

VOLVO BM

L 120



- **Engine output:**
SAE J1349 Net 140 kW (190 hp)
- **Operating weight:** 15,3 t (33 735 lb)
- **Buckets:** 2,8-10,0 m³ (3,7-13,1 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:

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

Make	Volvo		
Model	TD 71 G		
Output, gross, at	r/s (r/min)	36,7	(2200)
SAE J1349	kW (hp)	148	(200)
Flywheel output at	r/s (r/min)	36,7	(2200)
SAE J1349	kW (hp)	140	(190)
DIN 70020 / 6271	kW (hp)	140	(190)
Max. torque at	r/s (r/min)	23,3	(1400)
SAE J1349 Gross	Nm (lbf ft)	730	(538,4)
SAE J1349 Net	Nm (lbf ft)	705	(520)
DIN 70020 / 6271	Nm (lbf ft)	705	(520)
No. of cylinders	6		
Displacement, total	l (in ³)	6,7	(409)
Bore	mm (in)	104,77	(4,1)
Stroke	mm (in)	130	(5,1)
Compression ratio	15,5 : 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.

Voltage	V	24
Batteries	V	2x12
Battery capacity ea.	Ah	2x140
Cranking capacity ea.	A	2x800
Reserve capacity ea	min	2x270
Alternator rating	W/A	1680 / 60
Starter motor output	kW (hp)	5,4 (7,3)

SERVICE REFILL CAPACITIES



Crankcase	l (US gal)	25	(6,9)
Fuel tank	l (US gal)	215	(56,8)
Cooling system	l (US gal)	65	(17,2)
Transmission, total	l (US gal)	33	(8,7)
Drop-box	l (US gal)	4,7	(1,2)
Front axle, total	l (US gal)	35	(9,2)
Rear axle, total	l (US gal)	38	(10)
Hydraulic system	l (US gal)	255	(67,4)
Hydraulic tank	l (US gal)	190	(50,2)

DRIVE TRAIN



Torque converter: single-stage.

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

Axes: fully floating half-shafts. One-piece axle housing of ductile iron. Rigid front axle and oscillating rear axle.

Differential: 100% differential lock on front axle. Engagement and disengagement by means of switch on cab floor. Gearing is conventional, hypoid gears.

Hub reduction: Volvo BM manufacture with planetary type hub reduction gears. Low-friction roller bearings on each planetary 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	2,33 : 1		
Transmission, make	Volvo BM		
Model	HT 131		
Running speeds			
forward/reverse			
1	km/h (mile/h)	6,8	(4,2)
2	km/h (mile/h)	12,7	(7,9)
3	km/h (mile/h)	26,9	(16,7)
4	km/h (mile/h)	38,6	(24,0)
Measurement with tires	23.5 R 25"		
Front axle, make	Volvo BM		
Model	AH 60 H		
Rear axle, make	Volvo BM		
Model	AH 53 D		
Oscillation	± °	13	
	mm (in)	450	(18)

BRAKE SYSTEM



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

Service brakes: fully hydraulically operated power disc brakes. Transmission disengagement when braking preselected with a switch on the instrument panel.

Secondary: dual-circuit system. Front brake callipers on front axle and one brake calliper on rear axle included in one system and rear brake callipers on front axle and one brake calliper on rear axle in the other.

Parking brake: disc brake on front output shaft of transmission. A warning lamp indicates when the parking brake is applied and ignition is turned on 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)	405	(63)
Accumulators	3		
volume, total	l (in ³)	2,5	(152,5)
Parking brake area, total	cm ² (in ²)	100	(15,5)

STEERING SYSTEM



Load-sensing hydrostatic articulated steering.

Pump: variable flow axial piston pump fitted to a power take-off on transmission.

System supply: steering system supplied from separate steering pump.

Cylinders: two double-acting cylinders.

Steering cylinders			2	
Bore	mm	(in)	80	(3,3)
Piston rod diameter	mm	(in)	50	(1,96)
Stroke	mm	(in)	440	(17,3)
Relief pressure	MPa	(psi)	19	(2755)
Flow	l/min		97	
		(US gal/min)		(25,6)
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 (SAE J1040c), ISO 3449-1980 FOPS (SAE J231), 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 tempered safety glass.

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

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

Emergency exits			3	
Ventilation	m ³ /min	(cfm)	10	(353)
Heating capacity	kW	(Btu/h)	11,6	(39600)
Operator's seat			ISRI 6000/575	
Noise in cab max	dB (A)		78	

HYDRAULIC SYSTEM



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

Pump: a double-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 18 MPa (2610 psi). The pilot system is supplied from a separate pilot pump which is mounted in series with the steering and brake 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 bucket 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.

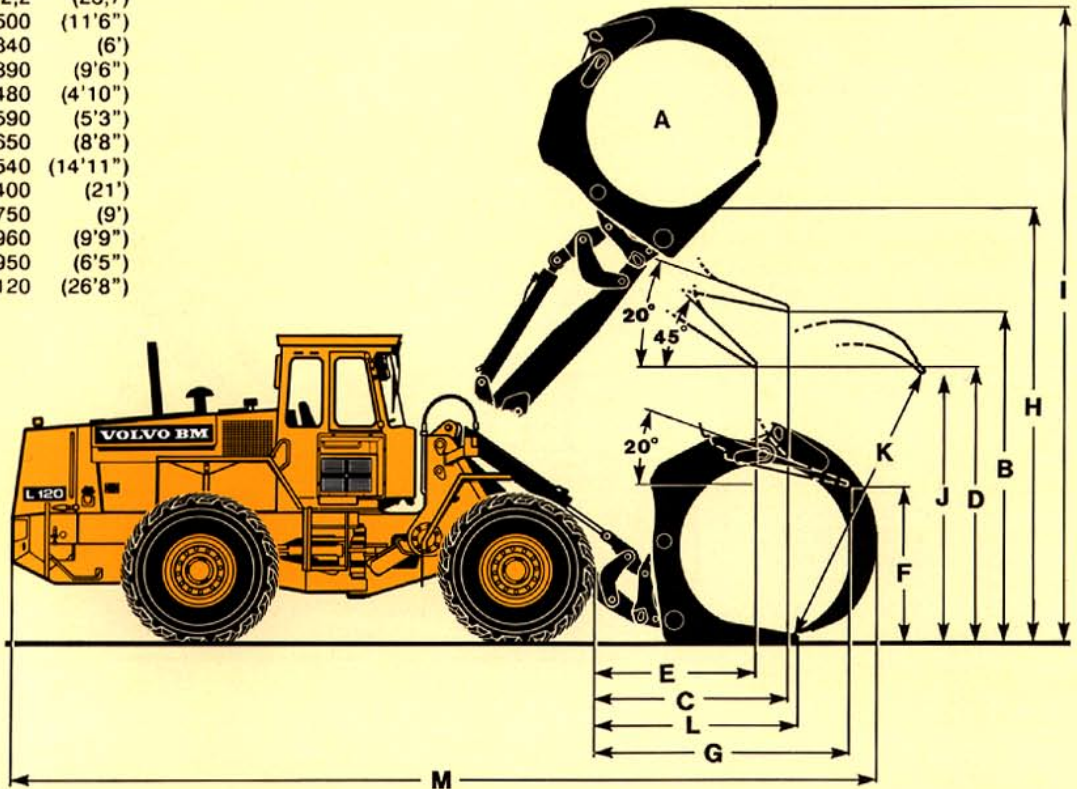
Main pump 1				
Relief pressure	MPa	(psi)	21,0	(3050)
Flow	l/min		196	
		(US gal/min)		(51,8)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)
Main pump 2				
Relief pressure	MPa	(psi)	18	(2600)
Flow	l/min		81	
		(US gal/min)		(21,4)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)
Pilot pump				
Relief pressure	MPa	(psi)	3,5	(510)
Flow	l/min		20	
		(US gal/min)		5,3
at	MPa	(psi)	3,5	(510)
and engine speed	r/s	(r/min)	36,7	(2200)
Lifting cylinder				
Bore	mm	(in)	140	(5,5)
Piston rod diameter	mm	(in)	70	(2,8)
Stroke	mm	(in)	980	(38,6)
Tilting cylinder				
Bore	mm	(in)	125	(4,9)
Piston rod diameter	mm	(in)	70	(2,8)
Stroke	mm	(in)	830	(32,7)
Lifting time *	s		6,5	
Tipping time *	s		1,5	
Lowering time (empty)	s		3,1	
Total cycle time	s		11,1	

* with load, SAE

Sorting Grapple (90354 Hook-On)

Operating weight	kg (lb)	15830 (34900)
Operating load	kg (lb)	5500 (12125)

A	m ² (ft ²)	2,2 (23,7)
B	mm (ft in)	3500 (11'6")
C	mm (ft in)	1840 (6')
D	mm (ft in)	2890 (9'6")
E	mm (ft in)	1480 (4'10")
F	mm (ft in)	1590 (5'3")
G	mm (ft in)	2650 (8'8")
H	mm (ft in)	4540 (14'11")
I	mm (ft in)	6400 (21')
J	mm (ft in)	2750 (9')
K	mm (ft in)	2960 (9'9")
L	mm (ft in)	1950 (6'5")
M	mm (ft in)	8120 (26'8")



ALTERATION OF DIMENSIONAL DATA

Tires		23.5 R 25 *	23.5-25/16			
Liquid ballast in rear tires		75% CaCl ₂	-			
Width over wheels	mm (in)	-	± 0			
Ground clearance	mm (in)	-	± 0			
Tipping load at full turn	kg (lb)	1380 (3040)	-150 (-330)			
Operating weight	kg (lb)	1170 (2570)	-260 (-570)			

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

Buckets

Straight bucket without teeth	2,8/3,1/3,3 m ³ (3,7/4,0/4,3 yd ³)
Straight bucket with teeth	2,8/3,1 m ³ (3,7/4,0 yd ³)
Spade nose bucket without teeth	2,8 m ³ (3,7 yd ³)
Spade nose bucket with teeth	2,8 m ³ (3,7 yd ³)
Light materials Bucket	5,4/10,0 m ³ (7,1/13,0 yd ³)
High-dump light materials bucket	4,8/8,8 m ³ (6,3/11,3 yd ³)

Timber grapples

Unloading grapple	2,2 m ² (23,7 ft ²)
Sorting grapple	2,2 m ² (23,7 ft ²)
Tree length grapple	1,3 m ² (13,9 ft ²)
Tropical timber grapple	0,9 m ² (9,7 ft ²)
Hi-lift swivel wood clamp	0,7-2,0 m ² (7,5-21,5 ft ²)
Log pusher	
Heel kickout	

Examples of other attachments

Pallet forks
 Breakout forks
 Fork tine extension
 Pallet fork with fork positioner
 Combination fork
 Material handling arms
 Hydraulic clamping grapple
 Asphalt cutter
 Diagonal snow blade

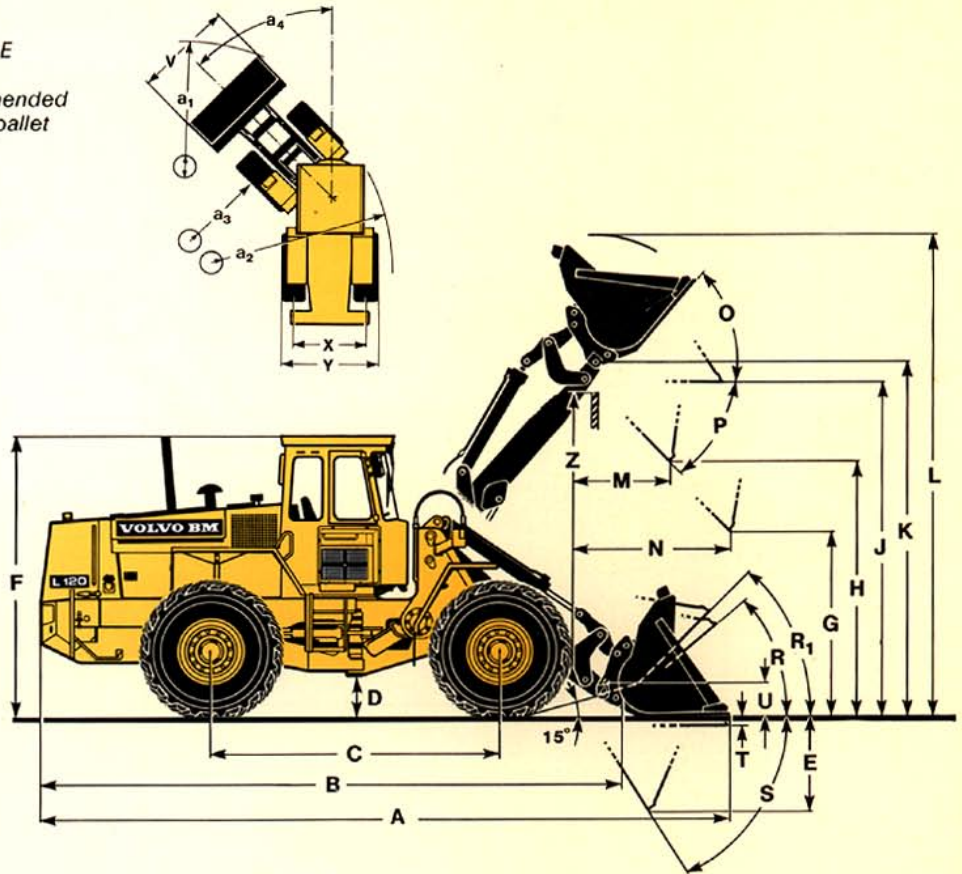
DIMENSIONAL DATA VOLVO BM L120

Tires: 23.5 R 25 *

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)	6360 (20'11")
C	mm (ft in)	3200 (10'6")
D	mm (ft in)	450 (1'6")
F	mm (ft in)	3240 (10'8")
G	mm (ft in)	2100 (6'11")
J	mm (ft in)	3760 (12'4")
K	mm (ft in)	3980 (13'1")
O	°	54
P	°	45
R	°	42
R ₁ *	°	45
~	°	56
S	°	58
T	mm (ft in)	30 (1,2")
U	mm (ft in)	330 (1'1")
~	mm (ft in)	720 (2'4")
X	mm (ft in)	2060 (6'9")
Y	mm (ft in)	2680 (8'10")
Z	mm (ft in)	3690 (12'1")
a ₂	mm (ft in)	5750 (18'10")
a ₃	mm (ft in)	3050 (10')
a ₄	± °	40

* Carrying position SAE
** In practical carry position



Bucket type

- 1 = Straight without teeth
- R = Hook-On
- D = Pin-On

Order No.		91381	91374	91382	91375	91383	91376
Mounting / Bucket type		D / 1	R / 1	D / 1	R / 1	D / 1	R / 1
Volume, heaped	m ³ (yd ³)	2,8 (3,7)	2,8 (3,7)	3,1 (4,1)	3,1 (4,1)	3,3 (4,3)	3,3 (4,3)
Volumetric weight	kg/m ³ (lb/yd ³)	1800 (3000)	1800 (3000)	1600 (2700)	1600 (2700)	1500 (2500)	1500 (2500)
Static tipping load, straight	kg (lb)	12330 (27180)	11880 (26190)	12200 (26895)	11850 (26125)	12010 (26475)	11660 (25705)
at 35° turn	kg (lb)	11030 (24315)	10630 (23435)	10930 (24095)	10600 (23370)	10730 (23655)	10420 (22970)
at full turn	kg (lb)	10650 (23480)	10260 (22620)	10550 (23260)	10230 (22550)	10350 (22815)	10050 (22155)
Breakout force	kN (lbf)	135,1 (30360)	125,9 (28305)	134,7 (30300)	125,8 (28290)	121,3 (27280)	114,3 (25690)
Hydraulic lifting force at ground level	kN (lbf)	221,8 (49870)	222,4 (50000)	222,4 (50000)	222,2 (49955)	221,5 (49800)	222,0 (49910)
at max. height	kN (lbf)	87,6 (19685)	86,0 (19335)	85,9 (19310)	87,3 (19620)	86,2 (19380)	84,9 (19090)
A	mm (ft in)	7660 (25'2")	7740 (25'5")	7660 (25'5")	7735 (25'5")	7780 (25'6")	7860 (25'10")
L	mm (ft in)	5370 (17'7")	5410 (17'9")	5490 (18')	5530 (18' 2")	5510 (18')	5560 (18'3")
V	mm (ft in)	2850 (9'4")	2850 (9'4")	2850 (9'4")	2850 (9'4")	2850 (9'4")	2850 (9'4")
a ₁ clearance circle	mm (ft in)	12560 (41'2")	12600 (41'4")	12560 (41'2")	12600 (41'4")	12610 (41'4")	12670 (41'6")
E	mm (ft in)	1070 (3'6")	1140 (3'9")	1070 (3'6")	1140 (3'9")	1170 (3'6")	1240 (4'1")
H	mm (ft in)	2890 (9'6")	2830 (9'3")	2890 (9'6")	2830 (9'3")	2800 (9'2")	2740 (9')
M	mm (ft in)	1070 (3'6")	1130 (3'9")	1070 (3'6")	1130 (3'9")	1160 (3'10")	1220 (4')
N	mm (ft in)	1680 (5'6")	1710 (5'7")	1680 (5'6")	1710 (5'7")	1730 (5'8")	1760 (5'9")
Weight distribution, front	kg (lb)	6130 (13515)	6290 (13865)	6160 (13580)	6320 (13930)	6370 (14040)	6460 (14240)
Weight distribution, rear	kg (lb)	9190 (20260)	9140 (20150)	9180 (20240)	9120 (20110)	9090 (20040)	9100 (20060)
Operating weight	kg (lb)	15320 (33775)	15400 (33995)	15340 (33820)	15440 (34040)	15450 (34060)	15500 (34280)

STANDARD EQUIPMENT

<p>Safety & comfort ROPS and FOPS cab Cab heating with filtered fresh air intake and defroster Tinted glass Ergonomically designed and adjustable operator seat with seat belt Rear-view mirrors, external, two Rear-view mirror, internal, one Lighting: main headlamps, full-dipped beam/asym. (halogen) working lights, front (two, halogen) working lights, rear (two, halogen) parking lights side marker lights brake lights</p>	<p>rear lights cab lighting instrument lighting direction indicators Instrument panel with symbols Sun visor Safety start Mudguards Hazard warning flashers Windscreen wipers, front and rear Horn Ashtray Cigarette lighter Lifting eyes Pressure gauge, brake system Opening window Wrist support</p>	<p>Engine & electrical system Fuel gauge Electric socket 24 V Battery disconnection switch Hour recorder Alternator Air cleaner with ejector emptying Engine temperature gauge Hydraulic transmission temperature gauge Control and warning lamps for: working lights, front/rear charging full-beam headlights direction indicators engine oil pressure hydraulic transmission oil pressure differential lock parking brake brake pressure hazard warning flashers air cleaner</p>	<p><i>Central warning: (standard on certain markets)</i> Engine oil pressure, brake pressure, parking brake, engine temperature, transmission temperature</p> <p>Drivetrain Powershift transmission Differential lock (front axle) Single-lever shift control Tires, 23.5 R 25 *</p> <p>Hydraulic system Vane pump Control valve (3 spool) Pilot valve (3 spool) Tilt position indicator Boom kick-out Tilt positioner Hydraulic oil cooler</p>
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OPTIONAL EQUIPMENT

<p>Service and maintenance equipment Tool kit Lockable tool box Wheel nut wrench set Air pressure equipment Anti freeze reservoir Air pressurized axles Extended lubepoints, loader linkage</p> <p>Engine equipment Pre-cleaner, oil-bath type Pre-cleaner, cyclone type Extra fuel filter Suction fan Preheating coil Engine block heater Low emission version High altitude version Fan, lower speed Exhaust deflector Radiator corrosion protected Coolant filter, engine</p> <p>Electrical equipment Rotating beacon Asymmetrical headlights, left Work lights front, extra</p>	<p>Work lights rear, extra Parking lights Attachment light (halogen) Registration plate light Back-up alarm Central warning with buzzer High tone horn Voltmeter Engine oil pressure gauge Hydraulic transmission oil pressure gauge Brushless Alternator 50A</p> <p>Drivetrain equipment Volvo BM Automatic Power Shift (4F/3R) Interlock for 4th speed Kickdown control at the liftcontrol lever</p> <p>Cab equipment File pocket Heated seat Air conditioner Tiltable steering wheel Dual brake pedals Windscreen washer, front/rear</p>	<p>Operators seat, heated, air suspended Reinforced windscreen Intermittent wiper, front Radio panel without radio Speedometer and tachometer Lever lock for hydraulic levers Sliding window, tinted glass Instructor's seat Parking-brake alarm, acoustic Extra air outlet ROPS canopy Ventilation fan Cab suppression kit</p> <p>Hydraulic equipment 3rd hydraulic control 3rd and 4th hydraulic control 5th hydraulic control Single-acting lifting function Boom lowering system Automatic hose coupler Separate attachment locking Parking brake, spring applied, hydraulically released Boom Suspension System</p>	<p>External equipment Extended mudguards Slow Moving Vehicle sign Towing hitch Extra counterweight</p> <p>Protective equipment Protection guards for headlamps Protection guards for rear working lights Protection guards for tail lights Net for suction fan Guard for silencer Anti skid equipment Vandalism protection kit Fuel fill protection Underbody protection plates</p> <p>Other equipment Secondary steering Hydraulic attachment bracket German version Fuel fill strainer 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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