



Michigan L160 High-Lift



ENGINE OUTPUT:
252 hp (185 kW) VOLVO
DIRECT-INJECTED,
TURBOCHARGED DIESEL

OPERATING WEIGHT:
52,710 lb (23,9 t)

GRAPPLES: 24-42 ft²
(2,25 - 3,9 m²)

**AUTOMATIC POWERSHIFT
TRANSMISSION**

**VME MANUFACTURED,
DESIGNED, ENGINEERED
FRONT CARRIER LINKAGE**

**COMFORT/EFFICIENCY
DESIGNED CAB**

**HIGH LIFT ARM MOUNTING
OFFERS LONG REACH AND
HIGH LIFT HEIGHT**

360° GRAPPLE ROTATION

**CENTRAL LUBRICATION
STANDARD EQUIPMENT**

**PILOT OPERATED
"FINGERTIP" HYDRAULICS**

MICHIGAN



ENGINE

Direct-injected, turbocharged 6 cylinder in-line 4-cycle diesel.

Make	Volvo	
Model	TD102GB	
Max. rating* at	2200 rpm	(36,7 rps)
SAE J1349 (ISO 1585)	264 hp	(194 kW)
Flywheel rating** at	2200 rpm	(36,7 rps)
SAE J1349 (ISO 1585)	252 hp	(185 kW)
DIN 70020/6271	252 hp	(185 kW)
Max. torque at	1400 rpm	(23,3 rps)
SAE J1349 (ISO 1585)	710 lbf ft	(962 Nm)
DIN 70020/6271	710 lbf ft	(962 Nm)
Number of cylinders	6	
Displacement, total	586 in ³	(9,6 dm ³ ,l)
Bore	4.75 in	(120,65 mm)
Stroke	5.5 in	(140 mm)

Air cleaners

1. Cyclone precleaner with automatic dust ejector.
2. Paper filter with restriction warning light on instrument panel.
3. Replaceable safety filter.

***Max. rating** - Rating of engine equipped only with components essential for engine function, such as injection pump, oil pump, and water pump.

****Flywheel rating** - Net rating measured with fan, intake and exhaust system, cooling system, and alternator mounted.



ELECTRICAL

The electrical system is well protected by fuses. Pre-wired for optional equipment.

Voltage	24 V	
Batteries (12 volt) no.	2	
Battery capacity, ea.	140 Ah	
Cranking capacity, ea.	800 A	
Reserve capacity, ea.	270 min	
Alternator rating	1540/60 W/A	
Starter motor output	9 hp	(6,6 kW)



SERVICE REFILL CAPACITIES

Crankcase, with filter	8.2 US gal	(31 dm ³ ,l)
Fuel tank	89.8 US gal	(340 dm ³ ,l)
Cooling system	18.5 US gal	(70 dm ³ ,l)
Transmission, total	12.4 US gal	(47 dm ³ ,l)
Front axle, total	11.9 US gal	(45 dm ³ ,l)
Rear axle, total	14.8 US gal	(56 dm ³ ,l)
Hydraulic system, total	84.5 US gal	(320 dm ³ ,l)
Hydraulic tank	60.8 US gal	(230 dm ³ ,l)



DRIVETRAIN

Torque Converter: Single stage, single phase.

Transmission: Volvo BM automatic powershift transmission, countershaft-type with bi-directional clutch modulation. Single lever control. Four speeds forward, three reverse.

Axles: Full-floating axle half-shafts with planetary final gear reduction. Single piece cast axle housings. Fixed front axle and oscillating rear axle.

Differentials: Hypoid gear differentials on front and rear axles. 100% differential lock on front axle controlled by floor switch.

Hub Reduction: Planetary-type final drive reduction with low-friction roller bearings mounted in each wheel hub.

Tires: Tubeless with nylon cord body. Other tires available for different applications.

Torque multiplication

2.6 :1

Transmission make, model

Volvo BM, HT 200

Speeds, forward/reverse

1	4.5 mph	(7,3 km/h)
2	8.4 mph	(13,5 km/h)
3	16.6 mph	(26,7 km/h)
4 (forward only)	24.8 mph	(39,9 km/h)

Measured with tires

26.5-25

Front axle make

Volvo BM

Rear axle make

Volvo BM

Rear axle oscillation, total

30 deg

23.6 in (600 mm)



BRAKES

The brake system meets requirements according to SAE J1152, EG 71/320 and ISO 3450.

Service brakes: Air-hydraulically operated dry disc brakes.

Application of brake pedal applies brakes and also neutralizes transmission when transmission disengaging switch is activated.

Secondary: Dual circuit axle-by-axle system. Actuated by service brake pedal. Visual low pressure alarm. Dead engine braking pressure provided by air reservoir in each circuit.

Parking brake: Wet multi-disc type in transmission case on output shaft. Spring applied, hydraulically released; actuated by a control to operator's left. Warning lamp for brake applied. Flashing central warning light if gear lever is in forward or reverse.

Brake friction area

Front wheel (ea.)	126 in ²	(810 cm ²)
Rear wheel (ea.)	126 in ²	(810 cm ²)

Reservoirs, no.

3

Volume, total

1830 in³

(30 dm³,l)

Parking brake area, total

240 in²

(1547 cm²)



STEERING

Articulated frame. Hydrostatic steering system with amplified hydraulics flow.

Pump: Vane type, mounted to a power take-off on the transmission.

Cylinders: Two double-acting cylinders with chrome plated piston rods.

Steering cylinders, no.

2

Bore

4.3 in

(110 mm)

Stroke

16.7 in

(423 mm)

Relief pressure

2175 psi

(15 MPa)

Steer pump output

50 US gal/min

(190 dm³,l/min)

at pressure

1450 psi

(10 MPa)

and engine speed

2200 rpm

(36,7 rps)



CAB

Integral ROPS/FOPS Cab meets requirements according to SAE J1040C, SAE J231, ISO 3471-1986, ISO 3449-1980, and SS/ISO 6055. Sound-insulating lining. Floor mats. Lockable door. Side and rear window exits. Tinted safety glass.

Heater, Defroster and Ventilator: A three-speed fan provides filtered fresh air and defroster for the front and side windows. Air conditioning optional.

Operator's Seat: Fully adjustable suspension seat with seat belt (SAE J386) and heater.

Heating capacity 39,600 Btu/h (11,6 kW)
Air conditioning (optional) 19,400 Btu/h (5,7 kW)
Ventilation 353 cfm (10,0 m³/min)



HYDRAULICS

Open center system pilot operated, and filtered breather on reservoir.
Pump: Pump 1: Twin vane pump (for operation of lift, tilt and grapple grip). Pump 2: Double gear pump (for operation of load leveling, rotation and pilot hydraulics).

Valve: Two pilot operated actuating valves.

Valve 1 serves: Lift, tilt and grip cylinders.

Valve 2 serves: Rotator and load leveling cylinder.

Filters: Two full-flow 10 micron return filters with magnetic core, located in hydraulic oil tank.

Pump No. 1

Relief pressure 2465 psi (17,0 MPa)
Pump output 84.5 US gal/min (320 dm³/min)
at pressure 1450 psi (10 MPa)
and engine speed 2200 rpm (36,7 rps)

Pump No. 2

Relief pressure 2030 psi (14,0 MPa)
Pump output 13.7 US gal/min (52 dm³/min)
at pressure 1450 psi (10 MPa)
and engine speed 2200 rpm (36,7 rps)

Lift cylinders, no. 2
Bore 4.9 in (125 mm)
Rod dia. 3.5 in (90 mm)
Stroke 81.5 in (2070 mm)

Tilt cylinders, no. 2
Bore 5.5 in (140 mm)
Rod dia. 2.75 in (70 mm)
Stroke 23.6 in (600 mm)

Grapple, load leveling
cylinders, no. 1
Bore 3.9 in (100 mm)
Rod dia. 2 in (50 mm)
Stroke 25.2 in (640 mm)

Grapple grip cylinders, no. 2
Bore 4.9 in (125 mm)
Rod dia. 2.4 in (60 mm)
Stroke 16.1 in (410 mm)

Lifting time (empty) 8.0 s
Lowering time (empty) 5.0 s
Forward tilt 2.5 s
Backward tilt 3.5 s
Grapple (close) 2.2 s
Grapple (open) 2.4 s

ALTERNATE EQUIPMENT*

Cross-beam

Cross-beam with 13.8 in (350 mm) Lowered Grapple Mount
Grapple Arms for Forest Waste, Sugar Cane and Bamboo
42 ft² (3,9 m²)

Guards For Piston Rods

Rotator

* Standard equipped machine does not include grapple, cross-beam or rotator. For further information please contact your local dealer.

Tires:

26.5-25 (20PR) L-3

26.5-25 (20PR) L-4

26.5-25 (20PR) L-5

26.5R25 XRDNA★

26.5R25 RL2F★

30/65R29

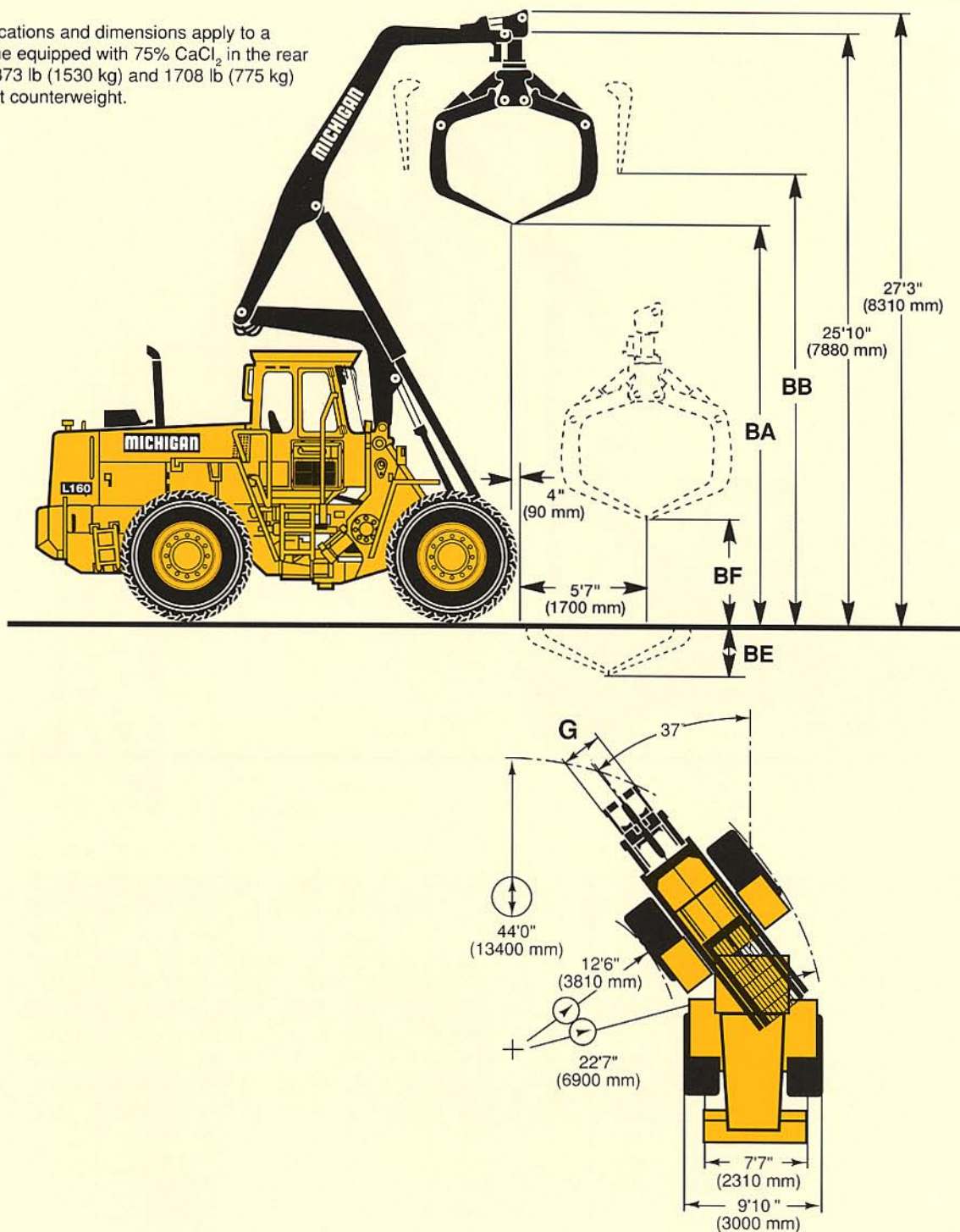


Grapple Arms with Hydraulic Log Clamps		Grapple Arms with Cinch Chain	
30 ft ²	(2,8 m ²)	42 ft ²	(3,9 m ²)
2.2-24 ft ²	(0,2-2,25 m ²)	35 ft ²	(3,25 m ²)
		30 ft ²	(2,8 m ²)
		24 ft ²	(2,25 m ²)

DIMENSIONS - MICHIGAN L160 HIGH-LIFT

Tires: 26.5R25XRA L-3★

Specifications and dimensions apply to a machine equipped with 75% CaCl₂ in the rear tires 3373 lb (1530 kg) and 1708 lb (775 kg) High-lift counterweight.



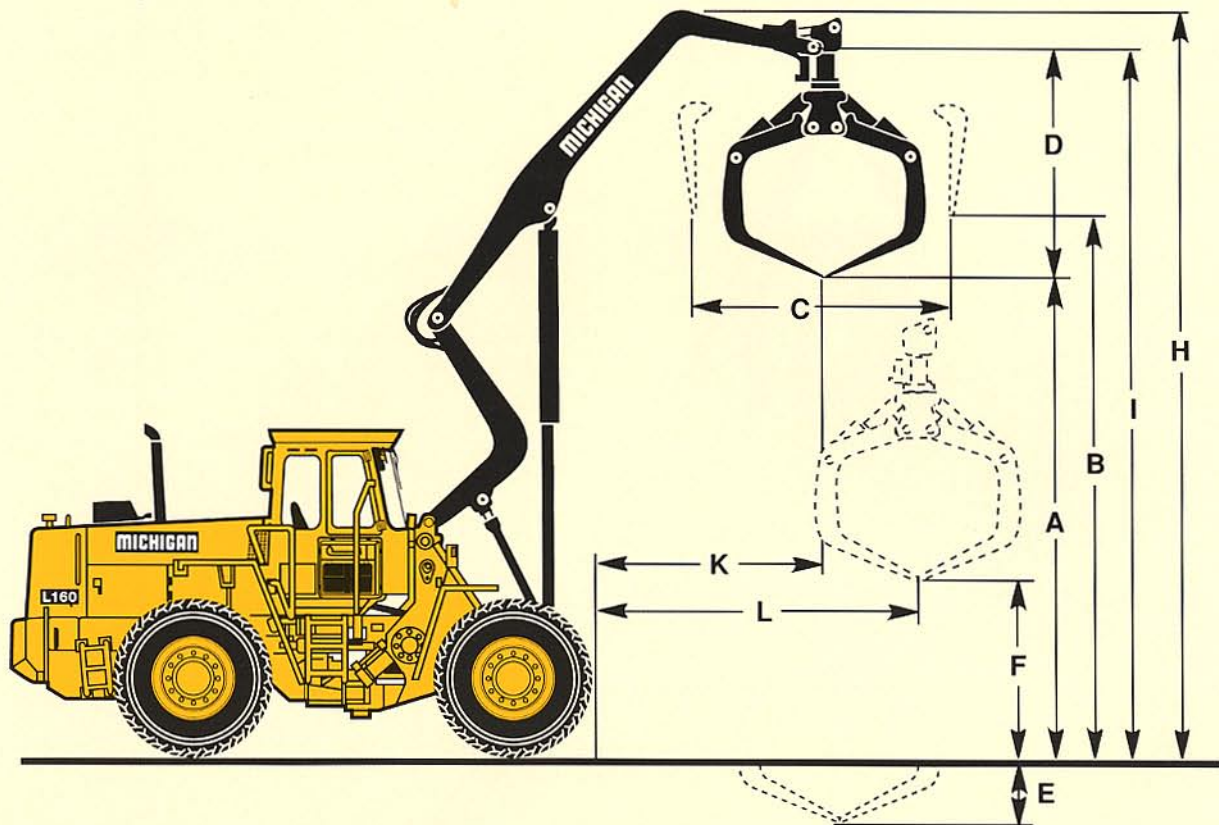
BA	ft in (mm)	15'5" (4700)	16'6" (5020)	17'5" (5320)	17'5" (5320)	17'3" (5250)
BB	ft in (mm)	18'8" (5680)	19'3" (5860)	19'9" (6020)	19'9" (6020)	19'6" (5950)
BE	ft in (mm)	4'3" (1290)	3'2" (960)	2'2" (660)	2'2" (660)	2'5" (730)
BF	ft in (mm)	2'4" (715)	3'5" (1050)	4'5" (1340)	4'5" (1340)	4'2" (1270)
G	ft in (mm)	35" (900)	35" (900)	35" (900)	45" (1150)	45" (1150)

SEE ALTERNATE EQUIPMENT FOR GRAPPLE SELECTION.

DIMENSIONS - MICHIGAN L160 HIGH-LIFT

Tires: 26.5R25XRA L-3★

Specifications and dimensions apply to a machine equipped with 75% CaCl₂ in the rear tires 3373 lb (1530 kg) and 1708 lb (775 kg) High-lift counterweight.



Grip area	ft ² (m ²)	42 (3,9)	35 (3,25)	24 (2,25)	2.2-24 (0,2-2,25)	2.2-30 (0,2-2,8)
Log length	ft in (m)	6'7" (2)	9'10" (3)	14'9"-15'9" (4,5-4,8)	-50' (-15)	-33' (-10)
Density	lb/yd ³ (kg/m ³)	950 (560)	950 (560)	930 (550)	840 (500)	840 (500)
Machine weight	lb (kg)	52,820 (23 960)	52,710 (23 910)	52,340 (23 740)	52,890 (23 990)	53,020 (24 050)
*Static tipping load						
straight	lb (kg)	19,620 (8900)	19,730 (8950)	20,060 (9100)	19,510 (8850)	19,400 (8800)
full turn	lb (kg)	17,660 (8010)	17,770 (8060)	18,140 (8230)	17,590 (7980)	17,420 (7900)
Operating load	lb (kg)	12,015 (5450)	12,125 (5500)	12,460 (5650)	11,900 (5400)	11,680 (5300)
A	ft in (mm)	15'5" (4700)	16'6" (5020)	17'5" (5320)	17'5" (5320)	17'3" (5250)
B	ft in (mm)	18'8" (5680)	19'3" (5860)	19'9" (6020)	19'9" (6020)	19'6" (5950)
C	ft in (mm)	13'5" (4100)	11'6" (3500)	10'0" (3050)	10'0" (3050)	11'4" (3450)
D	ft in (mm)	10'5" (3180)	9'5" (2860)	8'5" (2560)	8'5" (2560)	8'8" (2630)
E	ft in (mm)	4'10" (1480)	3'9" (1150)	2'9" (850)	2'9" (850)	3'0" (920)
F	ft in (mm)	5'0" (1530)	6'1" (1850)	7'0" (2150)	7'0" (2150)	6'10" (2080)
G	ft in (mm)	35" (900)	35" (900)	35" (900)	45" (1150)	45" (1150)

*With grapple in position for max. reach.

SEE ALTERNATE EQUIPMENT FOR GRAPPLE SELECTION.

STANDARD EQUIPMENT			
AIR CLEANER, DRY TYPE, DUAL ELEMENT, EXHAUST ASPIRATED PRECLEANER ALTERNATOR, 24V, 55 AMP AUTOMATIC LUBRICATION SYSTEM BATTERY DISCONNECT, LOCKABLE BRAKES, 4-WHEEL AIR OVER HYDRAULIC, DRY DISC, DUAL CIRCUIT BRAKE SYSTEM, SECONDARY CAB ACCESS STEPS & HANDRAILS (SAE J185) CAB: ROPS (SAE J1040C) (ISO 3471) FOPS (SAE J231) (ISO 3449) Acoustical Lining Ash Tray, Cigar Lighter Door, Lockable (Left Side Access) Electrical System: 24V Pre-wired for Optional Accessories Environmental Control: Heater/Defroster/Pressurizer 39,600 Btu/h (11,6 kW) with Three-Speed Blower Fan, Filtered Air Floor Mat Hand Throttle Interior Light Interior Rearview Mirror Safety Glass, Tinted Seat Belt (SAE J386)	Seat, Suspension, 6-Way Adjustable, Heated Steering Wheel, Adjustable Tilt Storage Compartment Sun Visor Windshield Washer, Front & Rear Windshield Wiper, Front, Intermittent Windshield Wiper, Rear COLD STARTING AIDS: Engine Intake Manifold Preheater Engine Fuel Mixture Enrichment COUNTERWEIGHT, HIGH-LIFT 1708 lb (775 kg) DIFFERENTIALS: Front, Air Operated Differential Lock Rear, Conventional DRAWBAR WITH PIN ENGINE COOLANT FILTER EXHAUST RAIN CAP (ELBOW TYPE) FENDERS, FRONT & REAR HYDRAULIC CONTROL LEVER SAFETY LATCH HYDRAULIC OIL COOLER HYDRAULIC PRESSURE TEST PORTS, QUICK CONNECT INSTRUMENTS/GAUGES, ILLUMINATED: Brake System (Dual Indicator) Air Pressure Gauge Engine Coolant Temperature Gauge	Fuel Gauge Hourmeter Sight Gauges: Coolant Level Hydraulic Fluid Level Transmission/Converter Fluid Temperature Gauge ISOLATION MOUNTS: Cab, Engine, Transmission, Radiator LIFTING LUGS LIGHTS: Driving (2-Front), Halogen with High/Low Beam, Parking Lights, Side Marker Lights, Stop/Tail Combination (2-Rear) Turn Signals with Hazard Warning Switch Work Lights, Halogen (2-Front, 2-Rear) MIRRORS, REARVIEW (2), EXTERIOR MUFFLER, SPARK ARRESTING NEUTRAL START FEATURE PROTECTIVE GRILLES FOR FRONT & REAR WINDOWS AS WELL AS ROOF SIDE PANELS, ENGINE HOOD STEERING FRAME LOCK TIRES: 26.5-25 (20PR) L-3 TRANSMISSION: MODULATED, WITH SINGLE LEVER CONTROL,	AUTOMATIC POWER-SHIFT & OPERATOR CONTROLLED DECLUTCH VALVE, MAIN HYDRAULIC, THREE (3) SPOOL, PILOT OPERATED VANDALISM LOCK, PROVISION FOR: Batteries, Engine Coolant, Engine Oil, Fuel, Hydraulic Fluid, Converter/Transmission Fluid WARNING ALARMS: Horn, Electric Reverse Alarm (SAE J994) WARNING & MONITORING LIGHTS: Air Cleaner Restriction Alternator Malfunction Central Warning Lamp: Brake System Air Pressure Engine Coolant Temperature Engine Oil Pressure Parking Brake Applied (Transmission in Forward or Reverse) Transmission Fluid Temperature Differential Lock Engine Intake Manifold Preheater High Beam Driving Lights Parking Brake Applied Transmission Clutch Pressure
OPTIONAL EQUIPMENT			
Air Conditioner, 19,400 Btu/h (5,7 kW) Beacon, Amber Rotating Cold Starting Aid, Engine Coolant Preheater (110V-1500W) Dual Service Brake Pedals Engine, Air Precleaner Engine Fan, Suction	Engine, High Altitude Version, Factory Engine Shutdown to Idle Kit Guards: Muffler Worklights, Front Worklights, Rear Horn, Air Light, Attachment Flood (Halogen)	Radio Mounting Panel (Includes 2 Speakers and Antenna) ROPS/FOPS Canopy (Open Type) Secondary Steering Slow Moving Vehicle Emblem Speedometer/Tachometer	Tire Options: 26.5-25(20PR)L-4 26.5-25(20PR)L-5 26.5R25XRDNA★ 26.5R25RL2F★ 30/65R29 Worklight, Extra Front Worklight, Extra Rear

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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