Volvo BM L180

- ***Engine output gross:***
  SAE J1349 211 kW (289 hp)
- ***Operating weight:***
  23,4-28,5 t (51 600-62 800 lb)
- ***Buckets:***
  4,2-14,0 m³ (5,5-18,3 yd³)

The high-capacity loader for the tough jobs

- *Torque Parallel Linkage – Powerful lift-arm system with:*
  - *unique breakout moment*
  - *excellent parallel lift-arm action*
  - *high lift height and long reach*
- *Direct-injected, turbocharged Volvo diesel*
- *Automatic Power Shift*
- *Enclosed wet oil-cooled brakes*
- *Care Cab – the cab with great comfort and safety*
- *Precision steering with good stability and maneuvrerability*
- *Contronic monitoring system*
- *Pilot-operated hydraulic system*
- *Hydraulic attachment bracket*

VOLVO BM

ENGINE

Volvo TD 122, a 6-cylinder, in-line, direct-injection, 4-stroke, turbocharged diesel engine with wet, replaceable cylinder liners.

Air cleaning: Air cleaning in three stages
1. Multi cyclone cleaner with automatic particle ejector
2. Paper filter with indicator
3. Safety filter

Make			Volvo	
Model			TD 122	
Output, gross at	r/s	(r/min)	33,3	(2000)
SAE J1349	kW	(hp)	211	(289)
Flywheel output at	r/s	(r/min)	33,3	(2000)
SAE J1349	kW	(hp)	202	(275)
DIN 70020 / 6271	kW	(hp)	202	(275)
Max. torque at	r/s	(r/min)	18,3	(1100)
SAE J1349 Gross	Nm	(lbf ft)	1390	(1025)
SAE J1349 Net	Nm	(lbf ft)	1380	(1018)
DIN 70020 / 6271	Nm	(lbf ft)	1380	(1018)
No. of cylinders			6	
Displacement, total	l	(in^3)	12,0	(733)
Bore	mm	(in)	130,17	(5,12)
Stroke	mm	(in)	150	(5,90)
Compression ratio			15:1	

ELECTRICAL SYSTEM

Contronic monitoring system with extended function surveillance. Solid-state electrical distribution box. The electrical system is well-protected by fuses. Prewired for optional equipment.

Central warning:
Central warning lamp for following functions: engine oil pressure, brake pressure, parking brake (buzzer by starting), engine temperature (buzzer as well), transmission temperature, transmission oil pressure, temperature front and rear axle/ brake cooling (buzzer as well), secondary steering (optional equipment), transmission hydraulic oil filter.

Voltage	V		24	
Batteries	V		2x12	
Battery capacity	Ah		2x140	
Alternator rating	W / A		1680 / 60	
Starter motor output	kW	(hp)	6,6	(9,0)

SERVICE REFILL CAPACITIES

Crankcase	l	(US gal)	33	(8,7)
Fuel tank	l	(US gal)	339	(89,6)
Cooling system	l	(US gal)	80	(21,1)
Transmission total	l	(US gal)	48	(12,7)
Front axle, total	l	(US gal)	46	(12,2)
Rear axle, total	l	(US gal)	46	(12,2)
Hydraulic system, total	l	(US gal)	260	(68,7)
Hydraulic tank	l	(US gal)	165	(43,6)

DRIVETRAIN

Torque converter: Single-stage.

Transmission: Volvo BM power shift transmission of countershaft type with single-lever control. Directional clutch modulation provides faster and smoother shifting between forward and reverse.
Shifting system: Volvo BM Automatic Power Shift.

Axles: Fully floating half-shafts with planetary type hub reductions. One-piece cast-steel axle housing. Fixed front axle and oscillating rear axle.

Differential: 100-% differential lock on front axle. Engagement and disengagement by means of switch on cab floor.

Hub reduction: Volvo BM manufacture with low-friction roller bearings on each planet wheel.

Tires: Alternative tires are available for different work operations.

Torque multiplication			2,27 : 1	
Transmission, make			Volvo BM	
Model			HT 220	
Speeds forward/reverse				
1	km/h	(mile/h)	6,5	(4,0)
2	km/h	(mile/h)	12,1	(7,5)
3	km/h	(mile/h)	24,0	(14,9)
4F	km/h	(mile/h)	35,1	(21,8)
Measurement with tires			26.5 - 25	
Front axle, make			Volvo BM	
Model			AWB 40	
Rear axle, make			Volvo BM	
Model			AWB 40	
Oscillation	± °		15	
Ground clearance at 15° oscillation	mm	(in)	610	(24,0)

BRAKE SYSTEM

The brake system meets the requirements of ISO 3450, SAE J1473 and EG 71/320

Service brakes: Volvo BM fully hydraulically operated, enclosed wet circulation oil-cooled disc brakes. Transmission disengagement during braking pre-selected via a switch on the instrument panel.

Secondary system: Dual-circuit system with rechargeable accumulators. One circuit or the parking brake fulfills the requirements.

Parking brake: Enclosed, wet multi-disc brake built into the transmission. Spring-loaded application. Hydraulic release via a lever to the left of the operator.

Number of discs/wheel			1	
Area/brake pad	cm^2	(in^2)	1750	(271)
Brake area/wheel	cm^2	(in^2)	3500	(542)
Accumulators,			3	
volume, total	l	(in^3)	3	(183)
Parking brake,				
area, total	cm^2	(in^2)	2583	(400)
Accumulator,			1	
volume, total	l	(in^3)	0,5	(30,5)

DIMENSIONAL DATA FOR VOLVO BM L180

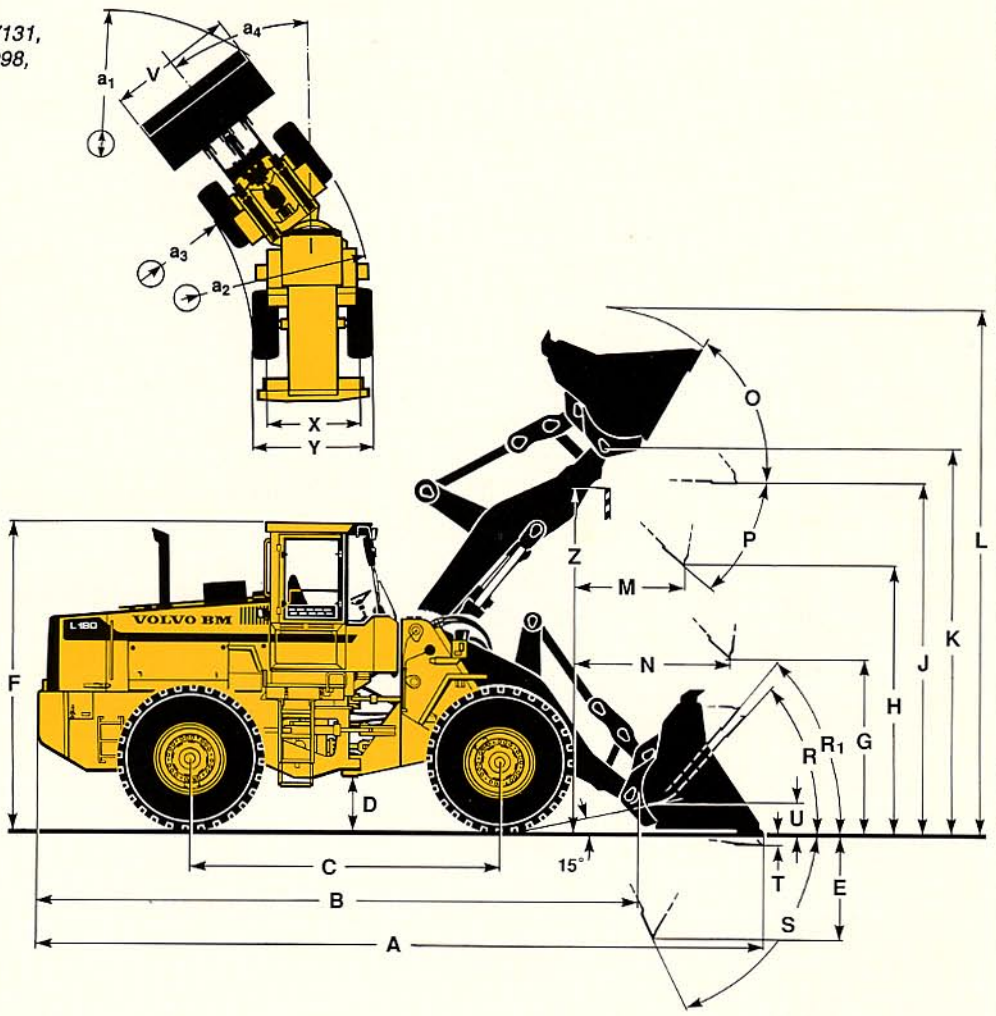
Tires: 26.5 R 25* XHA (L3)

Where applicable, specifications and dimensions are in accordance with ISO 7131, SAE J732, ISO 7546, SAE J742, ISO 5998, SAE J818.

B	mm	(ft in)	6960	(22'10")
C	mm	(ft in)	3550	(11'8")
D	mm	(ft in)	480	(1'7")
F	mm	(ft in)	3560	(11'8")
G	mm	(ft in)	2135	(7')
J	mm	(ft in)	4100	(13'5")
K	mm	(ft in)	4480	(14'8")
O	°		57	
P	°		45	
R	°		45	
R_1*	°		48	
S	°		71	
T	mm	(ft in)	110	(0'4")
U	mm	(ft in)	520	(1'9")
X	mm	(ft in)	2280	(7'6")
Y	mm	(ft in)	2955	(9'8")
Z	mm	(ft in)	4030	(13'3")
a_2	mm	(ft in)	6780	(22'3")
a_3	mm	(ft in)	3830	(12'7")
a_4	± °		37	

* Carrying position SAE

Bucket type
1 = Straight without teeth
2 = Spade nose with teeth
3 = Straight with teeth
4) = Edge savers
R = Hook-On
D = Pin-On

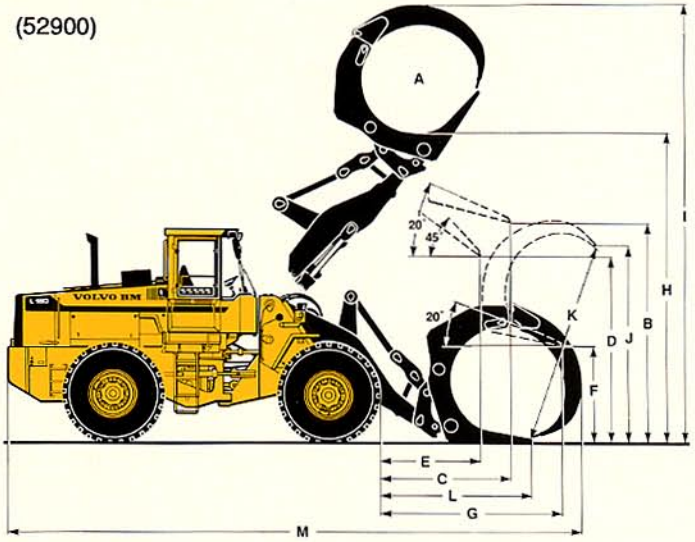


Order No.		92183		92182		91611		91610		91973
		4)		4)		4)		4)		
Volume heaped	m^3 (yd^3)	4,8 (6,3)	4,6 (6,0)	4,8 (6,3)	4,6 (6,0)	4,4 (5,8)	4,2 (5,5)	4,4 (5,8)	4,2 (5,5)	4,2 (5,5)
Mounting/Bucket type		D / 1	D / 1	R / 1	R / 1	D / 1	D / 1	R / 1	R / 1	D / 3
Tipping load, straight	kg (lb)	17410 (38380)	18000 (39680)	16730 (36880)	17300 (38140)	17630 (38870)	18200 (40125)	16950 (37370)	17510 (38600)	18190 (40100)
35° turn	kg (lb)	15290 (33710)	15870 (34990)	14640 (32280)	15210 (33530)	15500 (34170)	16070 (35430)	14860 (32760)	15410 (33970)	16030 (35340)
at full turn	kg (lb)	15040 (33160)	15620 (34440)	14390 (31720)	14960 (32980)	15260 (33640)	15820 (34880)	14620 (32230)	15170 (33440)	15780 (34790)
Breakout force	kN (lbf)	181 (40690)	193 (43390)	170 (38220)	180 (40460)	189 (42490)	202 (45410)	177 (39790)	189 (42490)	210 (47210)
A	mm (ft in)	8640 (28'4")	8540 (28'0")	8730 (28'8")	8620 (28'3")	8580 (28'2")	8470 (27'10")	8660 (28'5")	8560 (28'11")	8390 (27'6")
L	mm (ft in)	6180 (20'3")	6180 (20'3")	6230 (20'5")	6230 (20'5")	6130 (20'1")	6130 (20'1")	6180 (20'3")	6180 (20'3")	6200 (20'4")
V	mm (ft in)	3200 (10'6")	3200 (10'6")	3200 (10'6")	3200 (10'6")	3200 (10'6")	3200 (10'6")	3200 (10'6")	3200 (10'6")	3200 (10'6")
a_1 clearance circle	mm (ft in)	14960 (49'1")	14900 (48'10")	15010 (49'3")	14950 (49'0")	14920 (48'11")	14870 (48'9")	14970 (49'1")	14910 (48'11")	14830 (48'8")
E	mm (ft in)	1420 (4'8")	1330 (4'4")	1500 (4'11")	1410 (4'7")	1350 (4'5")	1270 (4'2")	1430 (4'8")	1350 (4'5")	1200 (3'11")
H	mm (ft in)	3070 (10'1")	3140 (10'3")	3020 (9'11")	3090 (10'2")	3120 (10'3")	3190 (10'6")	3060 (10'0")	3140 (10'3")	3240 (10'8")
M	mm (ft in)	1330 (4'4")	1290 (4'3")	1390 (4'6")	1350 (4'5")	1280 (4'2")	1240 (4'1")	1350 (4'5")	1310 (4'3")	1190 (3'11")
N	mm (ft in)	1960 (6'5")	1950 (6'4")	2000 (6'7")	1990 (6'6")	1930 (6'4")	1920 (6'3")	1980 (6'6")	1970 (6'5")	1890 (6'2")
Operating weight	kg (lb)	23600 52030	23290 (51340)	23930 52760	23620 (52075)	23470 51740	23160 (51060)	23780 52430	23470 (51740)	23350 (51480)

SORTING GRAPPLE

Operating weight kg (lb) 24000 (52900)

A	m^2	(ft^2)	3,3	(35,5)
B	mm	(ft in)	3780	(12'5")
C	mm	(ft in)	2130	(7')
D	mm	(ft in)	3080	(10'1")
E	mm	(ft in)	1660	(5'5")
F	mm	(ft in)	1620	(5'4")
G	mm	(ft in)	3020	(9'11")
H	mm	(ft in)	5120	(16'10")
I	mm	(ft in)	7800	(25'7")
J	mm	(ft in)	3400	(11'2")
K	mm	(ft in)	3650	(12')
L	mm	(ft in)	2410	(7'11")
M	mm	(ft in)	9880	(32'5")



ATTACHMENTS

Buckets

Straight bucket without teeth	4,2-4,8 m^3 (5,5-6,3 yd^3)
Straight bucket with teeth	4,2/4,6 m^3 (5,5/6,0 yd^3)
Spade nose bucket without teeth	4,2 m^3 (5,5 yd^3)
Spade nose bucket with teeth	4,2 m^3 (5,5 yd^3)
Rock bucket (density 2000 kg/m^3)	3,9 m^3 (5,1 yd^3)
Light materials bucket	7,5-14,0 m^3 (9,8-18,3 yd^3)
High-dump light materials bucket	7,0/13,0 m^3 (9,15/17,0 yd^3)

Timber grapples

Unloading grapple	3,3 m^2 (35,5 ft^2)
Sorting grapple	3,3 m^2 (35,5 ft^2)
General purpose grapple	1,8 m^2 (19,4 ft^2)
Tree length grapple	1,8 m^2 (19,4 ft^2)
Tropical timber grapple	1,4 m^2 (15 ft^2)
Heel/kickout	
Log pusher	

Examples of other attachments

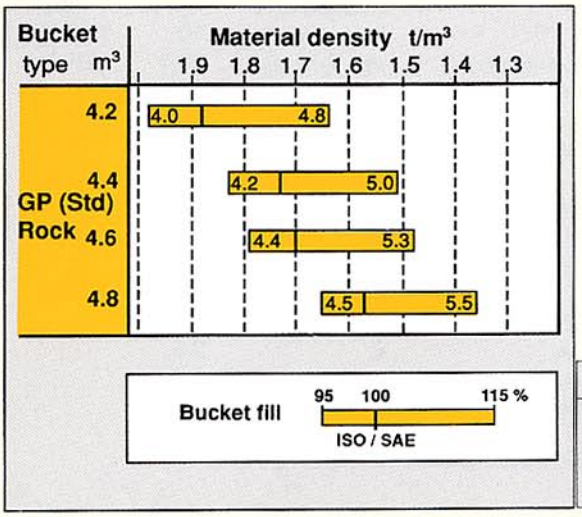
Fork holder	2260 mm (7'5")
Fork tines	1500 mm (4'11")
Combination forks	
Fork attachments with fixed tines	
Materials handling arm	

ALTERATION OF DIMENSIONAL DATA

						Counter-weight 1	Counter-weight 2	
Tires			30/65 29 XRDNA L3					
Extra counterweight	kg	(lb)				520*) (1150)	750**) (1650)	
Width over wheels	mm	(in)	+ 175 (7)					
Ground clearance	mm	(in)	± 0					
Tipping load at full turn	kg	(lb)	+395 (870)			+ 985 (1620)	+ 1420 (3130)	
Operating weight	kg	(lb)	+590 (1300)			+ 520 (1150)	+ 750 (1650)	

BUCKET SELECTION DIAGRAM

The volume of material handled is often greater than the bucket´s ISO/SAE classification.
Refer to the Material densities and bucket fill factor table prior to bucket selection.



*) **Counterweight 1,** *520 kg (1150 lb) may be used in all handling.*

****) Counterweight 2,** *750 kg (1650 lb) may only be used for stabilizing purposes within timber and pallet handling on a flat surface.*
Counterweight 2 replaces hydroinflation of rear tires.

Combination of counterweights 1 + 2 *may only be used in extreme cases for stabilizing purposes within timber and pallet handling with fork attachments. Only when working on a firm and flat surface.*

Material densities and bucket fill factor

Material	Earth	Clay	Sand	Gravel	Rock
Bucket fill %	100-115	110-120	100-110	100-110	75-100
Density t/m^3	1.4-1.6	1.4-1.6	1.6-1.9	1.7-1.9	1.5-1.9
Density lb/yd^3	2400-2700	2400-2700	2700-3200	2900-3200	2500-3200

STEERING SYSTEM

Load-sensing hydrostatic articulated steering with power amplification.

Pump: Variable-flow axial piston pump mounted on a power take-off on the transmission.

System supply: The steering system is fed from a separate steering pump.

Cylinders: Two double-acting cylinders with chromed piston rods.

Steering cylinders			2	
Bore	mm	(in)	100	(3,9)
Piston rod diameter	mm	(in)	50	(2)
Stroke	mm	(in)	418	(16,5)
Relief pressure	MPa	(psi)	21,0	(3045)
Max. flow	l/min		116,6	
	(US gal/min)			(30,8)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	35,0	(2100)

CAB

Tested and approved according to standards: ROPS (ISO/CD 3471-1990, SAE J1040), FOPS (ISO 3449, SAE J231), also meets standard according to "Overhead guards for rider lift trucks" (ISO 6055) and "Operator Restraint System" (SAE J386).

Safety and comfort: The *Care Cab* has convenient boarding steps and a wide door opening. It is lined on the inside with sound-absorbent material and mounted on 4 rubber pads to damp sound and inhibit vibration. Large glazed areas, good all-round visibility. The windshield is curved and made of laminated green-tinted glass.
All important operator information is presented clearly in front of the operator. Information panel for *Contronic* monitoring system (optional).

Heater and defroster: Heating element with filtered fresh air and 4-speed fan which gives over pressure and defroster outlets for all windows.

Operator's seat: Spring-suspended, adjustable operator's seat with lap belt. The seat is hung on a bracket on the rear wall. The force from the lap belt is absorbed by the seat rails.

Emergency exits			3	
Sound level in cab (ISO 6396)				
max.	dB (A)		-	
Ventilation	m^3/min	(ft^3)	10	(353)
Heating capacity	kW	(Btu/h)	11	(37500)
Operator's seat			ISRI	6000/575

HYDRAULIC SYSTEM

Open centre system with pilot-operated hydraulic valve.

Pump: A double pump (vane pump) mounted on a power take-off on the transmission.
Pump 1 works with all tilt and lift movements.
Pump 2 works with tilt out and lift up to 20 MPa (2900 psi). A pilot-controlled selector valve cuts-in flow to the system.

System supply: The pilot system is fed from a separate pilot pump, shared by the brake system.
Valve: Double-acting 3-spool valve. The control valve is actuated by a 3-spool pilot valve.
Lift function: The valve has four positions: Raise, neutral, lower and float. Disengageable inductive/magnetic automatic boom kick-out, adjustable for any position between maximum reach and full lift height.

Tilt function: The valve has three positions: Rollback, neutral and dump. Disengageable inductive/magnetic automatic bucket positioner, adjustable to any desired loading angle.

Cylinders: Double-acting.

Filters: Full-flow filtration through 10 µm filter cartridge.

Loader unit: *Torque Parallel Linkage* – with very high breakout force throughout the working range. Good parallel lift-arm action with both level and fully angled-up bucket throughout entire lifting range. Lift cylinders mounted in line with lift-arms. Tilt cylinder mounted between lift-arms.

Main pumps				
Relief pressure, pump 1	MPa	(psi)	22,5	(3362)
Flow	l/min		313,4	
	(US gal/min)			(82,8)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	35,0	(2100)
Relief pressure, pump 2	MPa	(psi)	20,0	(2900)
Flow	l/min		91,5	
	(US gal/min)			(24,2)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	35,0	(2100)
Pilot pump				
Relief pressure	MPa	(psi)	3,0-4,5	(435-652)
Flow	l/min		26,0	
	(US gal/min)			(6,9)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	35,0	(2100)
Lift cylinders			2	
Bore	mm	(in)	190	(7,5)
Piston rod diameter	mm	(in)	90	(3,5)
Stroke	mm	(in)	788	(31,0)
Tilt cylinder			1	
Bore	mm	(in)	260	(10,2)
Piston rod diameter	mm	(in)	120	(4,7)
Stroke	mm	(in)	480	(18,9)
Raise time *	s		6,6	
Dump time *	s		2,5	
Lower time (empty)	s		3,5	
Total cycle time	s		12,6	

** with load as per ISO 5998 and SAE J818.*

STANDARD EQUIPMENT

Safety and comfort

ROPS- and FOPS-cab
Cab heating with filtered fresh air intake and defroster
Tinted glass
Ergonomically designed and adjustable operator's seat with seat belt
Rear-view mirrors, external, two
Rear-view mirror, internal, one
Lighting:
headlights, full and dipped beam, asymmetrical, halogen
parking lights
working lights, front (two), halogen
working lights, rear (two), halogen
brake lights
rear lights
cab lighting
instrument lighting
direction indicators
Utility box in cab
File holder
Instrument panel with symbols
Sun visor
Safety start
Lever lock for hydraulic levers
Mudguards
Hazard flashers
Windshield wipers, front and rear windows
Intermittent wipers, front
Horn
Ashtray
Cigarette lighter
Lifting lugs
Openable window, right
Radio console without radio
Extended lube points

Engine & electrical system

Contronic monitoring system
Battery disconnect switch
Alternator
Air cleaner with ejector discharge
Engine temperature gauge
Hydraulic transmission temperature gauge
Hour recorder
Fuel gauge

Tell-tale and warning lamps for:
working lights, front/rear
charging
full-beam headlights
direction indicators
engine oil pressure
transmission oil pressure
differential lock
parking brake
brake pressure
hazard flashers
air cleaner
transmission hydraulic oil filter

Central warning (with buzzer):
engine oil pressure
brake pressure
parking brake(with buzzer)
engine temperature (with buzzer)
transmission temperature
transmission oil pressure
temperature front and rear axle/brake cooling (with buzzer)
secondary steering (optional)
transmission hydraulic oil filter

Drivetrain

Power Shift transmission
Automatic Power Shift (APS) (4F/3R)
Single-lever shift control
Differential lock, front axle
Internal circulation brake cooling, front and rear axle
Tires 26,5 R25*

Hydraulic system

Control valve (3-spool)
Pilot valve (3-spool)
Tilt position indicator
Boom kickout
Bucket positioner
Hydraulic oil cooler
Vane pump

OPTIONAL EQUIPMENT *(Standard on certain markets)*

Service and maintenance equipment
Tool kit
Wheel nut wrench set
Lockable tool box

Engine equipment
Electrical engine block heater
Low-emission version
Preheating coil
Oil bath pre-cleaner
Cyclone pre-cleaner
High-altitude version
Coolant filter

Electrical equipment
Rotating beacon with collapsible mount
Side marker lights
Left-hand asymmetrical headlights (halogen)
Extra working lights, front (two), halogen
Extra working lights, rear (two), halogen
Attachment lights (halogen)
Back-up alarm

Transmission equipment
Switch, forward/reverse shifting

Cab equipment
Radio
Instructor's seat
Heated operator's seat
Windshield washers, front/rear
Dual brake pedals
Hand throttle
Sliding vent window
Air conditioning
Installation kit for radio
Extra speedometer
Tiltable steering wheel
Information panel (Contronic): start figuration, setting language and versions, operating hours
general operating information, stop watch/trip meter, cycle counter, service interval
engine
electrical system
transmission
axles/brakes

Hydraulic equipment
3rd hydraulic control
Return line, 3rd hydraulic control
Electrical cable kit for 4th hydraulic control
Hydraulic attachment bracket incl. separate attachment locking
Boom lowering system
Boom Suspension System

External equipment
Towing hitch
Slow Moving Vehicle sign
Covering mudguards
Counterweight, 520 kg (1150 lb)
Counterweight, 750 kg (1650 lb)

Protective equipment
Protective grilles for headlights
Protective grilles for rear working lights
Protective grilles for rear lights
Muffler guard

Other equipment
German version (TBG)
Air horn
Secondary steering
Comfort Drive Control (CDC)
Fueling strainer
External brake oil cooling system, front and rear axles

Tires
30/65* R29

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
S-631 85 ESKILSTUNA SWEDEN

Ref. No. 21 2 669 1958 ENGELSKA
Printed in Sweden 7.01.93