Volvo BM L330C



VOLVO BM



SERVICE

Contronic monitoring system provides information on machine condition, routine maintenance schedules and minimizes time required for troubleshooting.

Service accessibility: Large, easy-to-open engine access doors with gas struts. Hinged radiator grille, fan and condenser. All routine service from ground level or steel platforms

D - C11	Harasa ye			
Refill	ca	pa	CI	ties

Fuel tank	693 1	Engine oil	611
Engine coolant	901	Transmission	921
Hydraulic tank	3361	Wheel hubs, ea.	20,81
Hydraulic system	552 1	Differentials, ea.	68,11
		Midmount bearing	4.71



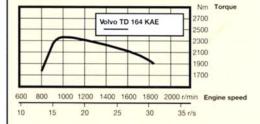
ENGINE

The low emission engine delivers high torque and quick response at low engine rpm. This contributes to good fuel economy, lower noise, longer life and reduced impact on the environment.

Engine: Volvo TD 164 KAE low emission, 6 cylinder, inline, direct-injected, turbocharged and intercooled, 4-stroke diesel engine.

Air Cleaning: three stage

Model	TD 164 KA	E
Output at	30,0 r/s	(1800 r/min)
SAE J1349 gross	370 kW	(503 hp)
SAE J1349 net	366 kW	(498 hp)
Max. torque at	16,7 r/s	(1000 r/min)
SAE J1349 gross	2370 Nm	
SAE J1349 net	2330 Nm	
Displacement	16,121	





ELECTRICAL SYSTEM

Contronic monitoring system with complete information on the status of the machine's various systems is standard. Electrical system with circuit board, mounted in the cab, is well protected by fuses. Prewired for optional equipment.

Central warning: Central warning lamp for the following functions: engine oil pressure, engine coolant temperature (with buzzer), transmission oil pressure, transmission oil temperature, brake pressure (buzzer), front axle oil temperature (buzzer), parking brake (buzzer).

Voltage	24 V	
Batteries, series/parallel	4x12 V	
Battery capacity, total	238 Ah	
Cold cranking capacity, total	1250 A	
Reserve capacity, ea	160 min	
Alternator rating	2240 W / 80	A
Starter-motor output	7.5 kW	(10.0 hp)



DRIVETRAIN

Drivetrain and working hydraulics well-matched to achieve optimum productivity. Dependable well proven design throughout the whole drivetrain.

Torque converter: Single-stage.

Transmission: Power shift, countershaft with single lever control. Directional and range modulation provide fast and smooth shifting.

Shifting system: Volvo BM Automatic Power Shift (APS II) with mode selector.

Axles: Fully floating axle shafts with planetary-type heavy duty hub reductions. Cast-steel axle housing. Fixed front axle and oscillating rear axle. Posi-Torq limited-slip differentials in front and rear axle.

Torque Converter	C9672
Torque multiplication	2,29:1
Transmission	C8421H
Speeds, max	
1, forward/reverse	6,6 km/h
2, forward/reverse	11,6 km/h
3, forward/reverse	19,9 km/h
4, forward only	34,2 km/h
Measured with tires	35/65R33 L-4
Front and rear axle	21D 5568
Rear axle oscillation,	±12 °
total	564 mm



BRAKE SYSTEM

Simple, reliable system ensures high availability and safety. Self-adjusting forced oil-cooled wet disc brakes give long service life.

Service brakes: Fully hydraulic operated system with outboard mounted oil-cooled, wet disc brakes at each wheel. Filtered and cooled oil circulates through each brake when engine is running. Transmission declutch during braking can be pre-selected by a switch on the instrument panel.

Secondary brake: Dual circuit axle-by-axle system. Actuated by service brake pedal. Low pressure alarm. Dead engine braking capability provided by two nitrogen-charged accumulators.

Parking brake: Dry disc type mounted on front axle input shaft. Spring applied, hydraulically released; actuated by switch on left instrument panel.

Pump: One variable-flow axial piston pump common with the pilot system.

Brake pressure setting	6,55 MPa
Number of discs/wheel	6
Number of accumulators	2
Volume, each	4,01

Standards: The brake system complies with the requirements of ISO 3450, SAE J1473



STEERING SYSTEM

Low-effort hydrostatic, load-sensing steering system gives short work cycle times. Power-efficient system provides good directional stability and smooth ride and contributes to good fuel economy.

System supply: The steering system is fed by two loadsensing variable-flow axial piston pumps. The pumps will also feed the main hydraulic system, but steering system flow always has priority.

Cylinders: Double-acting cylinders.

Steering cylinders	2
Bore	125 mm
Piston rod diameter	70 mm
Stroke	493 mm
Relief pressure	21,5 MPa
Max. flow	370 l/min
Articulation	± 35°



CAB

Care Cab with easy entry and wide door opening. Lined with sound-absorbent material. Sound and vibrationsuppressing suspension. Good all-round visibility, large glass areas. Curved windshield of laminated, green-tinted glass. Ergonomically located controls and instruments permit a comfortable operating position.

Instrumentation: All information important to the operator is easily visible in front of him. Cab display for Contronic monitoring system.

Heater/defroster/air conditioner: Heating element and air conditioner with filtered fresh air and four-speed fan. Defroster outlets for all windows. Cab air can be recirculated.

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

Emergency exits	2
Sound level in cab	
as per ISO 6394, max.	74 dB (A)
Exterior sound level	
ISO 6394 LwA	115 dB (A)
Ventilation	10 m ³ /min
Heating capacity	11 kW
Air conditioning capacity	8 kW

Standards: Tested and approved according to the following standards: ROPS (ISO 3471, SAE J1040), FOPS (ISO 3449, SAE J231). Complies with (ISO 6055) and "Operator Restraint System" (SAE J386).



HYDRAULIC SYSTEM

Load-sensing hydraulics distribute exactly the quantity of oil required for the function used. Load-sensing gives precise control of the hydraulics throughout the lifting range. High pump capacity provides quick and smooth movements.

System supply: Four load-sensing variable-flow axial piston pumps. Steering function always has priority from two of the pumps.

Valve: Twin double-acting 2-spool valves. The main valves are actuated by a pilot valve.

Lift function: The valve has four functions: raise, hold, lower and float. Inductive/magnetic automatic boom kickout can be switched on and off and is adjustable to any position between maximum reach and full lift height.

Tilt function: The valve has three functions: rollback, hold and dump. Inductive/magnetic automatic bucket positioner can be switched on and off.

Cylinders: Double-acting cylinders for each function.

Filter: Full-flow filtration through 20 micron (absolute) filter cartridge.

Main system		
Relief pressure	21,5 MPa	
Flow	740 I/min	
at	10 MPa	
and engine speed	30,0 r/s	(1800 r/min)
Pilot system		
Relief pressure	3,5 MPa	
Cycle times		
Raise*	8,5 s	
Dump*	1,8 s	
Lower, empty	4,5 s	
Total cycle time	14.8 s	

with load as per ISO 5998 and

SAE J818



LIFT-ARM SYSTEM

The Z-bar system is a dependable linkage with good breakout qualities. Ideal as a primary production unit.

Lift cylinder	2
Bore	230 mm
Piston rod diameter	120 mm
Stroke	1170 mm
Tilt cylinder	2
Bore	190 mm
Piston rod diameter	90 mm
Stroke	808 mm

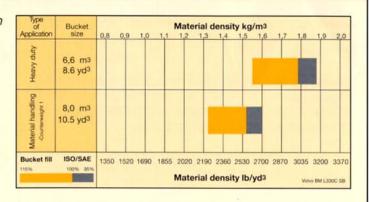
				н	EAVY DUTY AND MA	ATERIAL HANDL	ING			MATERIAL HANDLING	
Tires 35/65R33 L-	-4	Straight edge, STE	STE with teeth*	STE with BOE**	STE w/teeth* & wear caps	Spade nose, SPN	SPN with teeth*	SPN with BOE**	SPN w/teeth* & wear caps	Straight edge, STE	STE with BOE**
Volume, heaped	m ³	6,6	6,6	6,9	6,9	6,6	6,6	6,8	6,8	8,0	8,3
Volume, struck	m ³	5,6	5,6	5,9	5,9	5,6	5,6	5,8	5,8	6,8	7,1
Bucket weight	kg	4 000	4 410	4 510	4 670	4 300	4 720	4 910	4 980	4 430	4 940
Static tipping load	, kg	36 880	36 290	35 930	35 640	36 460	35 850	35 590	35 470	35 960	34 960
straight at full turn	kg	33 100	32 500	32 160	31 860	32 670	32 050	31 780	31 650	32 210	31 210
Breakout force	kN	500,3	500,3	467,9	459,0	426,7	426,7	402,4	395,9	446,4	420,0
А	mm	9 950	10 320	10 070	10 320	10 210	10 570	10 330	10 570	10 140	10 260
L	mm	6 930	6 930	6 930	6 930	6 930	6 930	6 930	6 930	7 170	7 170
J	mm	4 710	4 710	4 670	4 670	4 710	4 710	4 670	4 670	4 700	4 660
н	mm	3 780	3 540	3 690	3 540	3 610	3 380	3 520	3 380	3 650	3 560
M	mm	1 680	1 960	1 720	1 960	1 870	2 150	1 910	2 150	1 800	1 840
N	mm	2 330	2 670	2 470	2 670	2 610	2 820	2 620	2 820	2 550	2 570
Т	mm	90	90	130	130	90	90	130	130	100	140
E	mm	1 200	1 200	1 300	1 320	1 400	1 400	1 500	1 520	1 350	1 450
Bucket dimension	ns										
b	mm	1 830	2 190	1 920	2 190	2 080	2 440	2 170	2 440	2 000	2 090
С	mm	1 730	1 730	1 770	1 770	1 730	1 730	1 770	1 770	1 850	1 890
d	mm	1 400	1 770	1 490	1 770	1 650	2 020	1 740	2 020	1 570	1 660
е	mm	3 840	3 840	3 840	3 840	3 840	3 840	3 840	3 840	3 830	3 830
у	mm	65	65	65	65	65	65	65	65	65	65
a, clearance circle	mm	18 020	18 300	18 090	18 300	17 960	18 230	17 970	18 230	18 120	18 190
Operating weight	kg	46 710	47 130	47 220	47 390	47 020	47 430	47 630	47 690	47 150	47 660

Counterweight 1 included in operational data. Counterweight 1 may be used in material handling.

BUCKET SELECTION CHART

The volume handled varies with the bucket fill and is often greater than indicated by the bucket's ISO/SAE volume. The table shows optimum bucket choice with regard to the material density.

Material	Bucket fill %	Density t/m ³
Earth	100-115	1,4-1,6
Clay	110-120	1,4-1,6
Sand	100-110	1,6-1,9
Gravel	100-110	1,7-1,9
Rock	75-100	1,5-1,9



^{*}Teeth, Combi-parts C5T2. Dimensions measured to tips of teeth. Other teeth may affect dimensions differently.

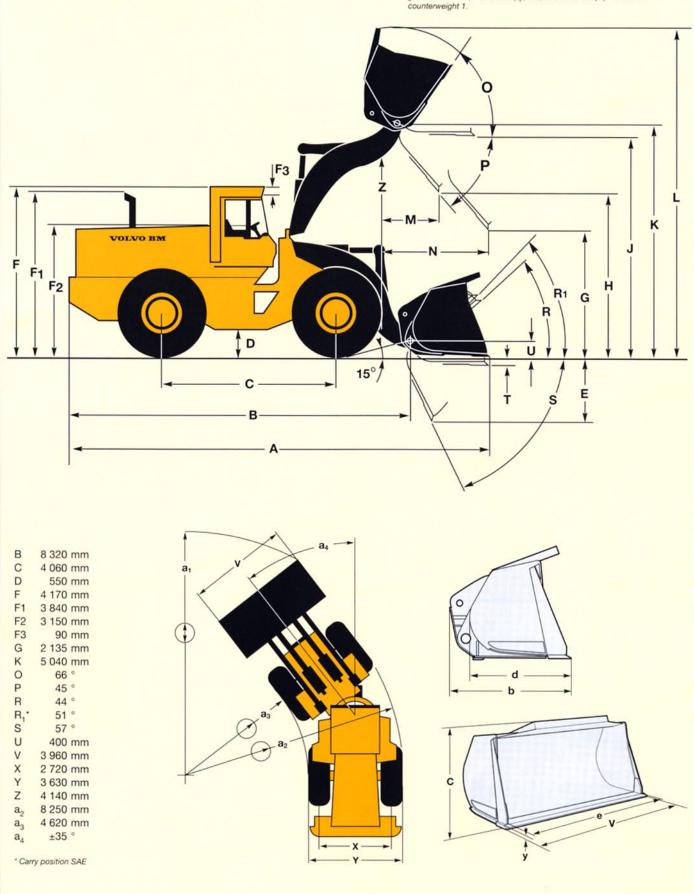
^{**}BOE - Bolt-on edges.

Maximum grading angle = 46°

OPERATIONAL DATA & DIMENSIONS (STANDARD BOOM)

Tires 35/65R33 L-4

Where applicable, specifications and dimensions are in accordance with ISO 7131, SAE J732, ISO 7546, SAE J742, ISO 5998, SAE J818, ISO 8313, Changes from the standard configuration may change machine dimensions and operating data. Operating weight is approximate and includes the bucket given in the table, ROPS canopy, cab, all standard equipment and counterveight.



Tires 35/65R33 L-4 and counterwe	ight 1				
SUPPLEMENTAL OPERATING WEIGHT		Change in operating weight	Change in static tipping load, straight	Change in static tipping load full turn	
Counterweight #1 (removal)	kg	- 1 040	- 2 300	- 2 050	
Fenders front	kg	+ 160	+ 45	+ 45	
ROPS canopy (removal) (for shipping only)	kg	- 760			
Optional tires: 35/65-33 (30PR) L-4 Firestone/ kg 35/65-33 (36PR) L-4 Firestone		+ 425	+ 390	+ 420	
35/65-33 (30PR) L-4 Goodyear kg		+ 785	+ 495	+ 460	
35/65-33 (30PR) L-5 Firestone kg		+ 1 040	+ 845	+ 830	
35/65-33 (30PR) L-5 Goodyear	kg	+ 1 470	+ 1 005	+ 920	
35/65R33 RL-5K* L-5 Goodyear kg		+ 1 010	+ 760	+ 710	
SUPPLEMENTAL OPERATING DIMENSIONS		Change in height dimensions	Change in width over tires	Change in reach fully raised	
Optional tires: 35/65-33 (30PR) L-4 Firestone/ 35/65-33 (36PR) L-4 Firestone	mm	+ 40	- 17	- 15	
35/65-33 (30PR) L-4 Goodyear	mm	+ 10	-7	- 12	
35/65-33 (30PR) L-5 Firestone	mm	+ 40	- 25	- 15	
35/65-33 (30PR) L-5 Goodyear	mm	+ 10	- 13	- 12	
35/65R33 RL-5K* L-5 Goodyear	mm	+ 20	- 9	- 12	
SUPPLEMENTAL SHIPPING DIMENSIONS		Height dimensions without ROPS canopy	Height dimensions		
Lower center hinge – top of cab	mm	3 520			
Rear frame – top of cab mm		3 510		HITTHE	
Bottom of planetary – top of cab mm		3 490			
Bottom of differential - top of cab mm		3 460			
Bottom of wooden wheels – op of cab	mm	3 690			
Bottom of wooden wheels – planetary	mm		200	reació seción	
Bottom of wooden wheels – differential	mm		235		

			HEAVY DUTY AND MATERIAL HANDLING							
Tires 35/65R33 L-4		Straight edge, STE	STE with teeth*	STE with BOE**	STE w/teeth*& wear caps	Spade nose, SPN	SPN with teeth*	SPN with BOE**	SPN w/teeth* & wear caps	
Volume, heaped	m ³	6,1	6,1	6,4	6,4	6,1	6,1	6,3	6,3	
Volume, struck	m ³	5,0	5,0	5,2	5,2	5,2	5,2	5,4	5,4	
Bucket weight	kg	3 990	4 400	4 500	4 660	4 290	4 700	4 900	4 960	
Static tipping load, straight	kg	35 950	35 370	34 970	34 700	35 490	34 900	34 550	34 440	
at full turn	kg	32 220	31 630	31 260	30 980	31 770	31 170	30 810	30 700	
Breakout force	kN	559,1	559,1	521,1	510,2	469,4	469,4	442,0	434,2	
A	mm	10 180	10 550	10 300	10 550	10 430	10 800	10 550	10 800	
L	mm	7 200	7 200	7 200	7 200	7 200	7 200	7 200	7 200	
J	mm	5 100	5 100	5 060	5 060	5 100	5 100	5 060	5 060	
н	mm	4 300	4 070	4 210	4 070	4 140	3 920	4 050	3 920	
M	mm	1 710	1 990	1 750	1 990	1 900	2 190	1 950	2 190	
N	mm	2 680	2 910	2 710	2 910	2 840	3 060	2 870	3 060	
Т	mm	80	80	120	120	80	80	120	120	
E	mm	1 030	1 030	1 120	1 140	1 210	1 210	1 310	1 330	
Bucket dimensions			1							
b	mm	1 680	2 050	1 770	2 050	1 940	2 300	2 030	2 300	
С	mm	1 840	1 840	1 880	1 880	1 840	1 840	1 840	1 840	
d	mm	1 260	1 620	1 350	1 620	1 510	1 880	1 590	1 880	
е	mm	3 840	3 840	3 840	3 840	3 840	3 840	3 840	3 840	
у	mm	65	65	65	65	65	65	65	65	
a ₁ clearance circle	mm	18 230	18 520	18 300	18 520	18 160	18 440	18 160	18 440	
Operating weight	kg	47 820	48 240	48 330	48 500	48 120	48 540	48 740	48 800	

Counterweight 2 included in operational data. Counterweight 2 may be used in material handling.

Counterweight 2 must never be used with hydroinflation or combined with tire chains.

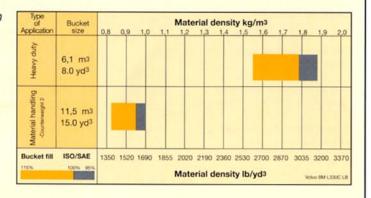
Maximum grading angle = 46°

Note: Light material bucket, 11,5m3, is available upon request.

BUCKET SELECTION CHART

The volume handled varies with the bucket fill and is often greater than indicated by the bucket's ISO/SAE volume. The table shows optimum bucket choice with regard to the material density.

Material	Bucket fill %	Density t/m ³
Earth	100-115	1,4-1,6
Clay	110-120	1,4-1,6
Sand	100-110	1,6-1,9
Gravel	100-110	1,7-1,9
Rock	75-100	1,5-1,9



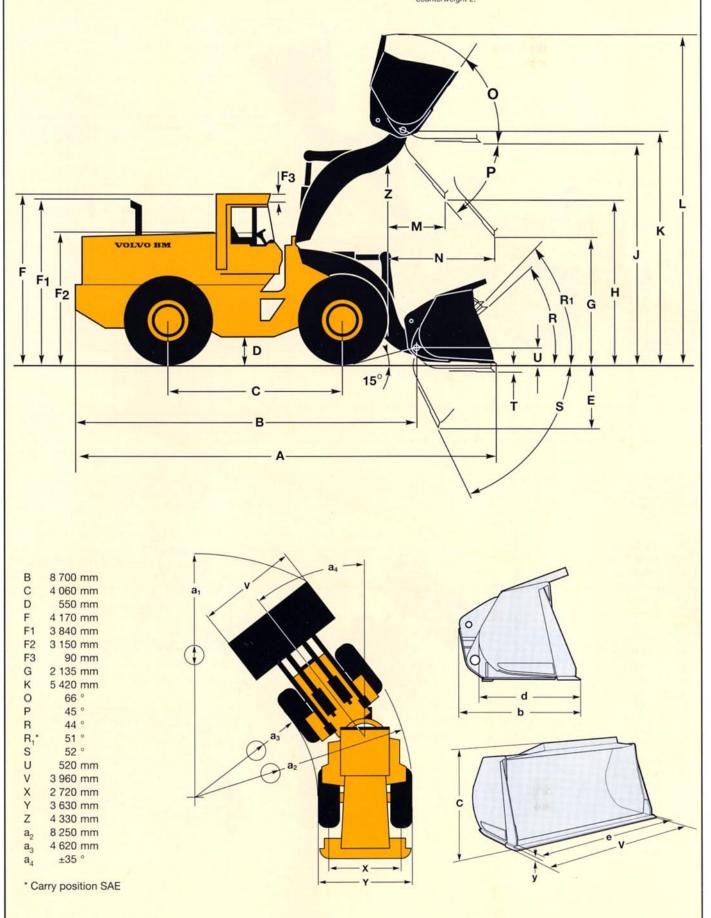
^{*}Teeth, Combi-parts C5T2. Dimensions measured to tips of teeth. Other teeth may affect dimensions differently.

^{**}BOE - Bolt-on edges.

OPERATIONAL DATA & DIMENSIONS (LONG BOOM)

Tires 35/65R33 L-4

Where applicable, specifications and dimensions are in accordance with ISO 7131, SAE J732, ISO 7546, SAE J742, ISO 5998, SAE J818, ISO 8313. Changes from the standard configuration may change machine dimensions and operating data. Operating weight is approximate and includes the bucket given in the table, ROPS canopy, cab, all standard equipment and counterweight 2.



SUPPLEMENTAL OPERATING DATA (LONG BOOM)

Tires 35/65R33 L-4 and counterweight 1 & 2

SUPPLEMENTAL OPERATING WEIGHT		Change in operating weight	Change in static tipping load, straight	Change in static tipping load full turn	
Counterweight #1 (removal) (for shipping only)	kg	- 1 040			
Counterweight #2 (removal) kg		- 1 040	- 2 140	- 1 900	
Fenders front	kg	+ 160	+ 45	+ 45	
ROPS canopy (removal) (for shipping only)	kg	- 760	This little		
Optional tires: 35/65-33 (30PR) L-4 Firestone 35/65-33 (36PR) L-4 Firestone	kg	+ 425	+ 320	+ 340	
35/65-33 (30PR) L-4 Goodyear	kg	+ 785	+ 420	+ 380	
35/65-33 (30PR) L-5 Firestone	kg	+ 1 040	+ 745	+ 725	
35/65-33 (30PR) L-5 Goodyear	kg	+ 1 470	+ 895	+ 810	
35/65R33 RL-5K* L-5 Goodyear	kg	+ 1 010	+ 690	+ 640	
SUPPLEMENTAL OPERATING DIMENSIONS		Change in height dimensions	Change in width over tires	Change in reach fully raised	
Optional tires: 35/65-33 (30PR) L-4 Firestone/ 35/65-33 (36PR) L-4 Firestone	mm	+ 40	- 17	- 15	
35/65-33 (30PR) L-4 Goodyear	mm	+ 10	-7	- 12	
35/65-33 (30PR) L-5 Firestone	mm	+ 40	- 25	- 15	
35/65-33 (30PR) L-5 Goodyear	mm	+ 10	- 13	- 12	
35/65R33 RL-5K* L-5 Goodyear	mm	+ 20	- 9	- 12	
SUPPLEMENTAL SHIPPING DIMENSIONS		Height dimensions without ROPS canopy	Height dimensions		
Lower center hinge – top of cab	mm	3 520			
Rear frame - top of cab	mm	3 510			
Bottom of planetary – top of cab	mm	3 490			
Bottom of differential – top of cab	mm	3 460			
Bottom of wooden wheels – op of cab	mm	3 690			
Bottom of wooden wheels – planetary	mm		200		
Bottom of wooden wheels – differential	mm		235		

STANDARD EQUIPMENT

Service and maintenance

Engine oil remote drain and fill Lubrication manifolds, ground accessible

Radiator remote drain and fill Transmission remote drain and fill Pressure test ports: transmission and hydraulic, quick connect, grouped on console for easy access

Fan, hydraulic driven, swing out Grille, rear, swing out

Air cleaner, dry type, dual element, with exhaust aspirated precleaner Coolant filter Coolant level sight gauge Engine intake manifold pre-heater Exhaust rain protection Flat-round radiator Low emission

Electrical System

24 volt - prewired for optional equipment Alternator, 24 Volt, 80 Amp Battery disconnect switch, lockable Gauges:

- engine temperature
- fuel level
- transmission temperature Hourmeter Horn, electric Lights:
- · instrument lighting
- · parking lights
- stop/tail combination (2 rear)
- turn signals with hazard warning switch
- working lights, 60 watt
 halogen (6 front and 2 rear)

Monitor and Warning:

 Central Warning (light with buzzer); engine oil pressure, engine coolant temperature (buzzer), transmission oil pressure, transmission oil temperature, brake system pressure, parking brake applied and transmission in forward or reverse (buzzer), front axle oil temperature (buzzer), hydraulic oil temperature

Contronic Monitoring System, (electronic control unit) Contronic Display
Warning and Monitoring Lights:

- · engine oil pressure
- · engine coolant temperature
- · air cleaner restriction
- alternator malfunction
- · working lights
- direction indicator
- hazard warning flasher
 transmission oil pressure
- · transmission oil temperature · brake system pressure
- parking brake applied
- front axle oil temperature Neutral start feature Test function for monitor and warning lights during start-up

Drivetrain

Countershaft transmission with directional and range modulation Single lever control
Automatic Power Shift (APS II) Operator controlled declutch Kickdown to 1st switch on shift lever and hydraulic console Transmission fluid level sight gauge Brakes, full hydraulic, wet disc, continuous oil-cooled, 4 wheel dual-circuit, axle by axle Secondary brake system, accumulator supplied Differentials: Posi-Torq limited-slip front and rear

Tyres and rims 35/65R33 L-4

Cab and ROPS Canopy ROPS Canopy (ROPS, SAE J1040, ISO 3471) FOPS, SAE J231, ISO 3449)

Cab (ROPS, SAE J1040, ISO 3471) Acoustical lining Air conditioner, 7kW, 24,000 Btu/h

Ashtray

Cigarette lighter Door lockable (left side access)

Door-open struts Heater/defroster/pressurizer 11 kW (37,500 Btu/h) with four speed blower fan

Filtered air for cab

Floor mat

Instrument panel with symbols Interior light

Mirror, rearview interior Mirror, rearview, exterior (2) Operator seat, ISRI, spring

suspended, heated Safety glass, tinted

Hip belt (SAE J386) Steering wheel, telescoping, adjustable tilt

Storage compartment Sun visor Windshield wiper, front and rear

Window openable, right-hand side Wiper, intermittent, front Cab access steps, hand rails, service platforms with anti-skid surfaces (SAE J185)

Hydraulic System

Main, load-sensing valves, 2 spool, pilot-operated Pilot valve, 3 spool Four variable-flow axial piston pumps (2 have steering priority) Boom and bucket control levers, fingertip Boom lever detents Boom lowering system Boom kickout, automatic, adjustable **Bucket lever detents** Bucket leveler, automatic, adjustable Control lever safety latch Steer, load-sensing valve Orbitrol, hydrostatic Hydraulic pressure test ports, quick connect Hydraulic fluid level sight gauge

External

Hydraulic oil cooler

Drawbar with pin Fuel fill strainer Isolation mounts: cab, engine, transmission, radiator Lifting lugs Side panels, engine hood Steering frame lock Tie-down locations Vandalism lock, provision for, batteries, engine coolant, fuel, hydraulic fluid, transmission/ torque converter fluid, engine side panels Boom to buckets pins with dual double-tapered roller bearings

OPTIONAL EQUIPMENT (May be standard in certain markets)

Service and maintenance

Single point lube Tool kit Tool box, lockable

Engine equipment

Engine block heater, 120 V US Engine block heater, 220 V Engine block heater, 220-240 V. Universal

Electrical system

Back-up alarm, acoustic Rotating beacon Working lights rear, extra

Switch, forward/reverse at hydr. controls

Tyres and rims

35/65-33 (30 PR) L4 FS 35/65-33 (36 PR) L4 FS (30 PR) L4 GY 35/65-33 35/65-33 (30 PR) L5 FS 35/65-33 (30 PR) L5 GY 35/65R33 RL-5K* L5 GY Rims with wood protection

Armrest (left) for ISRI operator seat Dual brake pedals Instructor's seat Operator seat, ISRI, air suspended, heated Radio installation kit Hip belt 3in Hip belt, retractable Sliding window, door Sound reduction kit Throttle, lockable Windshield washers front/rear

Hydraulic system

Attachment locking, without bracket Biodegradable hydraulic fluid Boom Suspension System Hydraulic function, 3rd

External equipment

Counterweight 1 - 2 x 520 kg Counterweight 2 - 2 x 520 kg Fenders, front Rear fender, swing-out

Protective equipment

Guards for stop/tail lights

Other equipment

Comfort Drive Control, CDC European sound reduction kit Long boom Secondary steering German Tiefbau kit

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