* (2,474*)	1,122* (2,474*)	856 (1,887)	802 (1,768)	571 (1,259)	539 (1,188)	420 (926)	398 (877)	4.99 (16.4)
	-1 (-3.3)	kg (lb)	1,624 (3,580)	1,486 (3,276)	841 (1,854)	788 (1,737)	561 (1,237)	529 (1,166)	471 (1,038)	446 (983)	4.57 (15.0)
-2 (-6.6)	kg (lb)	1,657 (3,653)	1,517 (3,344)	855 (1,885)	802 (1,768)			631 (1,391)	596 (1,314)	3.73 (12.2)	
Arm: 1400 mm (4'7") Dozer blade down	3 (9.8)	kg (lb)					740* (1,631*)	579 (1,276)	786* (1,733*)	517 (1,140)	4.27 (14.0)
	2 (6.6)	kg (lb)		957* (2,110*)	878 (1,936)	839* (1,850*)	564 (1,243)	837* (1,845*)	434 (957)	4.71 (15.5)	
	1 (3.3)	kg (lb)		1,542* (3,400*)	812 (1,790)	1,039* (2,291*)	539 (1,188)	901* (1,986*)	407 (897)	4.84 (15.9)	
	0 (0)	kg (lb)		1,884* (4,154*)	774 (1,706)	1,201* (2,648*)	520 (1,146)	982* (2,165*)	417 (919)	4.69 (15.4)	
	-1 (-3.3)	kg (lb)	2,539* (5,598*)	1,457 (3,212)	1,885* (4,156*)	769 (1,695)	1,205* (2,657*)	516 (1,138)	1,088* (2,399*)	479 (1,056)	4.24 (13.9)
-2 (-6.6)	kg (lb)	2,757* (6,078*)	1,495 (3,296)	1,465* (3,230*)	791 (1,744)			1,240* (2,734*)	702 (1,548)	3.27 (10.7)	
Arm: 1700 mm (5'7") + Additional counterweight + Dozer blade down	3 (9.8)	kg (lb)					617* (1,360*)	616 (1,358)	713* (1,572*)	487 (1,074)	4.60 (15.1)
	2 (6.6)	kg (lb)					733* (1,616*)	596 (1,314)	761* (1,678*)	417 (919)	5.00 (16.4)
	1 (3.3)	kg (lb)		1,351* (2,978*)	854 (1,883)	950* (2,094*)	565 (1,246)	819* (1,806*)	392 (864)	5.12 (16.8)	
	0 (0)	kg (lb)	1,122* (2,474*)	1,122* (2,474*)	1,790* (3,946*)	802 (1,768)	1,145* (2,524*)	539 (1,188)	891* (1,964*)	398 (877)	4.99 (16.4)
	-1 (-3.3)	kg (lb)	2,192* (4,833*)	1,486 (3,276)	1,892* (4,171*)	788 (1,737)	1,214* (2,676*)	529 (1,166)	987* (2,176*)	446 (983)	4.57 (15.0)
-2 (-6.6)	kg (lb)	3,181* (7,013*)	1,517 (3,344)	1,643* (3,622*)	802 (1,768)			1,121* (2,471*)	596 (1,314)	3.73 (12.2)	

Specifications



DIMENSIONS

Description	Unit	ECR40D	
		1,400 (4'7")	1,700 (5'7")
Arm	mm (ft in)		
A Maximum cutting height	mm (ft in)	4,690 (15'5")	4,853 (15'11")
B Maximum dump height	mm (ft in)	3,347 (10'12")	3,514 (11'6")
C Digging depth	mm (ft in)	3,131 (10'3")	3,431 (11'3")
C* Maximum digging depth	mm (ft in)	3,481 (11'5")	3,771 (12'4")
D Maximum vertical wall digging depth	mm (ft in)	2,521 (8'3")	2,811 (9'3")
E Maximum digging reach at ground level	mm (ft in)	5,411 (17'9")	5,699 (18'8")
F Maximum digging reach	mm (ft in)	5,533 (18'2")	5,813 (19'1")
G Highest position dozer blade	mm (ft in)		370 (1'3")
H Lowest position dozer blade	mm (ft in)		525 (1'9")
I Tumbler length	mm (ft in)		1,604 (5'3")
J Track length	mm (ft in)		2,055 (6'9")
K Dozer blade, maximum reach at ground level	mm (ft in)		1,648 (5'5")
L Overall width with 300 mm (1'0") rubber tracks	mm (ft in)		1,780 (5'10")
M Overall length	mm (ft in)	4,780 (15'8")	4,640 (15'3")
M* Transport length	mm (ft in)	5,650 (18'6")	5,580 (18'4")
N Overall height of engine hood	mm (ft in)		1,573 (5'2")
O Minimum ground clearance	mm (ft in)		285 (0'11")
P Dozer blade height	mm (ft in)		368 (1'2")
Q Shoe width (rubber)	mm (ft in)		300 (0'12")
R Ground clearance to superstructure	mm (ft in)		557 (1'10")
S Front slew radius	mm (ft in)	2,459 (8'1")	2,474 (8'1")
T Front slew radius with maximum offset	mm (ft in)	1,923 (6'4")	1,936 (6'4")
U Overall height	mm (ft in)		2,481 (8'2")
W Overall width of superstructure	mm (ft in)		1,575 (5'2")
X Tail slew radius	mm (ft in)	1,035 (3'5")	1,035 (3'5")
X1 Additional counterweight overhang	mm (ft in)	0 (0'0")	(incl.)
Y Angle of approach	°		25 (0'1")
Z Dozer blade width	mm (ft in)		1,780 (5'10")
α ₁ Maximum boom swing angle to the left	°		76 (0'3")
β ₁ Maximum boom offset to the right	mm (ft in)		995 (3'3")
α ₂ Maximum boom swing angle to the right	°		56 (0'2")
β ₂ Maximum boom offset to the left	mm (ft in)		787 (2'7")

1: Option

Equipment

STANDARD EQUIPMENT
Engine
Low emission, direct injection, water-cooled, Volvo 3-cylinder diesel engine, meeting EPA Tier 4 environmental regulations.
Engine restart prevention system. Starter motor is protected against ignition when engine is already running.
Dry-type single element air filter.
Plastic fuel tank with drain plug.
Protective strainer on the fuel suction pipe inside the tank
Water separator.
Translucent fuel filter.
Drivetrain
Axial piston hydraulic motors equipped with an epicyclic reduction gears.
Automatic two speed travel
Bottom flanged rollers lubricated for life.
Grease tensioning wheel lubricated for life.
Electric / Electronic control system
Maintenance free battery.
IP67 protected electrical system and high quality connectors.
Removable battery cut-off switch.
In-cab 12V power socket.
Swing system
Radial piston hydraulic motor with direct engagement on the ball internal crown wheel (no reduction gears).
Integrated shockless valve.
Automatic multi-disc slew brake.
Centralized and remote lubrication of crown wheel & ball bearing.
Undercarriage
"X" shape, box welded fabricated frame with sloping side members.
2 Tie-down points on the dozer blade.
2 Tie-down points on the frame.
2 Integrated lifting points.
Sturdy removeable protecting covers for track motors and slew system.
400HB weld-on edge on dozer blade
Hydraulic system
Large hinged and key-locked access panel.
Variable displacement, load-sensing piston pump.
Closed centre flow-sharing main control valve.
Cushoning on cylinders:
- Boom up
- Arm out
Patented filtering and filling element.
Single layer cooling system.
Double-acting hydraulic circuit for accessories.
Hammer / shear valve.
Plastic tank with drain plug.
Canopy
FOPS level 1 on top (Falling Objects Protective Structure)
TOPS (Tip-Over Protective Structure)
ROPS (Roll-Over Protective Structure)
Cushionned operator station
Large and roomy uncluttered floor
Left hand-rail access
Seat-belt with warning indicator
Cab
FOPS on top level 1 (Falling Object Protective Structure).
TOPS (Tip-Over Protective Structure).
ROPS (Roll-Over Protective Structure).
Cushioned operator station.
Large door access.
Large and roomy uncluttered floor.
Gas-strutt assisted front window opening.
Full opening front bay with in-cab storage for the front lower window.
Front windscreen wiper and washer nozzle.
Right hand side sliding window.
Heating systems.
Multiple adjustable air vents.
Filtered air inlet.
Cab inside light.
Seat-belt with warning indicator.
Two working lights on top front of the cab.
Digging equipment
Monobloc box welded boom.
Boom cylinder rod protection.
Integrated lifting point on the boom.
Monobloc box welded arm.
Long-life steel bushings.
Hardened, pre-lubricated and corrosion resistant pins.
50 hours greasing intervals.

STANDARD EQUIPMENT
Machine controls
Finger tip control for boom offset.
Finger tip control for auxiliary circuit.
Breaker toggle switch on right joystick
Automatic locking device for pilot controls and travel levers when the left console is raised.
Engine starting safety device: the left console must be raised to operate the starter.
Pressure accumulator to lower the equipment on the ground when the engine is switched off.
High torque / automatic two speed change over button on the keypad.
High speed toggle switch on the dozer blade lever.
Large travel pedals.
Instrumentation and monitoring
Water temperature and fuel level gauges.
Warning lights for hydraulic filter and air filter restriction.
Self-acting emergency engine shutdown. Prevents failures in case of coolant overheating or too low engine oil pressure.
Several warning lights, coupled to an audible signal, in the event of malfunction (overheating, drop in oil pressure, low battery voltage...)
Official approval
Machine conforming to European directive 2006/42/EC.
Noise emissions in the environment conforming to directive 2000/14/EC.
Hand Arm Vibrations - Whole Body Vibrations compliant with directive 2002/44/EC.
Electromagnetic compatibility (EMC) conforming to European directive 2004/108/EC and its amendments.
Object handling device conforming to EN 474-1 and EN 474-5 standards.
FOPS on top level 1 conforming to ISO 10262 standard.
TOPS conforming to ISO 12117 and EN 13531 standards.
ROPS conforming to ISO 3471-1 and / SAE J1040 standards.

EQUIPMENT	Standard
• = Standard	
○ = Option	
Operator environment	
Canopy	○
Cab with heater	○
Cab with heater and air conditioning	○
Vinyl or textile seat, with mechanical suspension, low-back seat and 2" seat belt	○
Vinyl or textile seat, height adjustable, with mechanical suspension, high back and 2" or 3" retractable seat belt	○
Storage box	○
Cab roof	○
ISO / SAE control pattern change (in-cab electric switch)	•
Travel alarm	•
Radio preparation (cab)	•
Radio, AUX, USB, Bluetooth	○
Anti-theft device	○
Digital hourmeter	•
Extra hour meter (mechanical,)	○
Cupholder.	○
Machine exterior	
Right rearview mirror	•
Left rearview mirror	○
Protected worklight on the boom	○
Rear worklight	○
Rotating beacon	○
Choice of halogen or LED lights and beacon	○
Additional counterweight	○
Front canopy guard (OPG1)	○
Severe-duty guards for cab or canopy (OPG2, front and top)	○
Several level of paint customisation (RAL specifications) to match with your corporate identity	○
Digging equipment	
Short arm + thumb bracket	○
Long arm + thumb bracket + additional counterweight	○
Undercarriage equipment	
300mm (1'0") rubber tracks	•
300mm (1'0") steel tracks	○
Standard dozer blade	○
Hydraulic angle blade	○

EQUIPMENT

- = Standard
- = Option

	Standard
Hydraulic equipment	
Proportional finger tip control for boom offset	●
On / Off finger tip control for boom offset	
Proportional finger tip control for accessories	●
On / off finger tip control for accessories	
Accessory flow adjustment with 3 function oriented button and user-defined settings.	●
Secondary relief valves for auxiliaries	●
Hydraulic drain for accessories	○
Breaker and clamshell auxiliaries	○
Second accessory circuit	○
Volvo Control System	○
Flat face hydraulic quick couplings	○
Single acting circuit for quick couplers	○
Double acting circuit for quick couplers	○
Boom and arm safety lifting valves with overload indicator	○
Boom, arm and dozer blade safety lifting valves with overload indicator	○
Float blade	●
Safety valve certification	○
Mineral hydraulic oil VG46	○
Bio hydraulic oil VG46 (PANOLIN®)	○
Mineral hydraulic oil VG68	○
Mineral hydraulic oil VG32	○
Bio hydraulic oil VG32 (PANOLIN®)	○

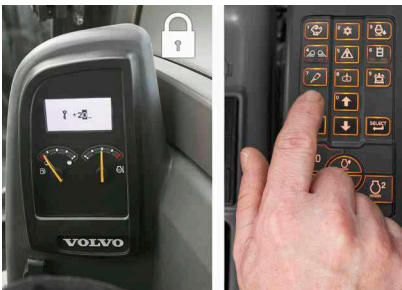
EQUIPMENT

- = Standard
- = Option

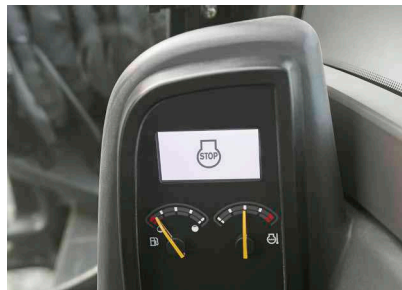
	Standard
Engine	
Manual engine control	
Digital engine control with two preset engine speed buttons (user adjustable)	●
Engine auto idling with time adjustment	○
ECO mode	●
Engine auto shut-down with time adjustment	○
Dual stage air filter	○
Service and maintenance	
In-cab air filter clogg warning lamp	●
In-cab engine overheating warning indicator	●
Tool kit	○
Electronic service reminder	●
V-CADS pro	●
Telematics	
Care Track	○
Attachments	
Volvo quick coupler mechanical (pin-on)	○
Volvo hydraulic quick coupler (pin-on)	○
Extra pin kit	○
Thumb with short clamp (for direct fit bucket)	○
Thumb with long clamp (when using quick coupler)	○
A choice of fix or tiltable buckets (300mm / 52L up to 1300mm / 150L)	○
Bolt-on side cutters	○
Hydraulic breaker	○

SELECTION OF VOLVO OPTIONAL EQUIPMENT

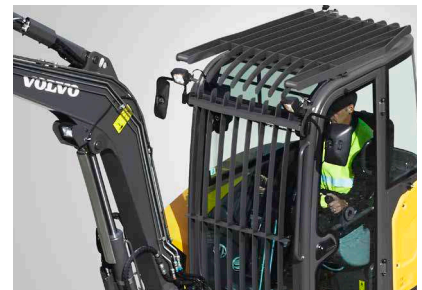
Anti theft



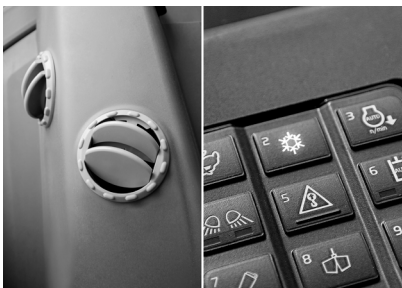
Auto engine shutdown



OPG



Air conditioning



Angle blade



Safety valves



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.

