Volvo BM EL70

- ***Engine output:***
  SAE J1349 Net:
  84 kW (114 hp)
- ***Operating weight:***
  10,6-13,5 t (23 810-29 760 lb)
- ***Loader buckets:***
  1,5-3,0 m^3 (2,0-3,9 yd^3)
  Std 1,5 m^3 (2,0 yd^3)
- ***Excavator buckets:***
  90-540 l (0,12-0,70 yd^3)
  Std 430 l (0,56 yd^3)
- *Cab with very good visibility, high comfort and safety*
- *Oscillating frame joint with rigid front and rear axles*
- *Stable and easy to manoeuvre*
- *Precision steering with end position damping in the steering cylinders*
- Load-sensing dual-circuit hydraulics 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*
- *Attachment bracket, std*

VOLVO BM

ENGINE

Volvo TD 45B: a 4-cylinder, direct-injection, turbocharged 4-stroke diesel engine with wet replaceable cylinder linings.

Air cleaning: Air cleaning in three stages.
1. Cyclone precleaner
2. Paper filter
3. Safety filter

Output gross at	r/s	(r/min)	33,3	(2000)
SAE J1349	kW	(hp)	84	(114)
DIN 70020 / 6271	kW	(hp)	78	(106)
Max. torque at	r/s	(r/min)	23,3	(1400)
SAE J1349	Nm	(lbf ft)	440	(324)
DIN 70020 / 6271	Nm	(lbf ft)	425	(313)
Displacement	l	(in^3)	4,48	(273)
Bore	mm	(in)	105,57	(4,2)
Stroke	mm	(in)	128	(5,0)
Compression ratio			15,6:1	

ELECTRICAL SYSTEM

24 V: two 12 V batteries connected in series

Central warning:
Central warning for the following functions:
Engine oil pressure, engine temperature, transmission oil pressure, transmission temperature, brake pressure, hydraulic oil temperature, parking brake.

Voltage	V	24	
Battery capacity	Ah	105	
Cranking capacity	A	575	
Reserve capacity	min	170	
Alternator	W / A	1710 / 60	
Starter motor	kW (hp)	5,4	(7,3)

SERVICE REFILL CAPACITIES

Crankcase	l	(US gal)	12	(3,2)
Fuel tank	l	(US gal)	255	(67,5)
Cooling system	l	(US gal)	27	(7,1)
Transmission, total	l	(US gal)	**22**	**(5,8)**
Front axle, total	l	(US gal)	22,5	(5,9)
Rear axle, total	l	(US gal)	22,5	(5,9)
Hydraulic tank	l	(US gal)	115	(30,4)
Hydraulic system	l	(US gal)	210	(55,4)

DRIVETRAIN

Torque converter: Single-stage type

Transmission: Volvo BM Power Shift transmission of the countershaft type with direction clutch modulation for quicker and smoother forward-reverse shifting. Single lever control.

Axles: Fully-floating half-shafts with planetary hub reductions. Rigid front and rear axles, made by Volvo BM.

Differential: Differential with 100% lock on both axles. Engagement and disengagement by means of switch on cab floor.

Torque multiplication			2,3 : 1	
Transmission, make			HT 90	
Running speeds, forward/reverse				
1	km/h	(mile/h)	7,0	(4,3)
2	km/h	(mile/h)	13,5	(8,4)
3	km/h	(mile/h)	25,5	(15,8)
4*	km/h	(mile/h)	44	(27,3)
Low range (option)				
1	km/h	(mile/h)	1,9	(1,2)
2	km/h	(mile/h)	3,7	(2,3)
3	km/h	(mile/h)	7,1	(4,4)
4	km/h	(mile/h)	13,3	(8,3)
Front axle			AH 31	
Rear axle			AH 31	

** Speed limitation 30 km/h on certain markets.*
Only 3 reverse speeds with Volvo BM Automatic Power Shift.

BRAKE SYSTEM

Service brakes: Fully hydraulically operated disc brakes split into two independent circuits.

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

Brake friction area/wheel				
Front	cm^2	(in^2)	405	(62,8)
Rear	cm^2	(in^2)	405	(62,8)
Accumulators,			3	
volume, total	l	(ft^3)	1,5	(0,53)
Parking brake,				
friction area	cm^2	(in^2)	70	(10,8)

STEERING SYSTEM

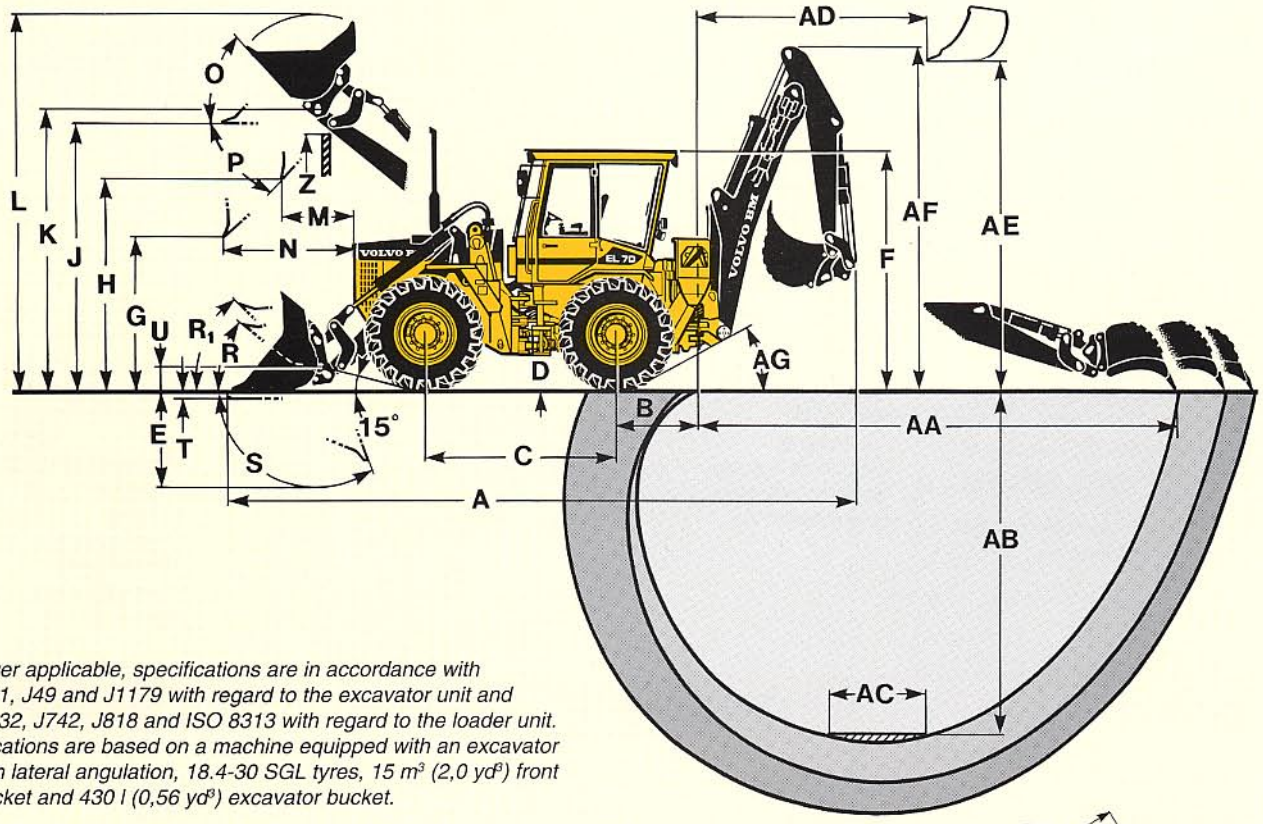
Load-sensing hydrostatic articulated steering with end position damping. Pump shared with hydraulic system, steering has priority.

Steering angle	±0		35	
Lock-to-lock turns				
of the wheel			3,75	
Steer cylinders				
Bore	mm	(in)	70	(2,756)
Stroke	mm	(in)	357	(14,05)
Piston rod diameter	mm	(in)	36	(1,417)
Pressure	MPa	(pci)	17	(2466)
Flow	l/min		45	
at engine speed	r/min		1000	

DIMENSIONAL DATA VOLVO BM EL 70

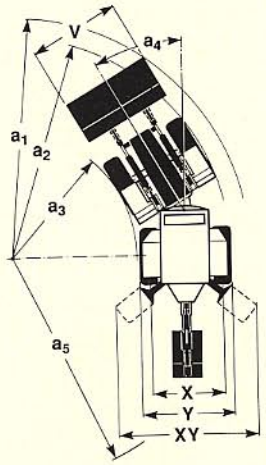
Straight front end bucket without teeth

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, 15 m³ (2,0 yd³) front end bucket and 430 l (0,56 yd³) excavator bucket.

B	mm (ft in)	1050	(3'5")	R_2*	°	51*	
C	mm (ft in)	2510	(8'3")	S	°	114	
D	mm (ft in)	480	(1'7")	T	mm (ft in)	110	(4,3")
E	mm (ft in)	740	(2'5")	U_1	mm (ft in)	410	(1'4")
F	mm (ft in)	3080	(10'1")	U_2	mm (ft in)	755	(2'6")*
G	mm (ft in)	200	(6'7")	X	mm (ft in)	1885	(6'2")
J	mm (ft in)	3480	(11'5")	Y	mm (ft in)	2350	(7'9")
K	mm (ft in)	3700	(12'2")	XY	mm (ft in)	3740	(12'3")
L	mm (ft in)	4880	(16'0")	Z	mm (ft in)	3430	(11'3")
O	°	50		a_1	se tabell		
P	°	45		a_2	mm (ft in)	5130	(16'10")
R	°	38		a_3	mm (ft in)	2780	(9'1")
R_1	°	43		a_4	°	35	
				a_5	mm (ft in)	5150	(16'11")



Frame joint oscillation ± 10°

*In practical carry position

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

Loader unit

Straight bucket without teeth	m³ (yd³)	1,5	(2,0)
Straight bucket with teeth	m³ (yd³)	1,5	(2,0)
Light materials bucket	m³ (yd³)	3,0	(3,9)
Grading bucket	m³ (yd³)	1,6	(2,1)
Sand spreading bucket	m³ (yd³)	2,0	(2,6)

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

Excavator unit

Excavator bucket	l	430/380/320	
	(yd³)	(0,56/0,50/0,42)	
Cable bucket	l (yd³)	200/120	(0,26/0,16)
Tapered cable bucket	l (yd³)	220	(0,29)
Cable bucket with ejector	l (yd³)	130	(0,17)
Profile bucket	l (yd³)	540	(0,70)
Grading and ditch-cleaning bucket	l (yd³)	470/440	(0,61/0,58)
Posthole bucket	l (yd³)	90	0,12)

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^3	(yd^3)	1,5	(2,0)	1,5	(2,0)	1,5	(2,0)
Density	kg/m^3	(lb/yd^3)	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^3)	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°					
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.

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")				
Ground clearance	mm	(ft in)	0	(0)	+83	(3,3")				
Change in operating weight	kg	(lb)	+190	(418)	+600	(1320)	–165	(364)	+300	(661)
Change in static tipping load at full turn	kg	(lb)					–235	(518)	+775	(1707)
Pin-on	kg	(lb)			+325	(716)	–280	(617)	+650	(1432)
Hook-on	kg	(lb)			+325	(660)	–280	(617)	+650	(1432)

CAB

Tested and approved as a safety cab in accordance with Chapter 3 of the Swedish Work Environment Act and complies with standards ISO 3471 ROPS, ISO 3449 FOPS and ISO 6055 "overhead guards for fork lift trucks".

Sound level in cab		
max. as per ISO 6396 (max. fan position)	dB (A)	70
fan position 1	dB (A)	65
Ventilation	m³/min	10
Heating capacity	kW	11
	Btu/h	37 500
Operator's seat	ISRI	6000/575
Emergency exits		5

HYDRAULIC SYSTEM

The hydraulic system is flow-regulated, load-sensing and of the closed-centre 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 (25 r/s)	2x64	2x17	2x14
2000 r/min (33 r/s)	2x85	2x22,5	2x18,7

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

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.

LOADER UNIT

Loader unit with hydraulic cylinders installed in line with the lift arms. Good parallel lift-arm action, extremely good dump angle. Bucket can be tilted forward 114° in the bottom position.

Lift cylinder			
bore	mm (ft in)	90	(3,5")
piston rod diameter	mm (ft in)	60	(2,4")
stroke	mm (ft in)	845	(2'9")
Tilt cylinder			
bore	mm (ft in)	90	(3,5")
piston rod diameter	mm (ft in)	60	(2,4")
stroke	mm (ft in)	1095	(3'7")
Raise, with SAE work load			
with/without flow integration	s	6/12	
Lower, without load	s	4	
Dump, with load	s	3	

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.

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

Cab equipment
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

Central instruments:
speedometer/tachometer
hour counter
fuel gauge
engine temperature gauge
central warning

Electrical equipment
Lighting:
- headlamps, full/dipped (asym., halogen)
- parking lights
- working lights, front (2 halogen)
- working lights, rear (2 halogen)
- side marker lights
- brake lights
- rear lights
- cab lighting
- instrument lighting
- direction indicators

Hazard flashers

Control and warning lamps for:
- charging
- hydraulic oil temperature
- hydraulic oil filter
- transmission oil pressure
- transmission oil temperature
- brake pressure
- engine oil pressure
- engine oil temperature
- air filter, engine
- parking brake
- working lights, front and rear
- full beam
- direction indicators
- differential lock

Electric socket 24V
Preheating coil
Battery disconnect switch
Alternator

Engine and electrical system
Air cleaner

Drivetrain
Power Shift transmission
Differential lock, rear axle
Single-lever shift control

Hydraulic system
Variable axial-flow piston pumps
Hydraulic oil cooler
Control valve, loader unit (2 sections)
Control valve, excavator unit (6 sections)

Loader unit
Bucket position indicator
Loader bucket 1,5 m^3 (2,0 yd^3)

Excavator unit
Mechanical attachment bracket
Lifting eye, excavator unit
Excavator bucket 430 l

Tyres
18.4-30/14 SGL

Other equipment
Mudguards
Lifting lugs
Lockable tool box
Oscillation lock
frame joint locking, automatic or manual

OPTIONAL EQUIPMENT

Cab equipment
Air conditioning
Dual controls
Interval wipers, front and rear
Parking-brake alarm
Cab heater socket, 220 V
Radio console without radio
Instructor's seat

Engine and electrical system
Electric engine block heater, 220 V
Silencer for extra-low sound level

Drivetrain
8-speed transmission
Automatic Power Shift
Transmission cut-out
Differential lock, front axle

Protective equipment
Underbody protection guard, front
Lift cylinder lock

Hydraulic system
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

Loader unit
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

Electrical equipment
Extra working lights, front and rear (halogen)
Rotating beacon with collapsible mount

Excavator unit
Float position for excavator boom
1st double-acting hydraulic take-off (DVG-1) max. 30 l/min (for e.g. slope bucket)
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
Excavator unit without lateral angulation
Excavator unit with bucket arm extension and lateral angulation

Tyres
17.5-25
17.5-R25
20.5-25
20.5 R 25** RL2+
600/60-30.5/12
600/65-34/14 SB

Service and maintenance equipment
Tool kit
Wheel nut wrench set

Other equipment
Secondary steering
Towing hitch, rear
Digging brake incl. spring-applied parking brake
Lift hook, excavator unit
Bucket cylinder guard
Inspection lamp 24 V

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.

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