

VOLVO BM

L 160



- **Engine output:**
SAE J1349 Net 185 kW (252 hp)
- **Operating weight:** 21,7 t (47 850 lb)
- **Buckets:** 3,4-13,0 m³ (4,5-17,0 yd³)

- Direct-injected, turbocharged Volvo diesel
- Volvo BM Automatic Power Shift
- Precision steering and small turning radius

Total control of attachment and load

- Ample breakout and lifting forces
- Pilot operated hydraulic system
- Loader unit with parallel lift-arm action, high lift height and long reach
- Hydraulic attachment bracket (optional)
- The largest family of attachments on the market

ENGINE



The engine is a 6-cylinder, direct-injection, 4-stroke, turbocharged diesel engine with wet, replaceable cylinder liners.

Air cleaning: air cleaning in three stages.

1. Cyclone cleaner with automatic exhaust ejector.
2. Paper filter with indicator in cab.
3. Safety filter.

Make		Volvo	
Model		TD 102 GB	
Output, gross, at	r/s (r/min)	36,7	(2200)
SAE J1349	kW (hp)	194	(264)
Flywheel output at	r/s (r/min)	36,7	(2200)
SAE J1349 Net	kW (hp)	185	(252)
DIN 70020 / 6271	kW (hp)	185	(252)
Max. torque at	r/s (r/min)	23,3	(1400)
SAE J1349 Gross	Nm (lbf ft)	980	(723)
SAE J1349 Net	Nm (lbf ft)	962	(710)
DIN 70020 / 6271	Nm (lbf ft)	962	(710)
No. of cylinders		6	
Displacement, total	l (in ³)	9,6	(586)
Bore	mm (in)	120,65	(4,75)
Stroke	mm (in)	140	(5,50)
Compression ratio		15:1	

ELECTRICAL SYSTEM



The electrical system is well protected with fuses. Prewired for extra equipment.

Central warning: (Standard on certain markets)

Central warning lamp for following functions: engine oil pressure, brake pressure, parking brake, engine temperature, transmission temperature, transmission oil pressure.

Voltage	V	24	
Batteries	V	2x12	
Battery capacity	Ah	2x140	
Cranking capacity	A	2x800	
Reserve capacity	min	2x270	
Alternator rating	W / A	1680 / 60	
Starter motor output	kW (hp)	6,6	(9)

SERVICE REFILL CAPACITIES



Crankcase	l (US gal)	29	(7,7)
Fuel tank	l (US gal)	340	(89,8)
Cooling system	l (US gal)	70	(18,5)
Transmission, total	l (US gal)	47	(12,4)
Front axle, total	l (US gal)	45	(11,9)
Rear axle, total	l (US gal)	56	(14,8)
Hydraulic system	l (US gal)	320	(84,5)
Hydraulic tank	l (US gal)	230	(60,8)

DRIVE TRAIN



Torque converter: single-stage, single-phase.

Transmission: Volvo BM power shift transmission of countershaft type with directional clutch modulation. Single lever control.

Axes: fully floating half-shafts. One-piece axle housing of casted steel. Rigid 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 planetary type hub reduction gears. Low-friction roller bearings on each wheel. The hub reduction gears can be removed without having to remove wheels and brakes.

Tires: Alternative tires are available for different working operations.

Torque multiplication		2,6 : 1	
Transmission, make		Volvo BM	
Model		HT 200	
Running speeds			
forward/reverse			
1	km/h (mile/h)	7,3	(4,5)
2	km/h (mile/h)	13,5	(8,4)
3	km/h (mile/h)	26,7	(16,6)
4	km/h (mile/h)	39,9	(24,8)
Measurement with tires		26.5 - 25	
Front axle, make		Volvo BM	
Model		AH 70 A	
Rear axle, make		Volvo BM	
Model		AH 70 D	
Oscillation	± °	15	
	mm (in)	600	(23,5)

BRAKE SYSTEM



The brake system meets requirements according to SAE J1473, EG 71/320 and ISO 3450.

Service brakes: air-hydraulically operated disc power brakes. Transmission disengagement when braking pre-selected with a switch on the instrument panel.

Secondary system: dual-circuit system, divided between axles. One circuit, or parking brake fulfills the requirements.

Parking brake: enclosed wet multi-disc brake built into transmission. A spring-loaded application. Hydraulic release with a control on left of operator. A warning lamp indicates when the parking brake is applied and gear lever is in forward or reverse.

Brake friction area			
front/wheel ea.	cm ² (in ²)	810	(126)
rear/wheel ea.	cm ² (in ²)	810	(126)
Reservoirs		3	
volume, total	l (in ³)	50	(3050)
Parking brake			
area, total	cm ² (in ²)	1547	(240)

STEERING SYSTEM



Articulated steering. Orbitrol steering with boosted flow.

Pump: vane pump fitted to a power take-off on transmission.

System supply: steering system supplied from separate steering pump.

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

Steering cylinders			2	
Bore	mm	(in)	110	(4,3)
Piston rod diameter	mm	(in)	50	(2)
Stroke	mm	(in)	423	(16,7)
Relief pressure	MPa	(psi)	15	(2175)
Flow	l/min		190	
	(US gal/min)			(50)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)

CAB



Tested and approved as safety cab according to the Swedish Working Environment Act section 3, subsection 8, and meets standards according to ISO 3471-1980, ROPS (SAEJ1040c), ISO 3449-1980 FOPS (SAE J231) and SS-ISO 6055 "Overhead guards for fork lift trucks" and SAE J386 Operator Restraint System. The cab is mounted on four rubber pads and is well insulated. The windshield is of laminated safety glass, all other windows being of toughened glass.

Heater and defroster: heating element with filtered fresh air and 3-speed fan with defroster outlets for all windows.

Operator's seat: spring suspended, fully adjustable operator's seat with seat belt.

Emergency exits			3	
Noise in cab				
max	dB (A)		80	
Ventilation	m ³ /min	(cfm)	10	(353)
Heating capacity	kW	(Btu/h)	11,6	(39600)
Operator's seat			ISRI 6000/575	

HYDRAULIC SYSTEM



Open center system pilot operated, and filtered breather on reservoir.

Pump: a triple-pump (vane pumps) fitted to a power take-off on transmission.

System supply: system supplied from two separate pumps, one large (pump 1) and one small (pump 2). Only the large pump operates when the system pressure exceeds 17 MPa (2465 psi). The pilot system is supplied from a separate pilot pump.

Valve: double-acting 3 spool valve. The control valve is governed by a 3 spool pilot valve.

Lifting function: the valve has four positions: lifting, neutral, lowering and floating. Disengageable electro-magnetic boom kick-out. Adjustable for all positions between maximum reach and full lifting height.

Tilting function: the valve has three positions: rollback, neutral and forward tilting. Disengageable electro-magnetic tilt positioner adjustable for all desired loading angles.

Cylinders: double-acting.

Filter: full-flow filtering through 10 µm filter cartridge in combination with magnetic core.

Load unit: hydraulic cylinders fitted in line with lifting arms.

Main pump 1				
Relief pressure	MPa	(psi)	20	(2900)
Flow	l/min		250	
	(US gal/min)			(66)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)
Main pump 2				
Relief pressure	MPa	(psi)	17	(2465)
Flow	l/min		140	
	(US gal/min)			(37)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)
Pilot pump				
Relief pressure	MPa	(psi)	4,0	(580)
Lifting cylinder				
Bore	mm	(in)	160	(6,3)
Piston rod diameter	mm	(in)	80	(3,1)
Stroke	mm	(in)	1107	(43,6)
Tilting cylinder				
Bore	mm	(in)	140	(5,5)
Piston rod diameter	mm	(in)	70	(2,8)
Stroke	mm	(in)	983	(38,7)
Lifting time *	s		6,7	
Tipping time *	s		1,9	
Lowering time (empty)	s		3,2	
Total cycle time	s		11,8	

* with load, SAE

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

Buckets

Straight lip without teeth	3,8/4,2/4,5 m ³	(5,0/5,5/6,0 yd ³)
Straight lip with teeth	3,8/4,2 m ³	(5,0/5,5 yd ³)
V-lip without teeth	3,8 m ³	(5,0 yd ³)
Truncated V-lip with teeth	3,8 m ³	(5,0 yd ³)
Rock bucket	3,4 m ³	(4,5 yd ³)
Light materials bucket	7,0/13,0 m ³	(9,2/17,0 yd ³)

Timber grapples

Unloading grapple	3,1/4,1 m ²	(33/44 ft ²)
Sorting grapple	3,1 m ²	(33 ft ²)
Tree Length grapple	1,4 m ²	(15 ft ²)
Log pusher		
Heel kickout		

Fork equipment

Fork holder	2260 mm	(7'5")
Fork tines	1500 mm	(4'11")

DIMENSIONAL DATA VOLVO BM L160

Tires: 26.5 R 25* XRA L3

Where applicable, specifications and dimensions are in accordance with SAE Standard J732c, J742b and J818b.

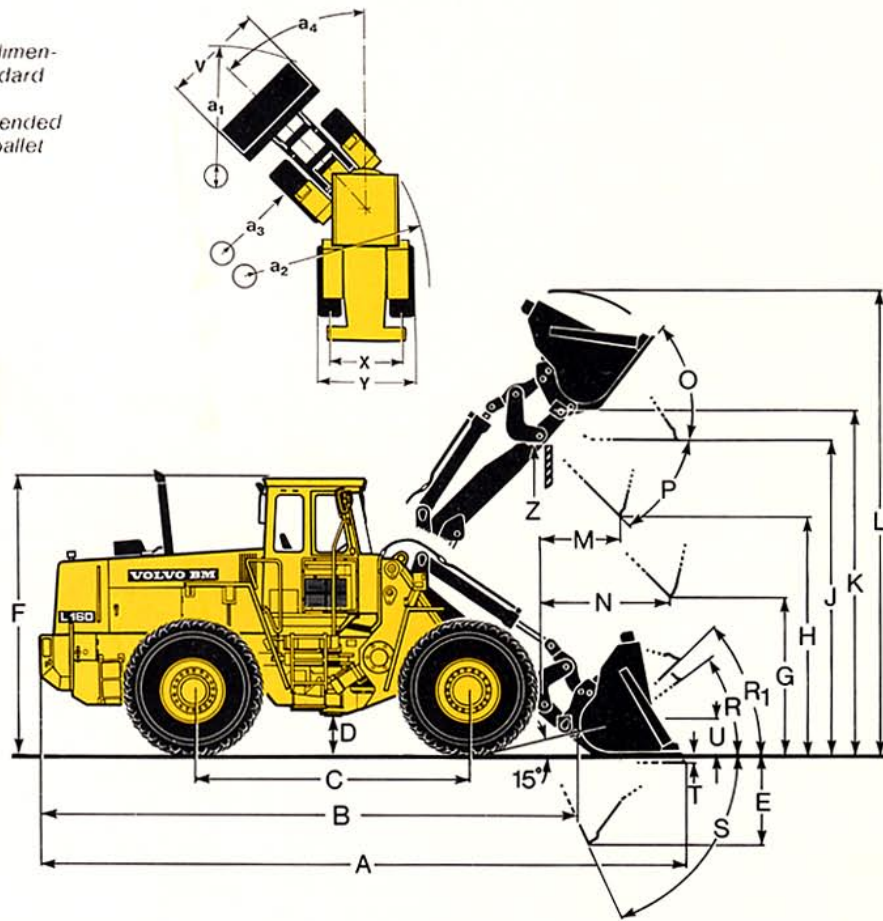
Liquid ballast in rear tires only recommended for stabilizing purposes in timber and pallet handling on hard and level ground.

B	mm (ft in)	6670	(21'11")
C	mm (ft in)	3550	(11'8")
D	mm (ft in)	470	(1'7")
F	mm (ft in)	3500	(11'6")
G	mm (ft in)	2000	(6'7")
J	mm (ft in)	4140	(13'7")
K	mm (ft in)	4430	(14'6")
O	°	55	
P	°	45	
R	°	42	
R ₁ *	°	45	
**	°	50	
S	°	67	
T	mm (ft in)	90	(3,5")
U	mm (ft in)	370	(1'2")
**	mm (ft in)	640	(2'1")
X	mm (ft in)	2310	(7'7")
Y	mm (ft in)	3000	(9'10")
Z	mm (ft in)	4020	(13'2")
a ₂	mm (ft in)	6820	(22'5")
a ₃	mm (ft in)	3790	(12'5")
a ₄	± °	37	

* Carrying position SAE
** In practical carry position

Bucket type

- 1 = Straight without teeth
- 2 = Spade nose bucket with teeth
- R = Hook-On
- D = Pin-On

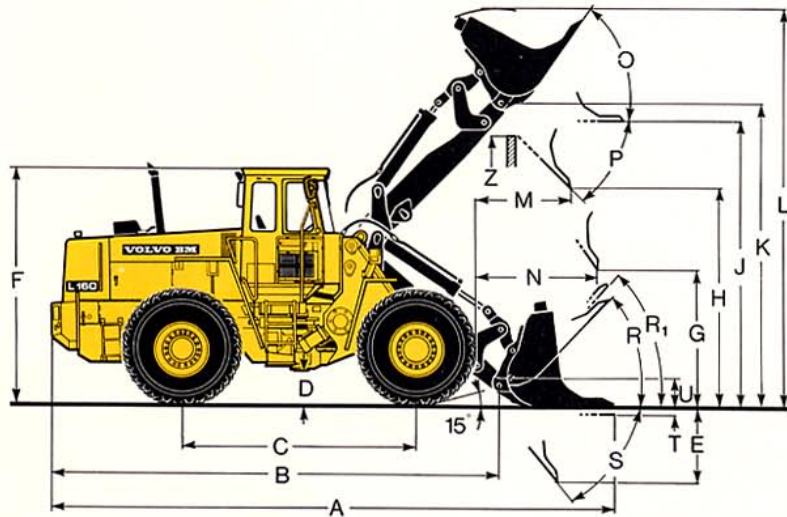


Order No.	99026	98933	99203	99027	99028	98934
Mounting / Bucket type	D / 1	R / 1	D / 1	D / 1	R / 1	D / 2
Volume, heaped	m ³ (yd ³)	3,8 (5)	3,8 (5)	4,2 (5,5)	4,5 (6)	4,5 (6)
Volumetric weight	kg/m ³	1800	1800	1600	1500	1500
	(lb/yd ³)	(3000)	(3000)	(2700)	(2500)	(2500)
Static tipping load, straight	kg	16200	15400	16100	15900	15010
	(lb)	(35710)	(33950)	(35490)	(35050)	(33090)
at 35° turn	kg	14200	13500	14200	14000	13200
	(lb)	(31310)	(29760)	(31310)	(30860)	(29100)
at full turn	kg	14000	13300	14000	13800	13000
	(lb)	(30860)	(29320)	(30860)	(30420)	(28860)
Breakout force	kN	178,6	166,7	178,6	162,4	145,8
	(lbf)	(40310)	(37460)	(40130)	(36500)	(32770)
Hydraulic lifting force at ground level	kN	249,3	244,7	248,6	247,6	243,1
	(lbf)	(56030)	(54980)	(55880)	(55650)	(54630)
at max. height	kN	109,3	106,5	108,8	108,4	105,5
	(lbf)	(24570)	(23940)	(24460)	(24370)	(23700)
A	mm	8080	8230	8140	8270	8420
	(ft in)	(26'6")	(27')	(26'8")	(27'2")	(27'7")
L	mm	5770	5760	6130	5880	5860
	(ft in)	(18'11")	(18'11")	(20'1")	(19'4")	(19'3")
V	mm	3200	3200	3200	3200	3200
	(ft in)	(10'6")	(10'6")	(10'6")	(10'6")	(10'6")
a ₁ clearance circle	mm	14730	14800	14760	14830	14900
	(ft in)	(48'4")	(48'7")	(48'5")	(48'8")	(48'11")
E	mm	1230	1360	1280	1400	1540
	(ft in)	(4')	(4'6")	(4'2")	(4'7")	(5'1")
H	mm	3220	3120	3180	3080	2980
	(ft in)	(10'7")	(10'3")	(10'5")	(10'1")	(9'9")
M	mm	1110	1210	1150	1250	1350
	(ft in)	(3'8")	(4')	(3'9")	(4'1")	(4'5")
N	mm	1850	1910	1880	1940	2000
	(ft in)	(6'1")	(6'3")	(6'2")	(6'4")	(6'7")
Weight distribution, front	kg	9600	10030	9710	9750	10210
	(lb)	(21160)	(21110)	(21410)	(21490)	(22510)
Weight distribution, rear	kg	12050	11890	12020	12000	11820
	(lb)	(26570)	(26210)	(26500)	(26460)	(26060)
Operating weight	kg	21650	21920	21730	21750	22030
	(lb)	(47730)	(48320)	(47910)	(47950)	(48570)

Spade nose bucket with teeth (91076 Pin-on)

Capacity	m ³	(yd ³)	3,4	(4,5)
Volumetric weight	kg/m ³	(lb/yd ³)	2000	(3400)
Machine weight	kg	(lb)	22190	(48920)
Static tipping load, at full turn	kg	(lb)	13580	(29940)

A	mm (ft in)	8300	(27'3")
B	mm (ft in)	6670	(21'11")
C	mm (ft in)	3550	(11'8")
D	mm (ft in)	470	(1'7")
E	mm (ft in)	1390	(4'7")
F	mm (ft in)	3500	(11'6")
G	mm (ft in)	2000	(6'7")
H	mm (ft in)	3060	(10')
J	mm (ft in)	4140	(13'7")
K	mm (ft in)	4430	(14'6")
L	mm (ft in)	5700	(18'8")
M	mm (ft in)	1230	(4')
N	mm (ft in)	1930	(6'4")
O	°	55	
P	°	45	
R	°	42	
R ₁ *	°	45	
~	°	50	
S	°	67	
T	mm (ft in)	90	(4")
U	mm (ft in)	415	(1'4")
~	mm (ft in)	640	(2'1")
V	mm (ft in)	3200	(10'6")
X	mm (ft in)	2310	(7'7")
Y	mm (ft in)	3000	(9'10")
Z	mm (ft in)	4000	(13'2")
a ₁	mm (ft in)	14880	(48'9")
a ₂	mm (ft in)	6820	(22'5")
a ₃	mm (ft in)	3790	(12'5")
a ₄	± °	37	

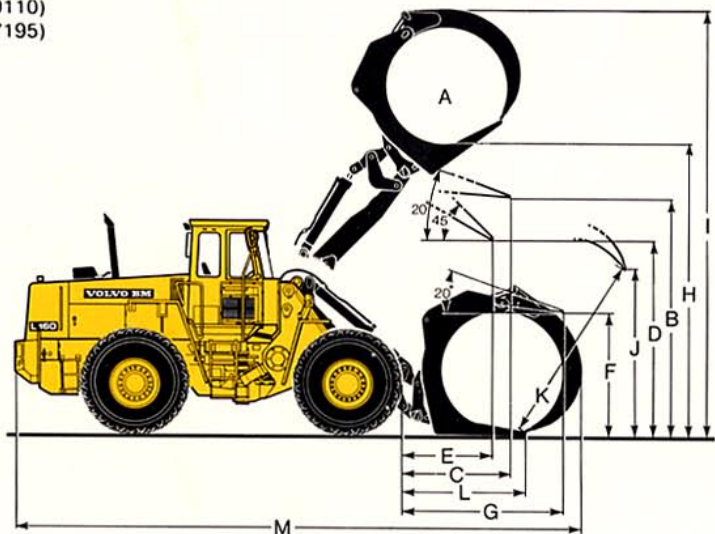


- * Carrying position SAE
- ~ In practical carry position

Sorting grapple (99999 Hook-on)

Operating weight	kg (lb)	22275 (49110)
Operating load	kg (lb)	7800 (17195)

A	m ² (ft ²)	3,1	(33)
B	mm (ft in)	3820	(12'6")
C	mm (ft in)	2070	(6'9")
D	mm (ft in)	3130	(10'3")
E	mm (ft in)	1650	(5'5")
F	mm (ft in)	1700	(5'6")
G	mm (ft in)	2945	(9'8")
H	mm (ft in)	5040	(16'6")
I	mm (ft in)	7310	(24')
J	mm (ft in)	3200	(10'6")
K	mm (ft in)	3400	(11'2")
L	mm (ft in)	2275	(7'6")
M	mm (ft in)	9465	(31')



ALTERATION OF DIMENSIONAL DATA

Tires	26.5-25/20	26.5-25/20 L3	26.5-25/20 L4	26.5 R 25 [*] L5	26.5 R 25 [*] XRDNA	
Liquid ballast in rear tires	75 % CaCl ₂					
Width over wheels	mm (in)	4 (0,16)	8 (0,31)	45 (1,77)	53 (2,1)	
Ground clearance	mm (in)	17 (0,67)	37 (1,46)	31 (1,22)	17 (0,67)	
Tipping load						
at full turn	kg (lb)	1900 (4190)	155 (340)	470 (1035)	690 (1520)	310 (680)
Operating weight	kg (lb)	1530 (3370)	255 (560)	780 (1720)	1150 (2535)	510 (1125)

STANDARD EQUIPMENT

<p>Safety and comfort ROPS- and FOPS-tested cab Cab heater with fresh air intakes provided with filters and defroster Tinted glass Ergonomically designed and adjustable driving seat with seat belt Rear-view mirrors, external, two Rear-view mirrors, internal one Lighting: main headlamps, full- and dipped-beam (asymmetrical, halogen) parking lights working lights, front (two), halogen working lights, rear (two), halogen sidelights brake lights rear lights cab lighting instrument lighting direction indicators</p>	<p>Storage box in cab Instrument panel with symbols Sun visor Safety start Mudguards Hazard warning flashers Windscreen wipers, front and rear windows Horn Ash tray Lighter Lifting eyes Lockable toolbox Pressure gauge for brake system Outlet for tire inflation Ventilation window</p>	<p>Engine & electrical system Socket, 24 V Battery disconnection switch Alternator Air cleaner with ejector emptying Engine temperature gauge Hydraulic transmission temperature gauge Hour recorder Fuel gauge Tell-tale lamps for: front and rear working lights charging full-beam headlights direction indicator flashers engine oil pressure transmission oil pressure differential lock parking brake brake pressure hazard warning flashers air cleaner</p>	<p>Central warning: (standard on certain markets) Engine oil pressure, Brake pressure, Parking brake, Engine temperature, Transmission temperature, Transmission oil pressure</p> <p>Drivetrain Power Shift transmission Differential lock (front axle) Single-lever shift control Tires 26.5 R 25"</p> <p>Hydraulic system Control valve (three spool) Pilot valve (three spool) Tilt position indicator Boom kick-out Tilt positioner Hydraulic oil cooler Vane pump</p>
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OPTIONAL EQUIPMENT (Standard on certain markets)

<p>Inspection and maintenance equipment Tool kit Wheel nut wrench Tyre inflation kit</p> <p>Engine equipment Enginge block heater, electrical Low exhaust emission version Suction fan Preheating coil Extra fuel filter Oil-bath pre-cleaner, std. engine Oil-bath pre-cleaner, low emission- and high-altitude version Cyclone pre-cleaner, low emission- and high-altitude version Underground version Exhaust cooling Rain cap for exhaust pipe High-altitude version Coolant filter Radiator, corrosion protected Fuel strainer</p>	<p>Electrical equipment Rotating beacon with collapsible mounting Asymmetrical left hand headlights (halogen) Extra working lights, front (halogen 2) Extra working lights, rear (halogen 2) Attachment lights (halogen) Inspection lamp Back-up alarm Central warning with buzzer Voltmeter Engine oil pressure gauge Transmission oil pressure gauge</p> <p>Transmission equipment Automatic Power Shift (4F/3R) Interlock for 4th speed</p> <p>Cab equipment Radio panel without radio Instructor's seat Heated operator's seat Windscreen washer, front/rear</p>	<p>Dual brake pedals ROPS canopy Intermittent wiper Sliding window, bronze tinted glass Air-conditioner Lever lock Speedometer and tachometer Ventilation fan Tilttable steering wheel Extra air outlet Rear hinged door</p> <p>Hydraulic equipment 3rd hydraulic control 3rd hydraulic control, return line 4th and 5th hydraulic control Hydraulic attachment bracket Boom lowering system Automatic hose coupler (AHC)</p> <p>External equipment Towing hitch "Slow-Moving Vehicle" sign</p>	<p>Protective equipment Protecting guards for headlamps Protecting guards for rear working lights Silencer guard Heavy duty safety roof Vandalism protection kit Antiskid tape Protection kit heavy dust Protection guards for tail lights Net for suction fan Underbody protection plate</p> <p>Other equipment Germany version Horn, air operated Compactor version Secondary steering Air tank, France Tropical version High-lift version Comfort Drive Control (CDC)</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.

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