



Michigan L70



ENGINE OUTPUT:
110 hp (81 kW) VOLVO
DIRECT-INJECTED, TURBO-
CHARGED DIESEL

OPERATING WEIGHT:
21,600 LB (9,9 t)

BUCKETS 2.0-3.5 yd³
(1,5-2,7 m³)

**AUTOMATIC POWER SHIFT
TRANSMISSION**

**INDUSTRY'S FIRST QUICK
COUPLING ATTACHMENT
BRACKET SYSTEM**

**COMFORT/EFFICIENCY
DESIGNED CAB**

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

**PARALLEL LIFT ARMS,
LEVEL FORKS THROUGH
ENTIRE LIFT ARC**

**PILOT OPERATED
"FINGERTIP" HYDRAULICS**

MICHIGAN



ENGINE

Direct-injected, turbocharged 4 cylinder, in-line 4-cycle diesel engine with wet, replaceable cylinder liners.

Make Volvo

Model TD 45B

Max. rating* at	2200 rpm	(36,7 rps)
SAE J1349 (ISO 1585)	118 hp	(87 kW)
Flywheel rating** at	2200 rpm	(36,7 rps)
SAE J1349 (ISO 1585)	110 hp	(81 kW)
DIN 70020	110 hp	(81 kW)
Torque at	1400 rpm	(23,3 rps)
SAE J1349 (gross)	325 lbf ft	(440 Nm)
SAE J1349 (ISO 1585) (net)	314 lbf ft	(425 Nm)
DIN 70020	314 lbf ft	(425 Nm)
Number of cylinders	4	
Displacement, total	273 in ³	(4,48 dm ³ ,l)
Bore	4.2 in	(105,6 mm)
Stroke	5 in	(128 mm)
Compression ratio	15.6:1	

Air cleaners

1. Cyclone pre-cleaner with automatic dust ejector.
2. Paper filter with restriction warning light on instrument panel.
3. Replaceable safety filter element.

*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 installed.



ELECTRICAL

The electrical system circuits are protected by fuses and pre-wired for optional equipment.

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

Voltage	24 V	
Batteries (12 volt)	2	
Battery capacity, ea.	105 Ah	
Cranking capacity, ea.	650 A	
Reserve capacity, ea.	130 min	
Alternator rating	1680/60 W/A	
Starter motor output	7.3 hp	(5,4 kW)



SERVICE REFILL CAPACITIES

Crankcase	2.8 US gal	(10,5 dm ³ ,l)
Fuel tank (usable)	47.0 US gal	(178 dm ³ ,l)
Fuel tank (total)	48.9 US gal	(185 dm ³ ,l)
Cooling system	7.1 US gal	(27 dm ³ ,l)
Transmission, total	5.8 US gal	(22 dm ³ ,l)
Front axle, total	6.9 US gal	(26 dm ³ ,l)
Rear axle, total	6.0 US gal	(22,5 dm ³ ,l)
Hydraulic system, total	34.3 US gal	(130 dm ³ ,l)
Hydraulic tank	22.5 US gal	(85 dm ³ ,l)



DRIVETRAIN

Torque Converter: Single stage, single phase.

Transmission: Volvo BM automatic powershift transmission.

Countershaft-type with directional powershift clutch modulation. Four speeds forward and three reverse. Single lever control.

Axes: 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. Engagement and disengagement by means of switch on cab floor.

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

Tires: Tubeless type with nylon cord. Optional tires available for specific applications.

Torque multiplication	2.91:1
Transmission make, model	Volvo BM, HT 90
Speeds, forward/reverse	

1	4.1 mph	(6,6 km/h)
2	8.0 mph	(12,8 km/h)
3	14.5 mph	(23,4 km/h)
4 (forward only)	23.9 mph	(38,4 km/h)

Measured with tires

Front axle make

Rear axle make

Rear axle oscillation, total

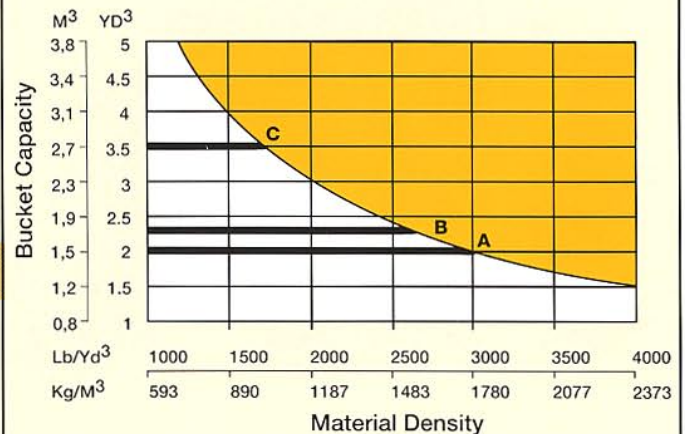
..... 15.75 in (400 mm)

Standard tires 17.5-25 (12PR) L-2



BUCKETS

A - Straight Edge General Purpose	2.0 yd ³	1.5 m ³
B - Straight Edge Material Handling	2.25 yd ³	1.7 m ³
C - Straight Edge Light Material	3.5 yd ³	2.7 m ³



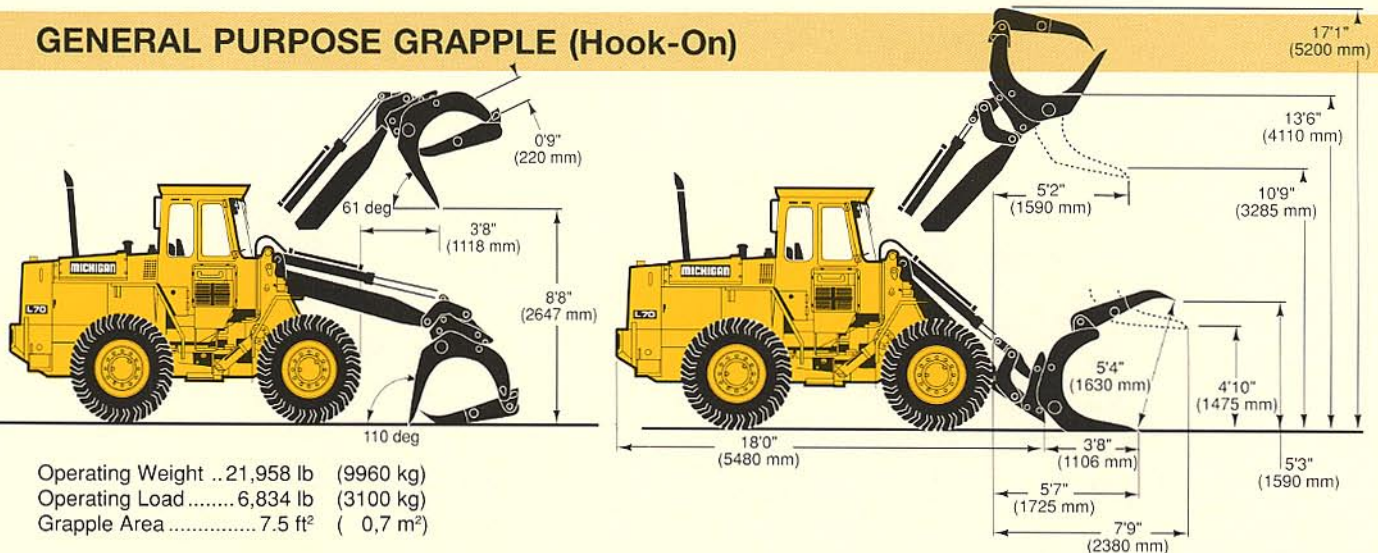
Note:

Correct Bucket Selection is determined by consideration of the work application, material density and type of material. Refer to Operational Data for bucket choices. The above graph is to be used as a guideline.

Contact your VME Distributor for assistance.

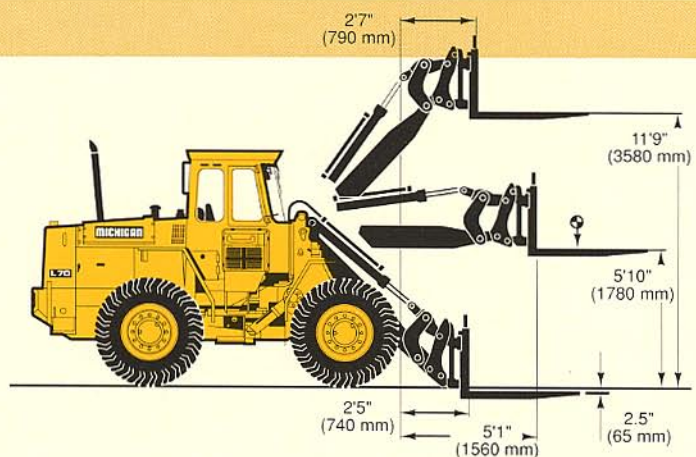


GENERAL PURPOSE GRAPPLE (Hook-On)



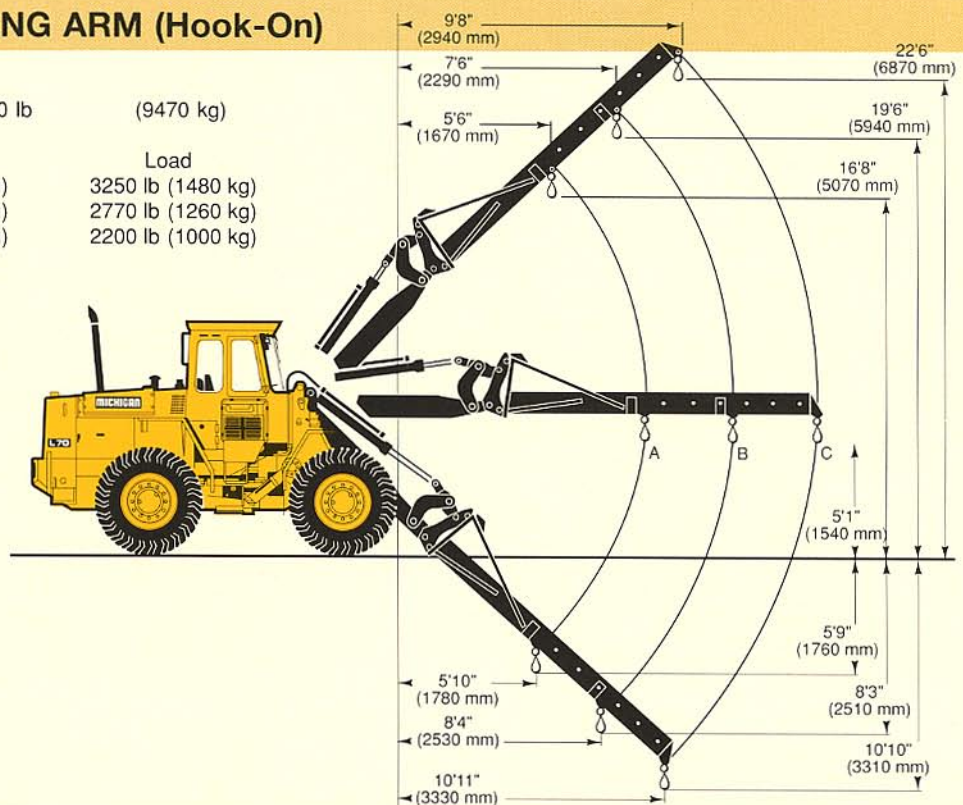
PALLET FORK (Hook-On)

Fork frame with tines		
Tine length	4' 0"	(1225 mm)
Frame width	4' 11"	(1500 mm)
Distance to center of gravity, fork tines level	2' 0"	(600 mm)
Operating weight	20,950 lb	(9500 kg)
Safe working load according to SS 3462	8800 lb	(4000 kg)

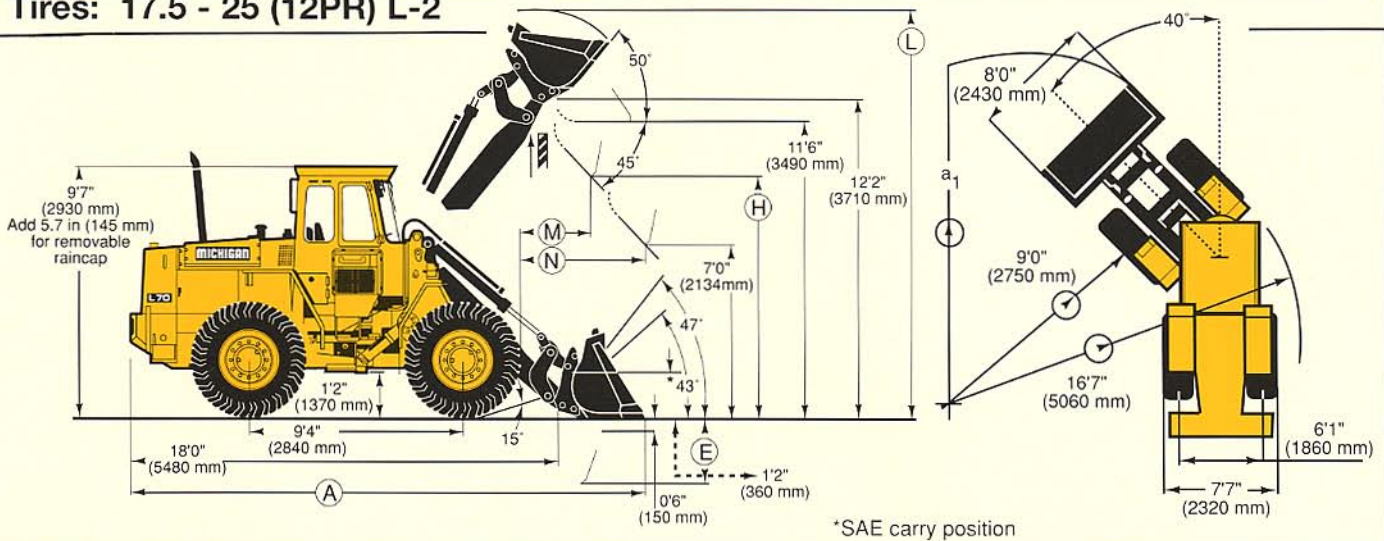


MATERIAL HANDLING ARM (Hook-On)

Operating weight	20,880 lb	(9470 kg)
Operating load capacity		
Position	Distance	Load
A	12'3" (3270 mm)	3250 lb (1480 kg)
B	14'3" (4340 mm)	2770 lb (1260 kg)
C	17'11" (5470 mm)	2200 lb (1000 kg)



OPERATIONAL DATA MICHIGAN L70

Tires: 17.5 - 25 (12PR) L-2


†Mounting/Bucket type	Pin-On	Hook-On	Pin-On	Hook-On	Pin-On	Hook-On
Volume, Heaped	2.25 yd ³ 1.7 m ³	2.25 yd ³ 1.7 m ³	2.0 yd ³ 1.5 m ³	2.0 yd ³ 1.5 m ³	3.5 yd ³ 2.7 m ³	3.5 yd ³ 2.7 m ³
Struck	1.9 yd ³ 1.5 m ³	1.9 yd ³ 1.5 m ³	1.8 yd ³ 1.4 m ³	1.8 yd ³ 1.4 m ³	2.9 yd ³ 2.2 m ³	2.9 yd ³ 2.2 m ³
Static tipping load, straight	15,140 lb 6870 kg	14,390 lb 6520 kg	15,480 lb 7020 kg	14,840 lb 6730 kg	15,230 lb 6910 kg	13,900 lb 6300 kg
at 35° turn	13,500 lb 6120 kg	12,790 lb 5800 kg	13,820 lb 6270 kg	13,210 lb 5990 kg	13,560 lb 6150 kg	12,330 lb 5590 kg
at full turn 40°	13,010 lb 5900 kg	12,320 lb 5590 kg	13,340 lb 6050 kg	12,720 lb 5770 kg	13,070 lb 5930 kg	11,880 lb 5400 kg
Breakout force	23,920 lbf 106.4 kN	21,760 lbf 96.8 kN	25,950 lbf 115.4 kN	23,490 lbf 104.5 kN	17,420 lbf 77.5 kN	16,160 lbf 71.9 kN
Hyd. lifting force, ground level	25,740 lbf 114.5 kN	25,790 lbf 114.7 kN	25,680 lbf 114.2 kN	25,830 lbf 114.9 kN	25,950 lbf 115.4 kN	25,950 lbf 115.4 kN
at max. height	9490 lbf 42.2 kN	9130 lbf 40.6 kN	9510 lbf 42.3 kN	9240 lbf 41.1 kN	9260 lbf 41.2 kN	8840 lbf 39.3 kN
(A)	21'10" 6650 mm	22'1" 6740 mm	21'7" 6570 mm	21'10" 6660 mm	22'11" 7000 mm	23'3" 7090 mm
(E)	3'3" 990 mm	3'6" 1080 mm	3'0" 920 mm	3'3" 1000 mm	4'5" 1340 mm	4'8" 1430 mm
(H)	9'2" 2800 mm	9'0" 2740 mm	9'4" 2850 mm	9'2" 2790 mm	8'5" 2560 mm	8'2" 2500 mm
(L)	16'0" 4890 mm	16'2" 4930 mm	15'10" 4820 mm	15'11" 4860 mm	16'5" 5010 mm	16'7" 5060 mm
(M)	3'5" 1050 mm	3'7" 1100 mm	3'3" 990 mm	3'5" 1050 mm	4'3" 1300 mm	4'5" 1360 mm
(N)	5'2" 1580 mm	5'3" 1610 mm	5'1" 1550 mm	5'2" 1580 mm	5'7" 1700 mm	5'8" 1720 mm
a ₁ Turning circle over bucket (bucket in carry position)	36'7" 11 140 mm	36'9" 11 190 mm	36'5" 11 100 mm	36'7" 11 150 mm	37'3" 11 340 mm	37'5" 11 400 mm
Weight distribution, front	9060 lb 4110 kg	9560 lb 4340 kg	9040 lb 4100 kg	9340 lb 4240 kg	9340 lb 4240 kg	9950 lb 4510 kg
Weight distribution, rear	12,260 lb 5560 kg	12,040 lb 5460 kg	12,260 lb 5560 kg	12,130 lb 5500 kg	12,130 lb 5500 kg	11,880 lb 5390 kg
Operating weight	21,320 lb 9670 kg	21,600 lb 9800 kg	21,300 lb 9660 kg	21,470 lb 9740 kg	21,470 lb 9740 kg	21,830 lb 9900 kg

†Bolt-on Cutting Edge Increases Bucket Capacity By .12 yd³ (.09 m³)

ALTERATION OF OPERATIONAL DATA

	17.5-25 Tires	17.5R25 Tires	22/65-25 Tires	*Counterweight	Wherever applicable, specifications are in accordance with SAE Standards J732 and J742. Changes from the standard configuration may change machine dimensions and operating data. Operating weight is approximate and includes the bucket given in the table and all standard equipment.
Liquid ballast in rear tires	*75% CaCl ₂			N/A	
Width over wheels		±0 in ±0 mm	+4.1 in (+105 mm)		
Ground Clearance		+0.2 in (+5 mm)	-0.55 in (-14 mm)		
Tipping Load at full turn	+1230 lb (+560 kg)	+440 lb (+200 kg)	+250 lb (+113 kg)	+783 lb (+355 kg)	
Operating weight	+1210 lb (+550 kg)	+220 lb (+100 kg)	+432 lb (+196 kg)	+463 lb (+210 kg)	

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

STANDARD EQUIPMENT			
AIR CLEANER, DRY TYPE, DUAL ELEMENT, EXHAUST ASPIRATED PRECLEANER ALTERNATOR, 24V, 60 AMP BATTERY DISCONNECT, LOCKABLE BOOM LEVER DETENTS ATTACHMENT BRACKET, HYDRAULIC ATTACHMENT BRACKET, SEPARATE LOCKING SYSTEM BRAKES, 4-WHEEL HYDRAULIC, DISC TYPE, DUAL CIRCUIT BRAKE SYSTEM, SECONDARY BUCKET LEVELER, AUTOMATIC WITH POSITION INDICATOR BUCKET LEVER DETENT CAB ACCESS STEPS & HANDRAILS, (SAE J185) CAB: ROPS (SAE J1040C) (ISO 3471) FOPS (SAE J231) (ISO 3449) Acoustical Lining Ash Tray, Cigarette 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 Pre-heater (ROPS Cab only) Engine Fuel Mixture Enrichment DIFFERENTIALS: Front; Hydraulic Differential Lock Rear; Conventional DRAWBAR WITH PIN ENGINE COOLANT FILTER EXHAUST RAIN CAP (ELBOW TYPE) FENDERS, FRONT & REAR HYDRAULIC CONTROL LEVER SAFETY LATCH HYDRAULIC PRESSURE TEST PORTS, QUICK CONNECT INSTRUMENTS/GAUGES: Illuminated: Brake System Pressure Gauge	Engine Coolant Temperature Gauge Fuel Gauge Hourmeter Transmission/Converter Fluid Temperature Gauge Sight Gauges: Coolant Level Hydraulic Fluid Level ISOLATION MOUNTS: Cab, Engine, Transmission 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 SIDE PANELS, ENGINE HOOD STEERING FRAME LOCK TIRES: 17.5-25 (12PR) L-2 (General) TOOL BOX TRANSMISSION: MODULATED WITH SINGLE LEVER CONTROL, AUTOMATIC POWER SHIFT, AND 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, Tool Box WARNING ALARMS: Central Warning Buzzer Horn, Electric Reverse Alarm (SAE J994) WARNING & MONITORING LIGHTS: Air Cleaner Restriction Alternator Malfunction Central Warning Lamp: Brake System Pressure Engine Coolant Temperature Engine Oil Pressure Parking Brake Applied (Transmission in Forward or Reverse) Transmission Fluid Temperature Differential Lock Engine Intake Manifold Pre-heater High Beam Driving Lights Parking Brake Applied TRANSMISSION OIL PRESSURE
OPTIONAL EQUIPMENT			
Air Conditioner, 19,400 BTU/h (5.7 kW) Alternator, Sealed Attachment Rib Kit (For adapting existing attachments on VME attachment bracket) Beacon, Amber Rotating Boom Kickout, Automatic, Adjustable Bucket Spillguard, Bolt-On Bucket Teeth, Bolt-On, (8) (Not for Use on Light Material Buckets) Cab Filters, Asbestos Protection	Cold Starting Aid, Engine Coolant Pre-heater (110V-11500W) Cutting Edge, 3 pc. Reversible, Bolt-On (Not for Use on High Tip Buckets) Dual Service Brake Pedals Engine Air Pre-cleaner, Oil Bath Type Engine Fan, Suction Engine, High Altitude Version, Factory Engine Oil Pressure Gauge Engine, Low Emission Version, Factory Engine, Shutdown to Idle Kit	Extra Air Outlets Guards: Headlights, Front Muffler Taillights, Rear Windshield, Front Worklights, Rear Horn, Electric (Extra Loud) Hydraulic Control for 3rd Function Hydraulic Control for 3rd and 4th Functions Hydraulic Oil Cooler Hydraulic Single Acting Control Radiator, Corrosion Resistant Radio Mounting Panel (Includes 2 Speakers, Antenna and 12 Volt Converter)	ROPS/FOPS Canopy (Open Type) Secondary Steering Slow Moving Vehicle Emblem Speedometer/Tachometer Tire Options: 17.5-25 (12 PR) L-3 17.5R25 22/65-25 (12PR) L-2 Transmission Clutch Pressure Gauge Transmission, 8 Speed Voltmeter Working Lights, Front, Extra Working Lights, Rear, Extra

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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FORM NO. L-556
DATE 2/91
Printed in U.S.A.