



Volvo BM L90B



- **Engine output gross:**
SAE J1349 115 kW (156 hp)
- **Operating weight:**
12,6 t (27 785 lb)
- **Buckets:**
2,1-6,5 m³ (2,7-8,5 yd³)
- *Direct-injected, turbocharged Volvo diesel*
- *Volvo BM Automatic Power Shift*
- *Precision steering and small turning radius*
- *Care Cab – the cab with great comfort and safety*
- *Contronic monitoring system*
- *Loader unit with parallel lift-arm action, high lift height and long reach*
- *Pilot operated hydraulic system*
- *Ample breakout and lifting forces*
- *The largest family of attachments on the market*

VOLVO BM

ENGINE



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

Air cleaning:

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

Make			Volvo	
Model			TD 61 GB	
Output at	r/s	(r/min)	36,7	(2200)
SAE J1349 Gross	kW	(hp)	115	(156)
Flywheel output at	r/s	(r/min)	36,7	(2200)
SAE J1349 Net	kW	(hp)	109	(148)
DIN 70020 / 6271 Net	kW	(hp)	109	(148)
Max. torque at	r/s	(r/min)	23,3	(1400)
SAE J1349 Gross	Nm	(lbf ft)	640	(472)
SAE J1349 Net	Nm	(lbf ft)	630	(465)
DIN 70020 / 6271 Net	Nm	(lbf ft)	630	(465)
No. of cylinders			6	
Displacement, total	l	(in ³)	5,48	(334)
Bore	mm	(in)	98,43	(3,87)
Stroke	mm	(in)	120	(4,72)
Compression ratio			16:1	

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 as well), engine temperature (buzzer as well) transmission temperature, transmission oil pressure, secondary steering (optional equipment).

Voltage	V	24	
Batteries	V	2x12	
Battery capacity	Ah	2x105	
Alternator rating	W / A	1680 / 60	
Starter motor output	kW (hp)	5,4	(7,3)

SERVICE REFILL CAPACITIES



Crankcase	l (US gal)	17	(4,5)
Fuel tank	l (US gal)	210	(55)
Cooling system	l (US gal)	53	(14)
Transmission, total	l (US gal)	33	(8,7)
Drop-box	l (US gal)	4,7	(1,2)
Front axle, total	l (US gal)	32,5	(8,6)
Rear axle, total	l (US gal)	29,5	(7,8)
Hydraulic system	l (US gal)	130	(34,0)
Hydraulic tank	l (US gal)	95	(26)

DRIVE TRAIN



Torque converter: single-stage.

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

Axes: fully floating half-shafts. One-piece cast steel axle housing. 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 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	2,66 : 1		
Transmission, make	Volvo BM		
Model	HT 131		
Running speeds			
1, forward/reverse	km/h (mile/h)	7,2	(4,5)
2, forward/reverse	km/h (mile/h)	13,6	(8,5)
3, forward/reverse	km/h (mile/h)	28,5	(17,7)
4, forward	km/h (mile/h)	39,7	(24,9)
Measurement with tires	20.5 R 25*		
Front axle, make	Volvo BM		
Model	AH 55 E		
Rear axle, make	Volvo BM		
Model	AH 45 K		
Oscillation	± °	15	
	mm (in)	525	(20,7)

BRAKE SYSTEM



The brake system meets requirements according to SAEJ1473, EG 71/320 och ISO 3450.

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

Secondary: two independent circuits, axle divided system.

Parking brake: disc brake on front axle pinion drive flange. 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)	405	(62,8)
rear/wheel ea.	cm ² (in ²)	405	(62,8)
Accumulators	2		
volume, total	l (in ³)	1,0	(61)
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	(3,15)
Piston rod diameter	mm	(in)	50	(1,96)
Stroke	mm	(in)	410	(16,1)
Relief pressure	MPa	(psi)	16,5	(2393)
Flow	l/min		91	
	(US gal/min)			(24)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)

CAB



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

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 visible 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 with 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	
Ventilation	m ³ /min	(ft ³)	10	(353)
Heating capacity	kW	(Btu/h)	11	(37500)
Operator's seat			ISRI	6000/575

HYDRAULIC SYSTEM



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

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

System supply: system supplied from a separate pump. The pilot system is supplied from a combined pilot/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 electromagnetic 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 electromagnetic 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.

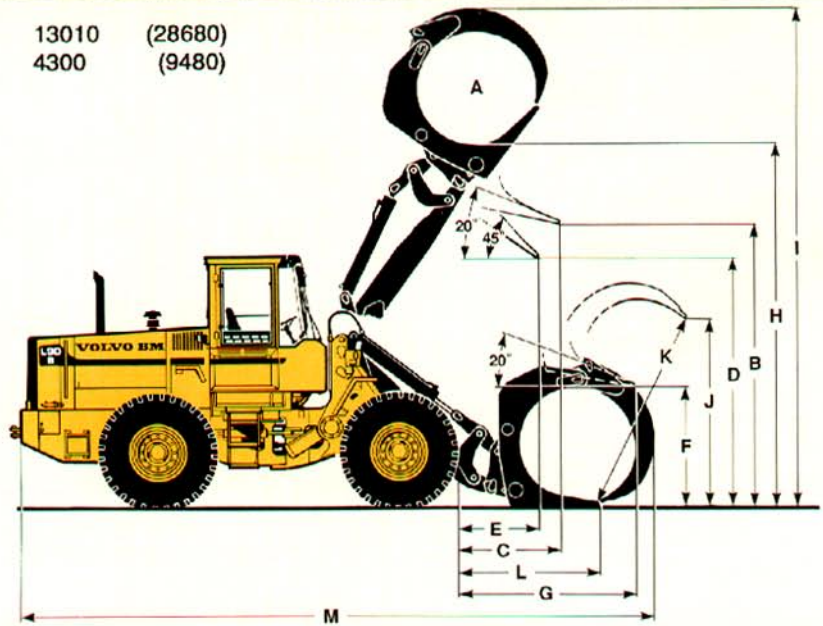
Main pump				
Relief pressure	MPa	(psi)	20,5	(2975)
Flow	l/min		202	
	(US gal/min)			(53,4)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)
Pilot pump				
Relief pressure	MPa	(psi)	3,0	(435)
Flow	l/min		25	
	(US gal/min)			(6,6)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)
Lifting cylinder				
Bore	mm	(in)	120	(4,7)
Piston rod diameter	mm	(in)	60	(2,4)
Stroke	mm	(in)	980	(38,6)
Tilting cylinder				
Bore	mm	(in)	110	(4,3)
Piston rod diameter	mm	(in)	60	(2,4)
Stroke	mm	(in)	830	(32,7)
Lifting time *	s		6,5	
Tipping time *	s		1,5	
Lowering time (empty)	s		3,0	
Total cycle time	s		11,0	

* with load, SAE

SORTING GRAPPLE (90351 Hook-On)

Operating weight	kg	(lb)	13010	(28680)
Operating load	kg	(lb)	4300	(9480)

A	m ²	(ft ²)	1,7	(18,3)
B	mm	(ft in)	3315	(10'11")
C	mm	(ft in)	1740	(5'9")
D	mm	(ft in)	2785	(9'2")
E	mm	(ft in)	1400	(4'7")
F	mm	(ft in)	1470	(4'10")
G	mm	(ft in)	2520	(8'3")
H	mm	(ft in)	4330	(14'2")
I	mm	(ft in)	6060	(19'11")
J	mm	(ft in)	2395	(7'10")
K	mm	(ft in)	2590	(8'6")
L	mm	(ft in)	1920	(6'4")
M	mm	(ft in)	8155	(26'9")



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

Buckets

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

Timber grapples

Unloading grapple	1,7/2,2 m ² (18,3/23,7 ft ²)
Sorting grapple	1,7/2,2 m ² (18,3/23,7 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 (SWC)	0,7-2,0 m ² (7,5-21,5 ft ²)
Heel kickout	
Log pusher	

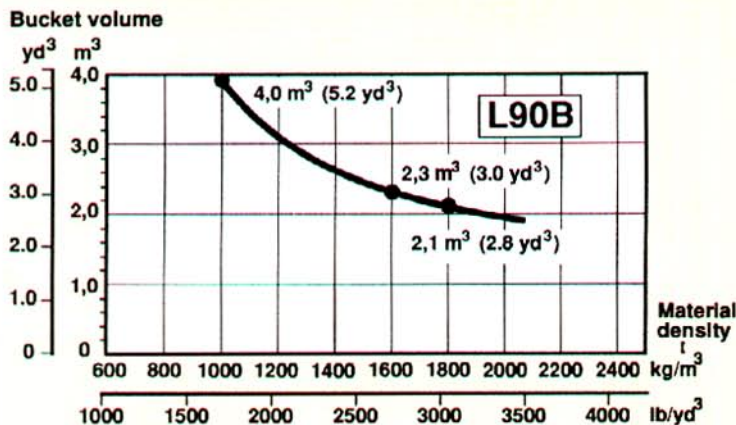
Examples of other attachments

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

ALTERATION OF DIMENSIONAL DATA

Tires			20.5 - 25/12				
Extra counterweight	kg	(lb)			Counter-weight 1	Counter-weight 2	
Width over wheels	mm	(in)	± 0		300*) (660)	500**) (1100)	
Ground clearance	mm	(in)	± 0				
Tipping load at full turn	kg	(lb)	-100 (-220)		+530 (1170)	+800 (1760)	
Operating weight	kg	(lb)	-220 (-485)		+300 (660)	+500 (1100)	

BUCKET SELECTION DIAGRAM



*) Counterweight 1, 300 kg (660 lb) may be used in all handling.

**) Counterweight 2, 500 kg (1100 lb) may only be used for stabilizing purposes within timber and pallet handling on a flat surface with. Counterweight 2 replaces hydroinflation of rear tires.

Combination of counterweights 1 + 2 may only be used for stabilizing purposes within timber and pallet handling on a flat surface.

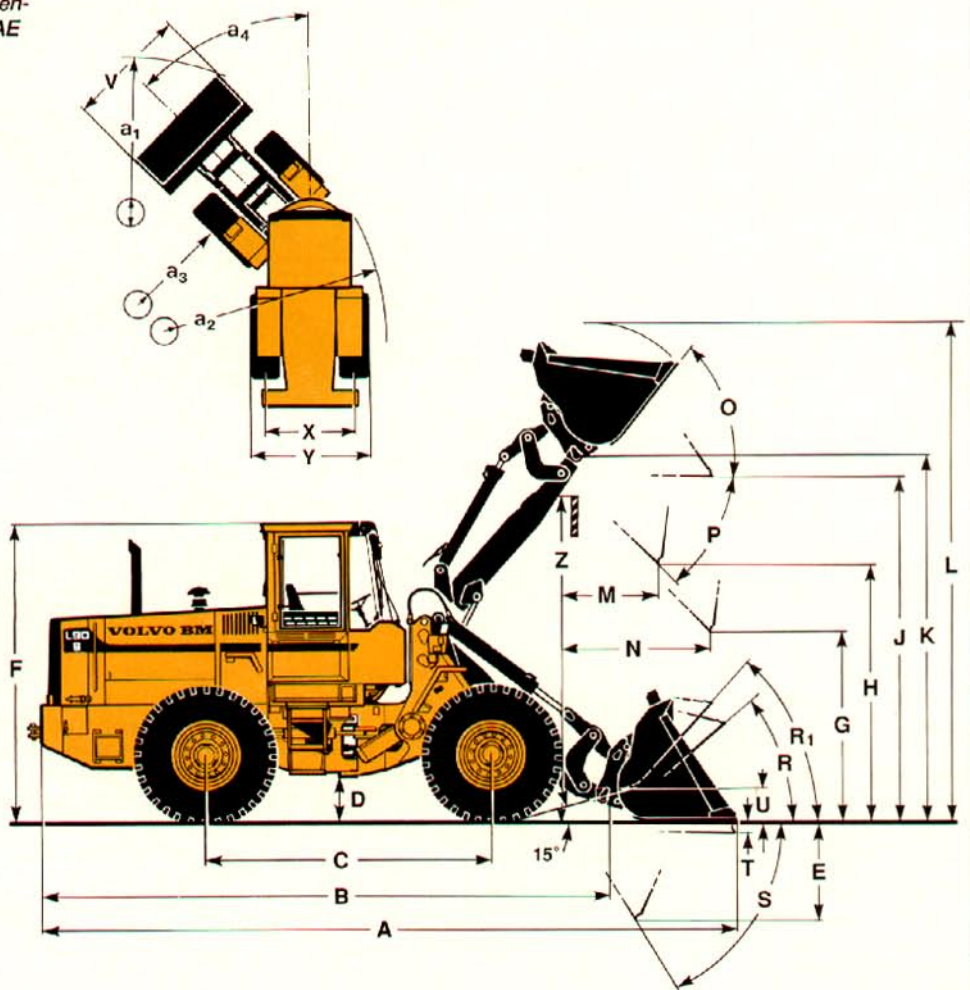
DIMENSIONAL DATA VOLVO BM L90B

Tires: 20.5 R 25*

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)	5990	(19'18")
C	mm	(ft in)	3000	(9'10")
D	mm	(ft in)	410	(1'4")
F	mm	(ft in)	3200	(10'6")
G	mm	(ft in)	2135	(7')
J	mm	(ft in)	3590	(11'9")
K	mm	(ft in)	3810	(12'6")
O	°		53	
P	°		45	
R	°		43	
R ₁ *	°		48	
**	°		54	
S	°		58	
T	mm	(ft in)	95	(3,7")
U	mm	(ft in)	375	(1'3")
**	mm	(ft in)	600	(2')
X	mm	(ft in)	1960	(6'5")
Y	mm	(ft in)	2490	(8'2")
Z	mm	(ft in)	3580	(11'9")
a ₂	mm	(ft in)	5360	(17'7")
a ₃	mm	(ft in)	2880	(9'6")
a ₄	± °		40	

* Carrying position SAE
** In practical carry position



Bucket type

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

Order No.	91367	91360	91368	91361	91369	91362
Mounting / Bucket type	D / 1	R / 1	D / 1	R / 1	D / 1	R / 1
Volume, heaped	m ³ (yd ³)	2,1 (2,75)	2,1 (2,75)	2,3 (3,0)	2,3 (3,0)	2,5 (3,25)
Static tipping load, straight	kg	9500	9000	9400	9000	8700
	(lb)	(20900)	(19800)	(20700)	(19800)	(19200)
at 35° turn	kg	8300	7900	8300	7900	7700
	(lb)	(18300)	(17400)	(18300)	(17400)	(17000)
at full turn	kg	8000	7600	7900	7600	7300
	(lb)	(17600)	(16800)	(17400)	(16800)	(16100)
Breakout force	kN	120,7	110,3	120,7	110,2	108,3
	(lbf)	(27130)	(24800)	(27130)	(24770)	(24350)
A	mm	7200	7270	7185	7270	7300
	(ft in)	(23'8")	(23'10")	(23'7")	(23'10")	(23'11")
L	mm	5000	5050	5100	5150	5100
	(ft in)	(16'5")	(16'7")	(16'9")	(16'11")	(16'9")
V	mm	2650	2650	2650	2650	2650
	(ft in)	(8'8")	(8'8")	(8'8")	(8'8")	(8'8")
a ₁ clearance circle	mm	11820	11870	11820	11870	11880
	(ft in)	(38'9")	(38'11")	(38'9")	(38'11")	(39")
E	mm	1010	1080	1010	1080	1110
	(ft in)	(3'4")	(3'7")	(3'4")	(3'7")	(3'8")
H	mm	2810	2750	2810	2750	2730
	(ft in)	(9'3")	(9')	(9'3")	(9')	(8'11")
M	mm	1050	1110	1050	1110	1130
	(ft in)	(3'5")	(3'8")	(3'5")	(3'8")	(3'9")
N	mm	1610	1650	1610	1650	1660
	(ft in)	(5'3")	(5'5")	(5'3")	(5'5")	(5'7")
Weight distribution, front	kg	5250	5400	5270	5440	5490
	(lb)	(11580)	(11900)	(11620)	(11990)	(12100)
Weight distribution, rear	kg	7100	7040	7100	7030	7030
	(lb)	(15650)	(15520)	(15650)	(15500)	(15500)
Operating weight	kg	12350	12440	12370	12470	12520
	(lb)	(27230)	(27420)	(27270)	(27490)	(27600)

STANDARD EQUIPMENT

Safety & 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 mirrors, internal, one
Lighting:
 main headlamps, full-dipped beam/asym. (halogen)
 working lights, front (two, halogen)
 working lights, rear (two, halogen)
 parking lights
 brake lights
 tail lights
 cab lighting
 instrument lighting
 workinglight dependent parkinglight

Instrument panel with symbols
 Sun visor
 Safety start
 Hazard warning flashers
 Windscreen wipers, front and rear
 Intermittent wipers, front
 Horn
 Ashtray
 Cigarette lighter
 Lifting eyes
 Opening window
 Wrist support
 Antiskid tape
 Filepocket
 Leverlock
 Radio console without radio
 Lockable engine hoods

Engine & electrical system

Contronic monitoring system
 Electric socket 24V
 Battery disconnection switch
 Alternator
 Rain cap
 Air cleaner with ejector discharge
 Engine temperature gauge
 Hydraulic transmission temperature gauge
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
 Hour recorder
 Fuel gauge

Central warning:

Engine oil pressure
 brake pressure
 parking brake (with buzzer)
 engine temperature (with buzzer)
 transmission temperature
 transmission oil pressure

Drivetrain

Power Shift transmission
 Automatic Power Shift (APS)
 Differential lock, front axle
 Single-lever shift control
 Tires 20.5 R25*

Hydraulic system

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

OPTIONAL EQUIPMENT *(Standard on certain markets)*

Service and maintenance equipment

Lockable tool box
 Tool kit
 Wheel nut wrench kit
 Extended lube points
 Air pressure equipment

Engine equipment

Electrical engine block heater
 Preheating coil
 Oil-bath pre-cleaner
 Low-emission version
 Extra fuel filter
 Cyclone pre-cleaner
 Coolant filter
 High-altitude version
 Radiator corrosion protected

Electrical equipment

Back-up alarm
 Brushless alternator

Extra working lights, front (two), halogen
 Extra working lights, rear (two), halogen
 Attachment light, (halogen)
 Left-hand asymmetrical headlights (halogen)
 Side marker lights
 Rotating beacon with collapsible mounting
 Registration plate light
 Radio

Transmission equipment

Switch, forward/reverse shifting
 Dual brake pedals

Cab equipment

Heated operator's seat
 Air suspended operators seat
 Speedometer and tachometer
 Sliding window
 Instructor's seat
 Parking-brake alarm, acoustic

Information panel Contronic:
 startup, settings language and units, operating hours
 operating information, stop watch, tripmeter, cycle counter, service intervals
 engine
 electrical system
 transmission
 Cable, information panel service
 Air conditioning
 Titable steering wheel
 Windshield washers, front / rear
 Throttle lockable

Hydraulic equipment

3rd hydraulic control
 3rd and 4th hydraulic control
 5th hydraulic control
 Single-acting lifting function
 Boom lowering system
 Hydraulic attachment bracket
 Separate attachment locking
 Automatic hose coupler (AHC)
 Hydraulic parking brake
 Boom Suspension System

External equipment

Extended mudguards
 Towing hitch
 Counterweight 1
 Counterweight 2

Protective equipment

Protective grilles for headlights
 Protective grilles for rear working lights
 Protective grilles for rear lights
 Underbody protection guard

Other equipment

Secondary steering
 Air horn
 Tires 20.5 x 25
 Comfort Drive Control (CDC)
 Fueling strainer
 Slow moving vehicle sign

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

S-631 85 ESKILSTUNA SWEDEN