



# Volvo BM EL70C



- **Engine output SAE J1349:**  
gross 90 kW (122 hp)  
net 88 kW (120 hp)
- **Operating weight:** 10,6–13,5 t
- **Loader buckets:** 1,5–3,0 m<sup>3</sup>
- **Excavator buckets:** 90–540 l
- **Volvo BM transmission** with Automatic Power Shift
- **Pressurized cab** with good visibility, high comfort and safety
- **Oscillating frame joint** with rigid front and rear axles
- **Stable and easy to manoeuvre**
- **Load-sensing dual circuit hydraulic system** – provide exact and effortless manoeuvring and good fuel economy
- **High-capacity loader**  
– Volvo BM loader unit with parallel lift-arm action  
– 51° carry angle and 114° dump angle
- **High-capacity excavator**
- **3 different excavator units** large digging, lift and breakout forces
- **Hydraulic attachment brackets,** front and rear

**VOLVO BM**



## SERVICE REFILL CAPACITIES

Excellent service accessibility through large, easy-to-open engine access doors with gas struts.

Fuel tank	255 l	Engine oil	12 l
Engine coolant	24 l	Axle front/rear	22,5/22,5 l
Hydraulic tank	115 l	Axle AH45 (option)	26 l
Transmission	27 l		



## ENGINE

Engine delivers high torque and quick response at low rpm even under full load. The machine can work at low engine speeds, which contributes to good fuel economy, less noise, less wear and longer life.

**Engine:** TD 48 GAE, water-cooled, 4-cylinder, in-line, direct-injected, turbocharged 4-stroke diesel engine with wet replaceable cylinder liners.

**Air cleaning:** three-stage.

Engine	<b>TD 48 GAE</b>	
Flywheel output at	33,3 r/s	2000 r/min)
SAE J1349 gross	90 kW	(122 hp)
net	88 kW	(120 hp)
Max. torque at	22,5 r/s	(1350 r/min)
SAE J1349 gross	475 Nm	
net	465 Nm	
Displacement	4,8 l	



## ELECTRICAL SYSTEM

Electrical system with circuit board is well protected by fuses. Prepared for retrofitting of optional equipment.

**Central warning:** Central warning lamp for the following functions: engine oil pressure, engine coolant temperature, hydraulic oil pressure in transmission, transmission oil temperature, brake pressure, parking brake.

Voltage	24 V
Batteries	2x12 V
Battery capacity	2x105 Ah
Cold cranking capacity, ea	575 A
Reserve capacity, ea	170 min
Alternator rating	1710 / 60 W/A
Starter-motor output	5,4 kW (7,3 hp)



## DRIVETRAIN

Drivetrain and working hydraulics well-matched to each other. Dependable design. Quick acceleration boosts productivity. Volvo BM system-compatible design facilitates servicing.

**Torque converter:** Single-stage

**Transmission:** Volvo BM Power Shift transmission of countershaft type with single-lever control. Fast and smooth forward/reverse shifting.

Automatic Power Shift (APS) is optional.

**Axles:** Volvo BM, fully floating axle shafts with planetary-type hub reductions. Cast-steel axle housing. Fixed front and rear axle. 100% differential lock on rear axle.

Transmission	Volvo BM HT90	
Torque multiplication	2,3 :1	
Speeds, max forward/reverse	High	Low (option)
1	7,0 km/h	1,9 km/h
2	13,5 km/h	3,7 km/h
3	25,5 km/h	7,1 km/h
4 (forward only)	44,0 km/h	13,3 km/h

Measured with tires	18,4 - 30 SGL
Front and rear axle	Volvo BM / AH31
Front axle	Volvo BM / AH45 (option)



## BRAKE SYSTEM

Simple, reliable system with few parts ensures high availability and safety. Self-adjusting dry disc brakes give long service intervals.

**Service brakes:** Volvo BM, dual-circuit, fully hydraulically operated disc brakes.

Transmission declutch during braking can be preselected by a switch on the instrument panel (Option).

**Parking brake:** Disc brake on rear axle pinion drive flange.

**Standards:** The brake system complies with the requirements of ISO 3450, SAE J1473

Number of discs/wheel	1
Number of accumulators	3
Volume, each	0,5 l



## STEERING SYSTEM

Low-effort steering gives short work cycle times. Power-efficient system provides good fuel economy, good directional stability and smooth ride.

**System supply:** The steering system has prioritized feed from the machine's load-sensing axial piston pump.

**Pump:** Double variable-flow axial piston pump.

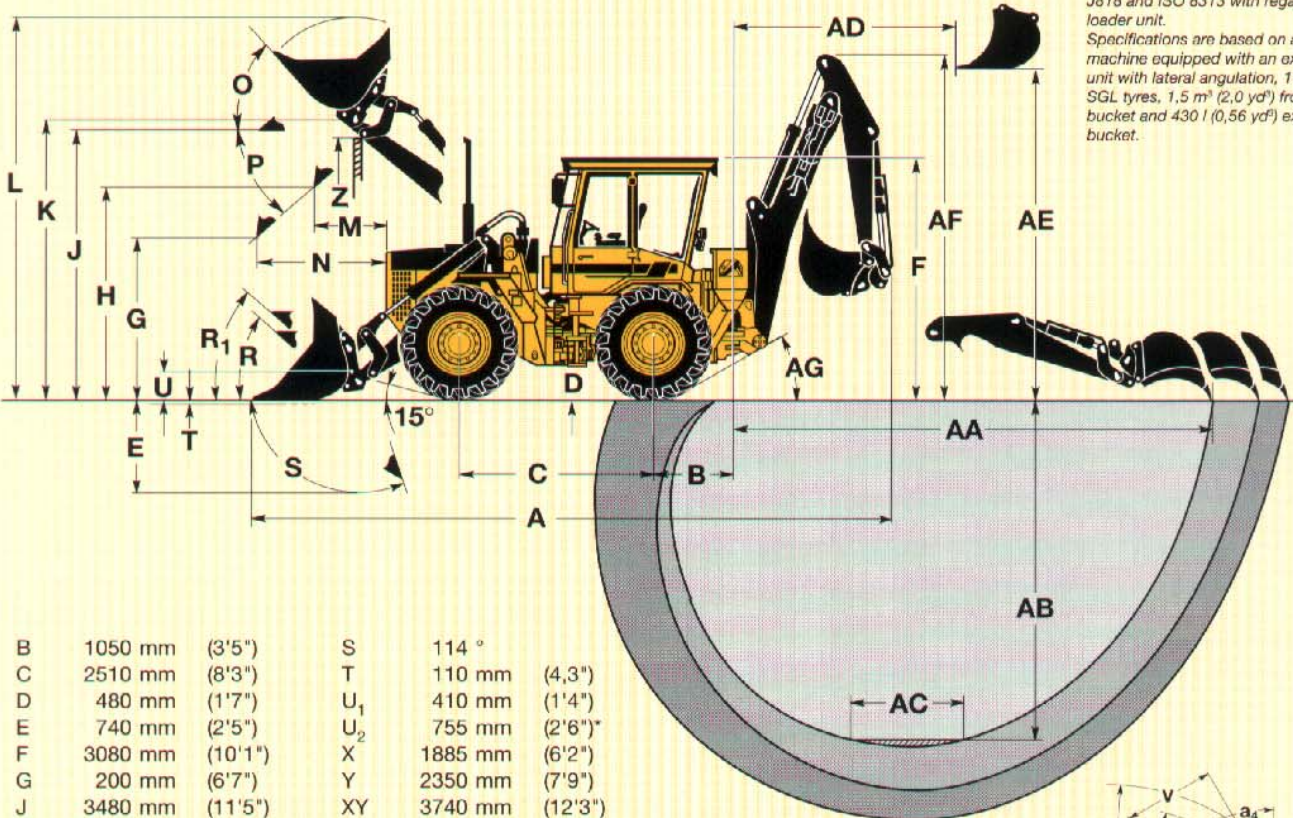
**Cylinders:** Two double-acting cylinders with end-position damping.

Steering cylinders	2
Bore	70 mm
Piston rod diameter	36 mm
Stroke	357 mm
Relief pressure	17 MPa
Max. flow	45 l/min
Articulation	± 35 °
Lock to lock turns of the wheel	3,75

# DIMENSIONAL DATA VOLVO BM EL 70C

**Straight front end bucket without teeth**  
**Tyres 18.4 - 30 SGL**

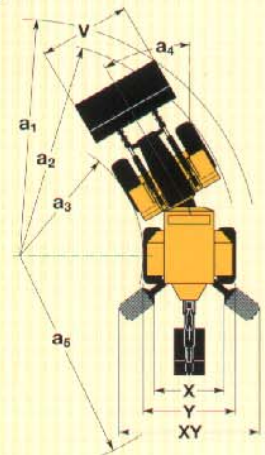
Wherever applicable, specifications are in accordance with SAE J31, J49 and J1179 with regard to the excavator unit and SAE J732, J742, J818 and ISO 8313 with regard to the loader unit.  
 Specifications are based on a machine equipped with an excavator unit with lateral angulation, 18.4-30 SGL tyres, 1.5 m<sup>3</sup> (2.0 yd<sup>3</sup>) front end bucket and 430 l (0.56 yd<sup>3</sup>) excavator bucket.



B	1050 mm (3'5")	S	114 °
C	2510 mm (8'3")	T	110 mm (4,3")
D	480 mm (1'7")	U <sub>1</sub>	410 mm (1'4")
E	740 mm (2'5")	U <sub>2</sub>	755 mm (2'6")*
F	3080 mm (10'1")	X	1885 mm (6'2")
G	200 mm (6'7")	Y	2350 mm (7'9")
J	3480 mm (11'5")	XY	3740 mm (12'3")
K	3700 mm (12'2")	Z	3430 mm (11'3")
L	4880 mm (16'0")	a <sub>1</sub>	see label
O	50 °	a <sub>2</sub>	5130 mm (16'10")
P	45 °	a <sub>3</sub>	2780 mm (9'1")
R	38 °	a <sub>4</sub>	35 °
R <sub>1</sub>	43 °	a <sub>5</sub>	5150 mm (16'11")
R <sub>2</sub> *	51 °		

Frame joint oscillation ±10°

\*In practical carry position



## ATTACHMENTS (for further information please contact your local dealer)

### Loader unit

Straight bucket without teeth	1,5 m <sup>3</sup> (2,0 yd <sup>3</sup> )
Straight bucket with teeth	1,5 m <sup>3</sup> (2,0 yd <sup>3</sup> )
Light materials bucket	3,0 m <sup>3</sup> (3,9 yd <sup>3</sup> )
Grading bucket	1,6 m <sup>3</sup> (2,1 yd <sup>3</sup> )
Sand spreading bucket	2,0 m <sup>3</sup> (2,6 yd <sup>3</sup> )

Pallet forks  
 Breakout forks  
 Fork tine extension  
 Pallet fork with fork positioner  
 Material handling arms  
 Snow blade  
 Sweeper

### Excavator unit

Excavator bucket	430/380/320 l (0,56/0,50/0,42 yd <sup>3</sup> )
Cable bucket	200/120 l (0,26/0,16 yd <sup>3</sup> )
Tapered cable bucket	220 l (0,29 yd <sup>3</sup> )
Cable bucket with ejector	130 l (0,17 yd <sup>3</sup> )
Profile bucket	540 l (0,70 yd <sup>3</sup> )
Grading and ditch-cleaning bucket	470/440 l (0,61/0,58 yd <sup>3</sup> )
Posthole bucket	90 l (0,12 yd <sup>3</sup> )

Hydraulic post-raiser  
 Material handling arm  
 Ripper  
 Asphalt cutter

## LOADER UNIT

Attachments for loader unit		Hook-on bucket without teeth		Hook-on bucket with teeth		Pin-on bucket with teeth	
		91449		99252		91284	
Capacity	m <sup>3</sup> (yd <sup>3</sup> )	1,5	(2,0)	1,5	(2,0)	1,5	(2,0)
Density	kg/m <sup>3</sup> (lb/yd <sup>3</sup> )	1800	(3000)	1800	(3000)	1800	(3000)
H	mm (ft in)	2810	(9'3")	2680	(8'10")	2740	(3000)
M	mm (ft in)	880	(2'11")	880	(2'11")	820	(2'8")
N	mm (ft in)	1390	(4'7")	1390	(4'9")	1350	(4'5")
A	mm (ft in)	8100	(26'7")	8300	(27'3")	8200	(26'11")
a1	mm (ft in)	11460	(37'7")	11560	(37'11")	11570	(37'11")
V	mm (ft in)	2500	(8'2")	2430	(7'11")	2500	(8'2")
Breakout force	kN (lbf)	71,9	(16160)	71,5	(16070)	80,4	(18070)
Static tipping load							
straight	kg (lb)	7370	(17236)	7350	(16192)	8000	(17624)
35° full turn	kg (lb)	6510	(14432)	6530	(14386)	7080	(15597)
Operating load at full turn	kg (lb)	3255	(7171)	3265	(7193)	3540	(7799)
Hydraulic lift force							
at ground level	kN (lbf)	88,0	(19780)	87,6	(19690)	87,3	(19620)
at max. height	kN (lbf)	33,0	(7420)	32,7	(7350)	34,5	(7750)
Operating weight *)	kg (lb)	10900	(24013)	11000	(24233)	10830	(23859)
Weight distribution, front	kg (lb)	4060	(8944)	4195	(9242)	3915	(8625)
Weight distribution, rear	kg (lb)	6840	(15069)	6805	(14991)	6915	(15234)

\*) Incl. operator and full fuel tank

## EXCAVATOR UNIT

Excavator unit type		With lateral angulation		Without lateral angulation		With lateral angulation and bucket arm extension **)	
Bucket	l (yd <sup>3</sup> )	430	(0,56)	430	(0,56)	320	(0,42)
A	mm (ft in)	8100	(26'6")	8000	(26'2")	8100	(26'7")
AA	mm (ft in)	6370	(20'11")	6940	(22'9")	6370/7320	(20'11"/24'0")
AB	mm (ft in)	4630	(15'2")	5180	(16'12")	4630/5640	(15'2"/18'6")
AC	mm (ft in)	600	(2'0")	600	(2'0")	600	(2,0")
AD	mm (ft in)	2130	(7'0")	2500	(8'2")	2145/3105	(7'0"/10'2")
AE	mm (ft in)	3860	(12'8")	4320	(14'2")	3830/4170	(12'7"/13'8")
AF	mm (ft in)	4150	(13'7")	4440	(14'7")	4150	(13'7")
AG	°	30		30		30	
Max. bucket angle	°	185		185		185	
Max. digging force at bucket lip	kN (lbf)	41,3	(9280)	39,3	(8832)	41,3/30,6	(9280/6880)
Permissible load in hook during lift as per ASS 90 *)	kN (lbf)	13,5	(3030)	11,8	(2650)	11,7/8,9	(2630/2000)
Max. lift force in hook *)	kN (lbf)	15,4	(3460)	13,7	(3080)	13,0/10,5	(2920/2360)
Slewing angle	±°	180				30	
Lateral angulation	±°	30				30	
Breakout force at bucket lip	kN (lbf)	61,0	(13710)	61,0	(13710)	61,0/61,0	(13710/13710)
Slewing torque	kNm (lbf ft)	36,8	(27140)	36,8	(27140)	36,8	(27140)

\*) at full reach (bucket hinge pin on a level with boom hinge pin), without attachment, measured in lifting hook

\*\*\*) Cannot be combined with 18.4-30 tires

## CHANGES IN DATA WITH ALTERNATIVE TYRES OR EXCAVATOR UNIT

		17.5 - 25		17.5 - R 25		20.5 - 25		20.5 - R 25	
Change in basic data									
Width over tyres	mm (ft in)	- 50	(2")	- 40	(1,6")	+ 160	(6,3")	+ 150	(6")
Ground clearance	mm (ft in)	- 70	(2,8")	- 60	(2,4")				
Change in operating weight	kg (lb)	- 65	(140)	+ 165	(360)	+ 260	(570)	+ 550	(1210)
Change in static tipping load at full turn									
Pin-on	kg (lb)	- 50	(110)			+ 130	(286)	+ 230	(507)
Hook-on	kg (lb)	- 50	(110)			+ 130	(265)	+ 230	(463)
		600 - 30.5		600 - 34		Excavator unit without lateral angulation		Excavator unit with extension	
Change in basic data									
Width over tyres	mm (ft in)	+ 170	(6")	+ 250	(10,0")	- 165	(364)	+ 300	(661)
Ground clearance	mm (ft in)	0	(0)	+ 83	(3,3")				
Change in operating weight	kg (lb)	+ 190	(418)	+ 600	(1320)	- 235	(518)	+ 775	(1707)
Change in static tipping load at full turn	kg (lb)					- 280	(617)	+ 650	(1432)
Pin-on	kg (lb)			+ 325	(716)	- 280	(617)	+ 650	(1432)
Hook-on	kg (lb)			+ 325	(660)				



## CAB

Pressurized cab with easy entry and wide door opening. Lined with sound-absorbent material. Good all-round visibility, large glass areas. Ergonomically located controls and instruments permit a comfortable operating position.

<b>Emergency exits</b>	3
<b>Sound level in cab</b>	
as per ISO 6396,	
max fan position	70 dB (A)
fan position 1	65 dB (A)
<b>Ventilation</b>	10 m <sup>3</sup> /min
<b>Heating capacity</b>	11 kW

**Operators seat:** Spring suspended, adjustable operator's seat with belt. The seat is mounted on a bracket on the floor. The force of the belt is absorbed by the seat rails.

**Standards:** Tested and approved according to the following standards: ROPS (ISO/CD 3471, SAE



## HYDRAULIC SYSTEM

The hydraulic system is flow regulated, load-sensing and of the closed-center type, which means that the load on the engine is no more than the utilized power. The system has two circuits with automatic or manual flow integration.

**Pump:** Two axial-flow piston pumps with variable flow.

### Max. flow at 215 MPa (3118 psi)

Engine speed	l/min	US gal/min	UK gal/min
1500 r/min (25r/s)	2x64	2x17	2x14
2000 r/min (33 r/s)	2x85	2x22,5	2x18,7

**Relief pressure** 22,5 MPa (3263 psi)

**Oil filter:** Full-flow filtration through 10 µm filter cartridge with magnetic core.

**Hydraulic system - excavator:** Circuit 1 feeds the bucket, bucket arm and slew function. Circuit 2 prioritizes the boom lift function. Flow that is not utilized is automatically fed over to circuit 1 as needed. Flow integration of circuit 1 to circuit 2 can be activated manually for the boom lift function.

**Hydraulic system - loader:** Circuit 1 feeds the tilt function, circuit 2 prioritizes the lift function. Flow that is not utilized in circuit 2 is automatically fed over to circuit 1 as needed. Flow integration of circuit 1 to circuit 2 can be activated manually for the lift function on the loader.



## LIFT-ARM SYSTEM

Volvo BM parallel arm system with good breakout force and parallel lift-arm action. Ideal for work with buckets or other Volvo BM attachments.

<b>Lift cylinder</b>		2	
Bore	mm (ft in)	90	(3,5")
Piston rod diameter	mm (ft in)	60	(2,4")
Stroke	mm (ft in)	845	(2'9")
<b>Tilt cylinder</b>		2	
Bore	mm (ft in)	90	(3,5")
Piston rod diameter	mm (ft in)	60	(2,4")
Stroke	mm (ft in)	1095	(3'7")
<b>Max. dump angle</b>			114°



## EXCAVATOR UNIT

Three alternative excavator units are available:

- Excavator unit without lateral angulation
- Excavator unit with lateral angulation
- Excavator unit with lateral angulation and bucket arm extension

The three units differ in terms of digging force, reach and digging depth. All units have a slender boom, only 230 mm (9,0 in) for best possible visibility.

<b>Slew cylinders</b>		2	
bore	mm (ft in)	100	(4")
piston rod diameter	mm (ft in)	50	(2")
stroke	mm (ft in)	315	(1")
<b>Boom cylinder</b>		1	
bore	mm (ft in)	130	(5,1")
piston rod diameter	mm (ft in)	60	(2,4")
stroke	mm (ft in)	930	(3'1")
<b>Bucket cylinder</b>		1	
bore	mm (ft in)	100	(4")
piston rod diameter	mm (ft in)	60	(2,4")
stroke	mm (ft in)	780	(2'6")
<b>Outrigger cylinders</b>		2	
bore	mm (ft in)	100	(4")
piston rod diameter	mm (ft in)	60	(2,4")
stroke	mm (ft in)	480	(1'7")
<b>Without lateral angulation</b>			
<b>Bucket arm cylinder</b>		1	
bore	mm (ft in)	125	(5")
piston rod diameter	mm (ft in)	70	(2,8")
stroke	mm (ft in)	825	(2'8")
<b>With lateral angulation</b>			
<b>Bucket arm cylinder</b>		1	
bore	mm (ft in)	125	(5")
piston rod diameter	mm (ft in)	70	(2,8")
stroke	mm (ft in)	755	(2'6")
<b>Lateral angulation cylinder</b>		1	
bore	mm (ft in)	100	(4")
piston rod diameter	mm (ft in)	50	(2")
stroke	mm (ft in)	255	(10")
<b>Bucket cylinder for post-raising</b>		1	
bore	mm (ft in)	110	(4'4")
piston rod diameter	mm (ft in)	60	(2'4")
stroke	mm (ft in)	765	(2'6")
<b>With lateral angulation and bucket arm extension</b>			
<b>Bucket arm cylinder</b>		1	
bore	mm (ft in)	125	(5")
piston rod diameter	mm (ft in)	70	(2,8")
stroke	mm (ft in)	755	(2'6")
<b>Lateral angulation cylinder</b>		1	
bore	mm (ft in)	100	(4")
piston rod diameter	mm (ft in)	50	(2")
stroke	mm (ft in)	255	(10")
<b>Extension cylinder</b>		1	
bore	mm (ft in)	80	(3,1")
piston rod diameter	mm (ft in)	50	(2")
stroke	mm (ft in)	1000	(3'3")

## STANDARD EQUIPMENT

<p><b>Cab equipment</b>          ROPS and FOPS cab          Cab heating with filtered fresh air intake and defroster          Climate control system          Tinted glass          Ergonomically designed and adjustable operator's seat with lap belt          Rear-view mirrors, external, 2          Rear-view mirror, internal, 1          Sun visor          Safety start          Windscreen wipers, front and rear          Windscreen washers, front and rear          Horn          Ashtray          Cigarette lighter          Lamp test, warning and control lamps          Direct-acting mechanical control levers for excavator and loader hydraulics          Openable and fold-in rear window          Openable side window          Web pouch</p> <p><i>Central instruments:</i>          speedometer/tachometer          hour counter          fuel gauge          engine temperature gauge          central warning</p>	<p><b>Electrical equipment</b>  <i>Lighting:</i>  <ul style="list-style-type: none"> <li>• headlamps, full/dipped (asym., halogen)</li> <li>• parking lights</li> <li>• working lights, front (2 halogen)</li> <li>• working lights, rear (2 halogen)</li> <li>• side marker lights</li> <li>• brake lights</li> <li>• rear lights</li> <li>• cab lighting</li> <li>• instrument lighting</li> <li>• direction indicators</li> </ul>         Hazard flashers</p> <p><i>Control and warning lamps for:</i>  <ul style="list-style-type: none"> <li>• charging</li> <li>• hydraulic oil temperature</li> <li>• hydraulic oil filter</li> <li>• transmission oil pressure</li> <li>• transmission oil temperature</li> <li>• brake pressure</li> <li>• engine oil pressure</li> <li>• engine oil temperature</li> <li>• air filter, engine</li> <li>• parking brake</li> <li>• working lights, front and rear</li> <li>• full beam</li> <li>• direction indicators</li> <li>• differential lock</li> </ul>         Electric socket 24V          Preheating coil          Battery disconnect switch          Alternator</p>	<p><b>Engine and electrical system</b>          Air cleaner</p> <p><b>Drivetrain</b>          Power Shift transmission          Differential lock, rear axle          Single-lever shift control</p> <p><b>Hydraulic system</b>          Variable axial-flow piston pumps          Hydraulic oil cooler          Control valve, loader unit (2 sections)          Control valve, excavator unit (6 sections)</p> <p><b>Loader unit</b>          Bucket position indicator          Loader bucket 1,5 m<sup>3</sup> (2,0 yd<sup>3</sup>)</p> <p><b>Excavator unit</b>          Mechanical attachment bracket          Lifting eye, excavator unit          Excavator bucket 430 l</p>	<p><b>Tyres</b>          18.4-30/14 SGL</p> <p><b>Other equipment</b>          Mudguards          Lifting lugs          Lockable tool box          Oscillation lock, frame joint locking, automatic or manual          Lockable fuel filler cap</p>
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## OPTIONAL EQUIPMENT (May be standard on certain markets)

<p><b>Cab equipment</b>          Air conditioning          Dual controls          Interval wipers, front and rear          Parking-brake alarm          Cab heater socket, 220 V          Radio console without radio          Instructor's seat</p> <p><b>Electrical equipment</b>          Extra working lights, front and rear (halogen)          Rotating beacon with collapsible mount</p> <p><b>Engine and electrical system</b>          Electric engine block heater, 220 V</p> <p><b>Drivetrain</b>          8-speed transmission          Automatic Power Shift          Transmission cut-out          Differential lock, front axle</p> <p><b>Protective equipment</b>          Underbody protection guard, front          Lift cylinder lock</p>	<p><b>Hydraulic system</b>          Single-acting hydraulic take-off for hand-held tools (EVH), adjustable flow 0-90 l/min (basic kit for EVL and EVG take-offs)          Electro-hydraulic servo system for loader and excavator units and for outriggers          Assembly kit for extra hydraulic controls</p> <p><b>Loader unit</b>          1st double-acting hydraulic take-off (DVL-1) for attachment locking, max. 30 l/min          2nd double-acting hydraulic take-off (DVL-2) max. 130 l/min (for e.g. high-dump bucket)          Single-acting hydraulic take-off (EVL) max. 170 l/min (for e.g. sweeper)          Single-acting lift control          Hydraulic attachment bracket</p>	<p><b>Excavator unit</b>          Float position for excavator boom          1st double-acting hydraulic take-off (DVG-1) max. 30 l/min (for e.g. slope bucket)          Proportional double-acting hydraulic take-off, DVG-1          2nd double-acting hydraulic take-off (DVG-2) max. 30 l/min (for e.g. rotortilt)          Single-acting hydraulic take-off (EVG) max. 170 l/min (for hydraulic hammer)          Bucket cylinder guard          Hose rupture valve, outriggers          Hydraulic attachment bracket          Hose rupture valve incl. load indication on excavator boom</p> <p><b>Tyres</b>          17.5-25          17.5-R25          20.5-25          20.5 R 25** RL2+          600/60-30.5/12          600/65-34/14 SB</p>	<p><b>Service and maintenance equipment</b>          Tool kit          Wheel nut wrench set</p> <p><b>Other equipment</b>          Secondary steering          Towing hitch, rear          Digging brake incl. spring-applied parking brake          Lift hook, excavator unit          Bucket cylinder guard          Inspection lamp 24 V          Lever lock for hydraulic controls</p>
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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.

**VME Industries Sweden AB**  
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