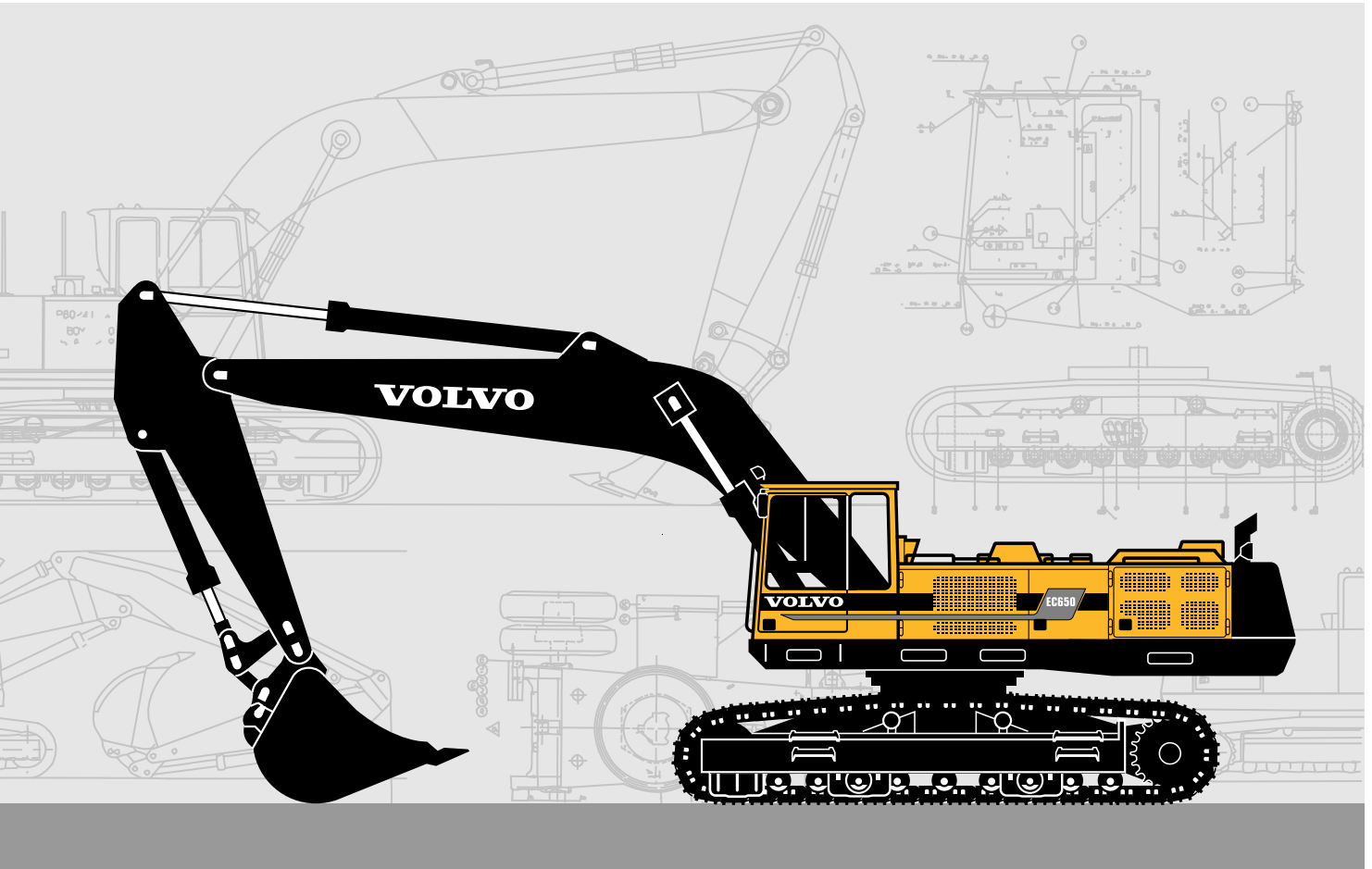


VOLVO EXCAVATOR

EC650



- **Engine Power:**
284 kW, 386 hp
- **Operating Weight:**
64,9 – 66,8 t
143,100 – 147,300 lb
- **Buckets:**
3 300 l, 4.32 yd³ BE*
4 400 l, 5.75 yd³ ME*
- Volvo low emission, turbo-charged, diesel engine with direct injection and intercooler
- Three-circuit hydraulic system
- Care cab
 - computerized control and warning system
 - ergonomic environment
 - low sound level
 - filtered air
- Heavy duty equipment with spherical steel link bearings
- Digging and breakout forces for tough conditions
- Long undercarriage for high stability
- Swing circle in oil bath
- Automatic lubrication

* BE = Backhoe Equipment
ME = Mass Excavation Equipment

VOLVO



ENGINE

The engine is a low emission*, turbocharged, 4-stroke diesel engine with water cooling, direct injection and intercooling.

Model	Volvo TD 122KIE	
Output at	30 r/s	1800 rpm
Net (ISO 9249/SAE J1349)	273 kW	371 hp
Gross (SAE J1349)	284 kW	386 hp
No. of cylinders	6	6
Displacement, total	11,98 l	731 in³
Bore	130,17 mm	5.12 in
Stroke	150 mm	5.91 in

* Complies with off-road equipment emission restrictions that was effective 1996 in California and will be 1997 in Europe.



ELECTRICAL SYSTEM

Micro processor for monitoring of engine / hydraulic system. High capacity and well protected electric system. Printed, circuit board-based electrical system with clearly arranged fuses and relays. The system is designed to accept optional equipment. Battery disconnect standard.

Voltage	24 V
Battery	2 x 12 V
Battery capacity	170 Ah
Alternator	28/55 V/A
Alternator rating	1540 W



DRIVE TRAIN

Each track is powered by an axial piston hydraulic motor. Multi-disc track brakes are spring applied and hydraulically released. Motor, brakes and planetary gears are fully enclosed in the crawler frame.

Max. tractive force	519 kN	116,680 lbf
Max. travel speed	2,8 km/h	1.7 mph
Gradeability, continuously	36,8°	(74.7 %)



SERVICE REFILL CAPACITIES

Fuel tank	770 l	203 gal
Fuel pump capacity	90 l/min	23.8 gpm
Hydraulic system, total	840 l	222 gal
Diesel engine oil	29 l	7.7 gal
Cooling system (incl. antifreeze)	72 l	19.0 gal
Swing gearbox	25 l	6.6 gal



UNDERCARRIAGE

Heavy duty box designed body with solid swing circle support.

Lifetime lubricated rollers and front idlers.

Track chain size	D9G
No. of track shoes	2 x 48
Track width – standard	800 mm 31"
optional	600 mm 24"
No. of bottom rollers	2 x 9
No. of top rollers	2 x 2



CARE CAB

The operator's cab offers a heavy-duty supporting frame structure. Large windows provide excellent 360° visibility. The upper front window slides up under the ceiling, and the lower one can be removed for ventilation. A sliding side window in the cab door provides additional crossventilation.

Heater and defroster: Air for the operator's cab is recirculated through a unique micro / macro filtration system. A 3-speed fan provides efficient heating and defrosting through 14 vents. Prepared for air conditioning.

Operator's seat: Adjustable suspension operator's seat with heating, headrest and individually adjustable armrests. Hand controls are conveniently located.

Acoustics: Approved according to 86/662/EEC.

Exterior noise (ISO 6393)	
Average value L _{WA} (sound power level)	107 dB(A)
Operators position (ISO 6394)	
with the door closed	
L _{PA} (sound pressure level)	75 dB(A)



SWING SYSTEM

The superstructure is rotated by an axial piston motor through a servo-released swing brake, into the two-step swing gear giving torque to the inner tooth race of the swing circle. The entire swing circle runs in a dust-protected oil bath.

Swing, start to stop*	
90° turn	7.0 seconds
180° turn	10.5 seconds
Swing speed	5.0 rpm

* Empty bucket and equipment extended.



HYDRAULIC SYSTEM

All-servo controlled, 3-circuit hydraulic system.

Pumps: P1 is a power and pressure-controlled pump with priority to the swing circuit. The other 4 pumps to the boom, stick, bucket and travel circuits. P2V and P3V are power and pressure-controlled. P2K and P3K have a constant flow.

Mode selector: Three working modes:

HLD = Heavy Lift Device and Power Boost

ECO = Economy

CAP = Capacity

Powerboost temporarily selectable 10 seconds even in Economy and Capacity mode. Electronically-controlled pump regulation for highest power output.

Valve system: Boom, stick and bucket are operated by dual main valves, connected in accordance with our patented priority valve system, to obtain best combination of precision maneuverability and minimized fuel consumption. Boom cylinder movement equipped with floating position to increase the digging speed. Security hose rupture valve on the boom cylinders.

Pump P1

Maximum pressure 29 MPa **4210 psi**

Maximum flow 180 l/min **47.6 gpm**

Pumps P2V and P3V

Maximum pressure 30 MPa **4350 psi**

Power boost 34 MPa **4930 psi**

Maximum flow 2x173 l/min **2x45.7 gpm**

Pumps P2K and P3K

Pressure 30 MPa **4350 psi**

Power boost 34 MPa **4930 psi**

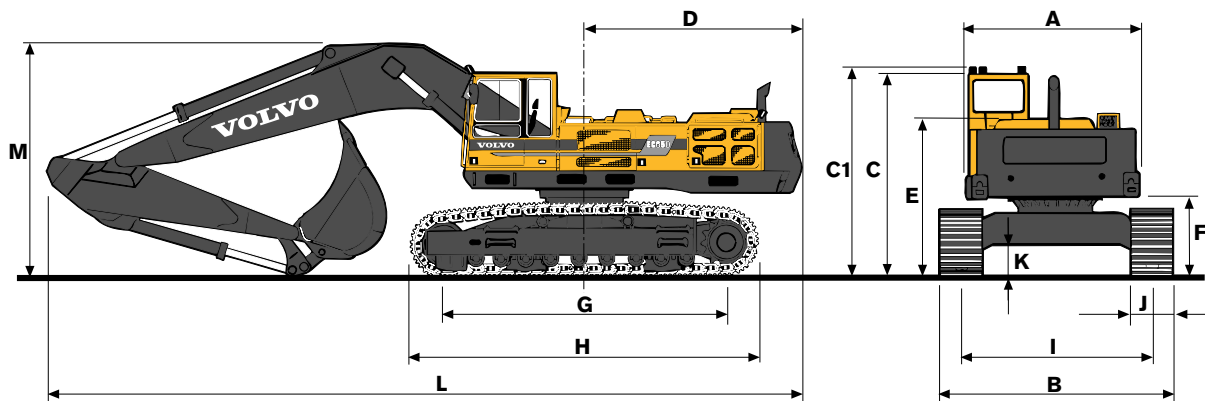
Flow 2x180 l/min **2x47.6 gpm**

Servo pump

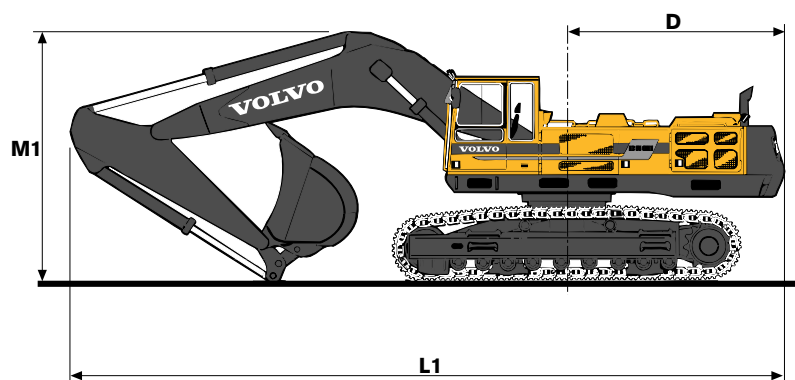
Pressure 6,5 MPa **940 psi**

Flow 21 MPa **5.5 gpm**

DIMENSIONS



A	3 030 mm 9'11"
B	4 150 mm 13'7"
C	3 600 mm 11'10"
C1	3 740 mm 12'3"
D	3 840 mm 12'7"
E	2 850 mm 9'4"
F	1 440 mm 4'9"
G	4 730 mm 15'6"
H	5 980 mm 19'7"
I	3 350 mm 11'
J	800 mm 31"
K	600 mm 24"
L	13 280 mm 43'7"
L1	12 490 mm 41'
M	4 150 mm 13'7"
M*	4 000 mm 13'1"
M1	4 650 mm 15'3"
M1*	4 390 mm 14'5"

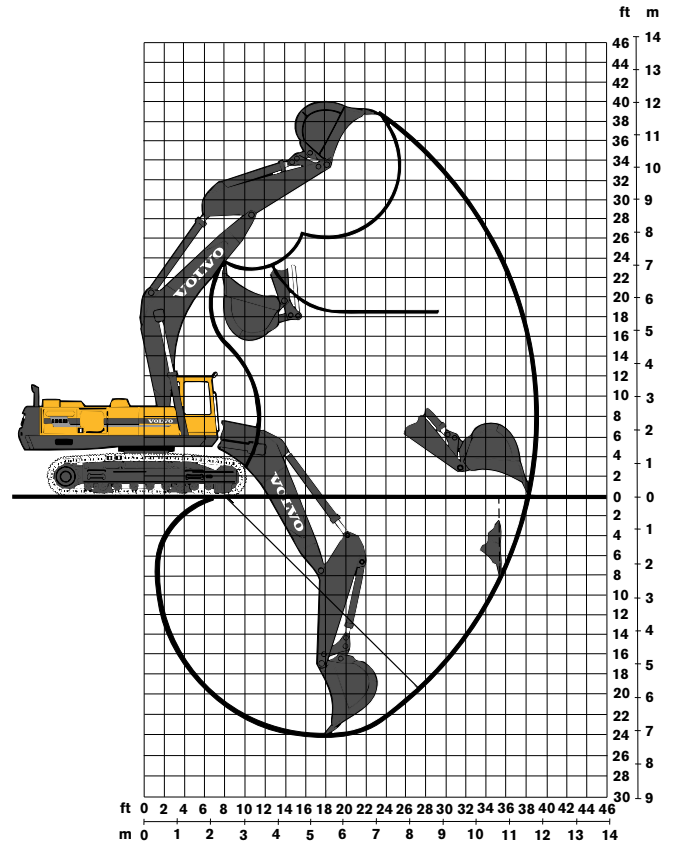
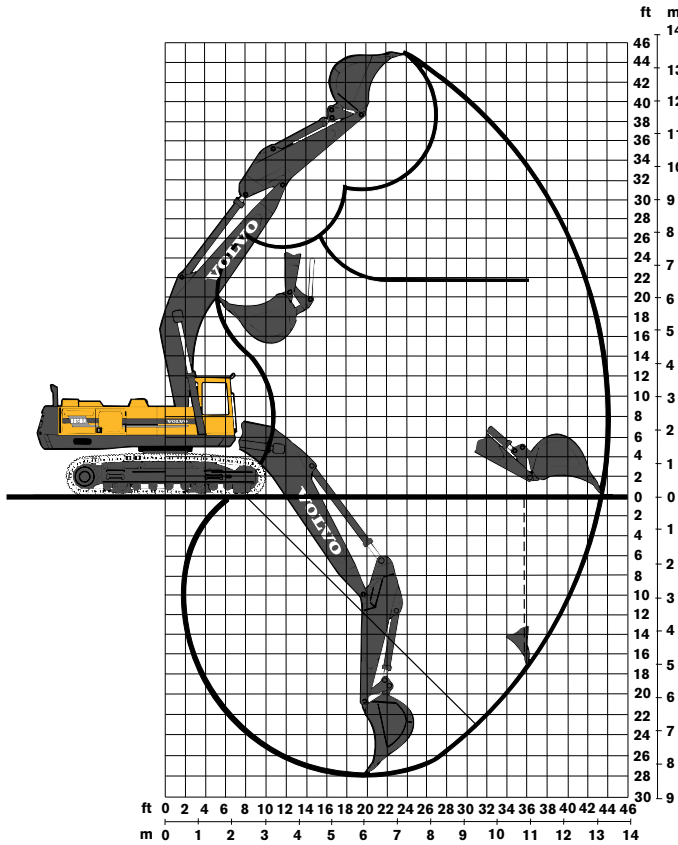


* without bucket

WORKING RANGES

Backhoe equipment (BE)

Mass excavation equipment (ME)



		BE		ME	
Boom	m, ft	7,6	24'11"	6,6	21'8"
Stick	m, ft	3,25	10'8"	2,75	9'
Max. reach	m, ft	13,3	43'8"	11,7	38'5"
Max. reach at ground level	m, ft	13,1	43'	11,4	37'5"
Max. digging depth	m, ft	8,4	27'7"	7,2	23'7"
Max. height, ground-tooth tip	m, ft	13,3	43'8"	11,5	37'9"
Max. dumping height	m, ft	9,3	30'6"	7,8	25'7"
Max. pract. dumping height					
Pract. digging depth for a material with a 45° angle of repose	m, ft	6,5	21'4"	5,5	18'
Max. vertical digging depth	m, ft	6,9	22'8"	5,9	19'4"
Max. vertical digging depth	m, ft	5,2	17'1"	2,5	8'2"
Min. swing radius in front	m, ft	4,8	15'9"	4,7	15'5"

DIGGING FORCE

Bucket digging force*	335 kN	75,310 lbf	BE
Stick force*	249 kN	55,980 lbf	BE
Bucket digging force**	399 kN	89,700 lbf	ME
Stick force**	315 kN	70,810 lbf	ME

* With HD-bucket 3 300 l, 4.32 yd³, SAE

** With bucket 4 400 l, 5.75 yd³, SAE

BUCKET AND STICK COMBINATIONS

BUCKETS for direct fitting	Volume SAE l yd ³	Cutting width mm in	Weight kg lb	Suitable for stick	
				BE 3,25 m 10'8"	ME 2,75 m 9'
Heavy Duty 2,0 t/m ³ 3370 lb/yd³ BE	3 300 4.32	1 800 71"	3 000 6610	• •	
General purpose 1,8 t/m ³ 3030 lb/yd³ ME	4 400 5.75	2 040 80"	3 750 8270		• •



WEIGHT AND GROUND PRESSURE

Standard BE-machine, 7,6 m, **24'11"** boom, 3,25 m, **10'8"** stick, 3 300 l, **4.32 yd³** bucket and 12 000 kg, **26,450 lb** counterweight.













Standard ME-machine, 6,6 m, **21'8"** boom, 2,75 m, **9'** stick, 4 400 l, **5.75 yd³** bucket and counterweight 12 000 kg, **26,450 lb**.

Track shoes	
600 mm	24"
800 mm	31"
800 mm	31"

Machine weight	
64 900 kg	143,100 lb
66 300 kg BE	146,200 lb
66 300 kg ME	146,200 lb

Ground pressure	
102,6 kPa	14.9 psi
78,6 kPa	11.4 psi
78,6 kPa	11.4 psi

LIFTING CAPACITIES *(At the bucket lifting hook. Unit: pounds)*

 Across carriage  Along carriage	Lifting hook related to ground level	Reach from machine centerline										
		20'		25'		30'		35'		Max. reach		Max. ft.
												
BE Boom 7,6 m, 24'11" Stick 3,25 m, 10'8" Bucket 3 300 l, 4.32 yd³ , 3 000 kg, 6610 lb Track shoes 800 mm, 31"	30'			20,980*	20,980*	19,570*	19,570*			10,580*	10,580*	33.8
	25'			22,780*	22,780*	20,930*	20,930*	16,780*	16,780*	9,410*	9,410*	37.3
	20'	30,510*	30,510*	25,490*	25,490*	22,410*	22,410*	18,560	20,420*	9,230*	9,230*	39.6
	15'	37,730*	37,730*	28,690*	28,690*	24,200*	24,200*	17,800	21,360*	9,520*	9,520*	41.0
	10'	41,800	44,570*	29,580	32,450*	25,960*	25,960*	17,000	22,270*	9,550*	9,550*	41.7
	5'	40,060	47,300*	28,200	35,200*	27,400*	27,400*	16,320	22,830*	9,570*	9,570*	41.7
	0'	39,480	47,620*	27,480	35,930*	20,510	28,200*	15,850	22,880*	10,530*	10,530*	40.9
	-5'	39,430	45,740*	27,240	35,030*	20,230	27,700*	15,670	22,300*	12,110*	12,110*	39.3
	-10'	39,760	41,800*	27,380	32,360*	20,280	25,510*	15,840	19,990*	13,250*	13,250*	36.9
	-15'	39,850	35,070*	26,870*	26,870*	20,770*	20,770*			15,910*	15,910*	33.3
-20'	22,990*	22,990*	16,660*	16,660*					13,980*	13,980*	27.1	
ME Boom 6,6 m, 21'8" Stick 2,75 m, 9' Bucket 4 400 l, 5.75 yd³ , 3 750 kg, 8270 lb Track shoes 800 mm, 31"	30'			23,440*	23,440*					21,050*	21,050*	27.1
	25'			24,090*	24,090*	21,940*	21,940*			19,890*	19,890*	31.6
	20'	30,720*	30,720*	26,520*	26,520*	23,950*	23,950*			18,330	19,500*	34.4
	15'	36,200*	36,200*	31,280*	29,500*	22,940	25,480*	17,140	21,320*	15,990	19,070*	36.2
	10'	41,960	42,680*	29,480	32,390*	21,800	27,030*	16,500	22,340*	14,820	19,540*	37.0
	5'	40,310	47,040*	28,190	35,000*	20,890	28,030*	15,960	22,820*	14,510	20,910*	36.9
	0'	39,970	47,710*	27,550	35,840*	20,360	28,030*	15,700	22,490*	14,940	21,430*	36.0
	-5'	39,980	45,320*	27,410	34,300*	20,270	26,810*			16,420	21,430*	34.1
	-10'	39,550*	39,550*	27,720	29,720*	20,670	22,460*			19,500	20,540*	31.1
	-15'	27,460*	27,460*	19,810*	19,810*					17,530*	17,530*	26.3

* Limited by hydraulic lifting capacity.

The above loads are in compliance with ISO standard 10567. They do not exceed 87 % of hydraulic lifting capacity or 75 % of tipping load, with the machine on firm and level ground. Working pressure with HLD = 34 MPa/340 bar, **4350 psi**.

STANDARD EQUIPMENT

Engine and Electrical System

Computer controlled monitoring system
 Battery disconnecter and main fuel cock
 Key switch-off
 Automatic idling speed (Fuel-miser)
 3-step air cleaner
 incl. exhaust ejector
 Exhaust pipe elbow
 Hour meter
 Tachometer
 Fuel gauge
 Temperature gauge for cooling fluid and hydraulic oil
 Electric preheating element
 24 V electrical system with 2 standard batteries

Undercarriage

Swing circle in oil bath
 800 mm, **31"** track shoes with double grousers
 Hydraulic track adjuster
 Derailing shields, 3 pcs
 Top rollers, 2 pcs

Safety and Comfort

Safety bar for control levers
 Hose rupture valve on boom cylinder
 Hydraulic refueling pump, 90 l/min, **23.8 gpm**
 Over load indicator
 Lights (halogen):
 5 working lights, front
 1 working light, rear
 Instrument lighting
 Illuminated cab, engine compartment and fuel filling compartment
 Rear view mirrors:
 4 exterior, 1 interior
 Cab heating with 14 vents
 Ergonomically designed and adjustable operator's seat, with heating coils
 Filtered air intake
 Cab skylight
 Sliding window in the cab door
 Emergency exit through rear window
 Tinted windows (clear front)
 Internal sun visor
 Double intermittent windshield wipers
 Windshield washers
 Compressor horn
 Radio console

Hydraulics

Float position on boom
 Dual main valve for the travel and equipment functions
 Power boost
 Mode selector, 3 steps
 Three variable and two fixed axial piston working pumps
 Standard filter cartridges for return, leak oil and breathing filter

Backhoe Equipment

7,6 m, **24'11"** monobloc boom
 3,25 m, **10'8"** stick
 End dampening on all cylinders
 Security lifting hook
 Spherical steel link bearings in all connections
 Friction welded piston rod eyes
 Automatic lubrication

OR

Mass Excavation Equipment

6,6 m, **21'8"** monobloc boom
 2,75 m, **9'** stick
 End dampening on all cylinders
 Security lifting hook
 Spherical link bearings in all connections
 Friction welded piston rod eyes
 Automatic lubrication

OPTIONAL EQUIPMENT

Engine and Electrical System

Electric over speed protector
 Volvo diesel driven engine and cab heater with digital timer
 Immersion heater, 220 V
 Oil bath cleaner
 Extra fuel filter
 Coolant filter

Undercarriage

600 mm, **24"** track shoes
 Brake valves on crawler motors

Safety and Comfort

Rock guard over drivers cab (FOPS approved)
 Protective grid for front window and roof window
 Fire extinguisher
 Seat belts
 Rotating beacon
 Protection against over filling fuel
 Extra circulation pump for the heating system
 Extra hose rupture valves on stick/bucket cylinders
 Rear lights
 Exterior glare shields
 Rear window jalousie
 Air conditioning
 Micro filter for the cab
 Radio cassette player

Hydraulics

Biologically degradable oil
 Hydraulic equipment for:
 articulated slope bucket
 grapple
 hydraulic hammer
 crusher
 shears

Equipment

Extra working lights on boom

Material Handling Equipment

10,3 m, **33'10"** boom
 8,1 m, **26'7"** stick

Under our policy of continuous product 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

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