

**HITACHI**

# ***EH 650***

**Maximum Payload**

36.3 m tons (40.0 U.S. tons)

**Maximum Payload  
with Standard Liners**

34.2 m tons (37.7 U.S. tons)

**Maximum GMW**

62 560 kg (137 919 lb)

**Engine**

Volvo TD 164 KAE

Rated Power 370 kW (496 hp)



# Specifications: EH650



## ENGINE

Volvo TD 164 KAE, four-stroke direct-injected turbocharged diesel engine with charge air cooler and wet, replaceable cylinder liners.

**Cold starter:** Cold start aid boosts fuel injection and incorporates starting element to preheat intake air.

**Air filter:** Cyclone cleaner, main filter of paper type and catch-all safety filter.

**Radiator fan:** Extraction fan mounted on engine.

Make	Volvo			
Model	TD 164KAE			
Type	4 Cycle			
Aspiration	Turbocharged			
Gross Power (SAE 1995 @ 1800 rpm)	kW	hp	370	<b>496</b>
Net Power (SAE 1349 @ 1800 rpm)	kW	hp	366	<b>491</b>
No. Cylinders	6			
Bore & Stroke	mm	144 x 165		
	in	<b>5.7 x 6.5</b>		
Displacement	L	in <sup>3</sup>	16.1	<b>1 726</b>
Maximum Torque (SAE 1995) @ 1000 rpm	N•m	lb/ft	2 370	<b>1 748</b>
Starting	Electric			



## TIRES

Standard - Front and Rear	Rim Width			
Bridgestone 18.00-33(32)E3	mm	in	330	<b>13</b>

Optional tires, brands and treads available.



## BODY CAPACITY

Load volume complies with SAE J/ISO 6483.

	m <sup>3</sup>	yd <sup>3</sup>
Struck (SAE)	17.0	<b>22.2</b>
Heap 2:1 (SAE)	23.5	<b>30.7</b>



## TRANSMISSION

**Transmission:** Allison M5600AR. Planetary-type transmission with built-in retarder.

**Torque converter:** Allison TC-683. Torque converter integral with transmission with lock-up in all ranges (except reverse).

This transmission utilizes the Allison Commercial Electronic Control, providing hoist interlock and built-in diagnostics.

### Maximum Speeds @ governed engine speed

Range	Ratio	km/h	mph
1	4.00:1	11	<b>6.8</b>
2	2.68:1	16	<b>9.9</b>
3	2.01:1	21	<b>13.0</b>
4	1.35:1	31	<b>19.3</b>
5	1.00:1	42	<b>26.1</b>
6	0.67:1	63	<b>39.1</b>
R1	5.12:1	8	<b>5.0</b>
R2	3.46:1	12	<b>7.5</b>



## WEIGHTS

	kg	lb
Net Machine Weight	26 260	<b>57 892</b>

Maximum GMW with Std. Tires [18.00-33(32)E3] Including Options, 50% Fuel, Operator & Payload Not to Exceed	62 560	<b>137 919</b>
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Maximum Payload	36 300	<b>80 027</b>
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Major Options Approximate change in Net Machine Weight: Body Liners, Complete	2 100	<b>4 630</b>
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Max. Payload with Body Liners, Complete	34 200	<b>75 397</b>
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Weight Distribution	FRONT	REAR
Empty	50%	50%
Loaded	32%	68%



## DRIVE AXLE

**Axle shafts:** Fully floating axle shafts with planetary hub reductions.

### Ratios

Differential	3.17:1
Planetary gear	4.94:1
Total reduction, rear axle	15.65:1

# Equipment & Dimensions: EH650

## STANDARD EQUIPMENT

### BODY EQUIPMENT

Body heating (exhaust)      Rock body

### HYDRAULIC SYSTEM

Hoist  
One three-stage telescoping cylinder, two-stage double-acting

### ENGINE AND ELECTRICAL SYSTEM

Alternator  
Electric engine inlet air preheater  
Gauges/Instruments: fuel gauge, pressure, air (two circuits), pressure, engine oil, pressure, transmission oil, speedometer, tachometer, transmission oil temperature

Lights: backup beams, direction indicators, headlights, bright/dim/asymmetric instrument lighting, lights, backup, lights, cab, lights, parking, lights, tail

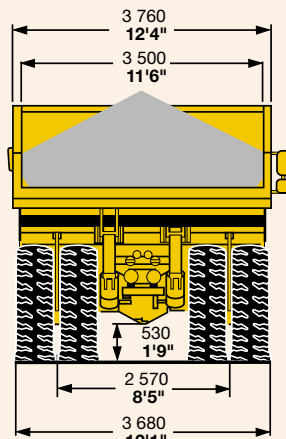
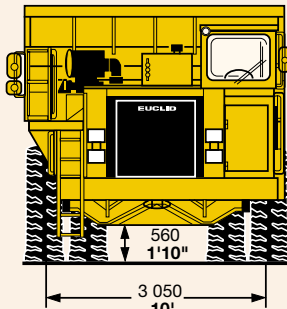
### SAFETY AND COMFORT

Air conditioning (R134a)  
Anti-theft lock  
Cab heating with filtered fresh air intake and defroster  
Cigarette lighter and ashtray  
Ergonomically designed and adjustable operator's seat  
Hazard flashers  
Horn  
Indicator for air cleaner  
Instructor's seat  
Mud flaps, front wheels  
Rear-view mirrors  
Reverse alarm  
Rock ejectors  
Seat belt, operator  
Sliding window  
Sun visor  
Supplementary steering  
Tilt steering wheel  
Tinted glass  
Windshield washers  
Windshield wipers

### TRANSMISSION

Automatic lock-up  
Automatic power shift transmission  
Retarder  
Torque converter

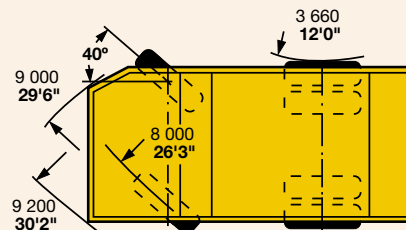
Pilot lamps for:  
body up  
bright lights  
charging  
engine oil pressure  
flashers and director indicators  
lock-up  
parking brake



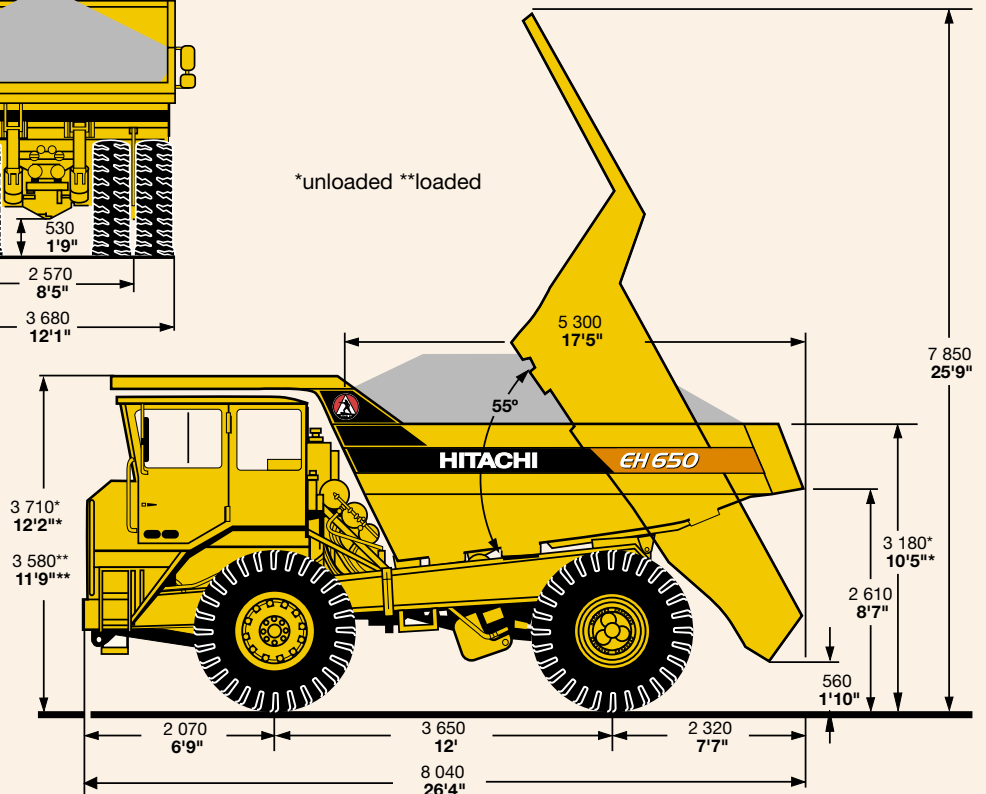
## OPTIONAL EQUIPMENT

Additional working lights  
Body liners  
Cab guard  
Cab heater, auxiliary  
Canopy reinforcement  
Engine heater  
FOPS  
Front wheel protection ring  
Heated rear-view mirrors  
Mud flaps, rear wheels  
PIN plate, EEC

PIN plate, manufactured in Poland  
Rims with wooden protection  
Seat, air ride operator's  
Seat, heated operator's  
Seat belt, trainer seat  
Spare rim  
Spare wheel  
Tool kit  
Top extension 200 mm (7.9 in)



unit:mm  
ft in





## HYDRAULIC SYSTEM

**Hoist:** One 3-stage telescopic cylinder, two stages are double-acting. A hoist stop is built into the cylinder.

**Hydraulic system:** Load-sensing hydrostatic system. Engine-driven piston pump mounted on the transmission's power take-off. Common reservoir for steering and hoist. Steering is always given priority over the hoist system.

### Hoist

Raise Time with Load	s	12
Lower Time	s	12

### Hydraulic System

Relief Pressure	MPa	psi	19	<b>2 755</b>
Flow	L/min	gpm	201	<b>53.1</b>
At Engine Speed	rps	rpm	33	<b>2 000</b>



## BRAKE SYSTEM

**Service brakes:** Uses dual circuit air-operated drum brakes on all four wheels.

**Circuit division:** Circuit 1 supplies the front brakes. Circuit 2 supplies the rear brakes.

**Parking brake:** Separate circuit. Spring-actuated drum brakes on all four wheels.

<b>Compressor Capacity</b>	L/min	gpm	430	<b>113.6</b>
At	MPa	psi	0.7	<b>101</b>
And	rps	rpm	33	<b>2 000</b>

### Pressure Regulator

Actuate	MPa	psi	0.75	<b>109</b>
Relief	MPa	psi	0.81	<b>117</b>

### Brake Area

Front/Wheel (each)	cm <sup>2</sup>	in <sup>2</sup>	1 770	<b>274</b>
Rear/Wheel (each)	cm <sup>2</sup>	in <sup>2</sup>	1 770	<b>274</b>
No. of Reservoirs			3	
Total Volume	L	ft <sup>3</sup>	140	<b>4.94</b>

### Parking Brake

Area	cm <sup>2</sup>	in <sup>2</sup>	7 080	<b>1 097</b>
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**Retarder:** Foot-operated valve activates retarder incorporated into the transmission.

Capacity	kW	hp	410	<b>550</b>
At	rps	rpm	33	<b>2 000</b>



## STEERING SYSTEM

Load-sensing hydrostatic steering system of closed-center type.

Steering Angle				<b>40°</b>
Turning Diameter (SAE J/ISO 5010)	m	ft in	8.0	<b>26'4"</b>
Lock-to-lock turns			3.8	
Steering Cylinders			2	
Bore	mm	in	63.0	<b>2.5</b>
Stroke	mm	in	500.0	<b>19.69</b>
Piston Rod Diameter	mm	in	40.0	<b>1.57</b>
Relief Pressure	MPa	psi	17.5	<b>2 540</b>

**Steering cylinders:** Double-acting, one for each wheel, mounted between the steering knuckle arm and brackets on the front axle.

**Hydraulic pump:** Engine-driven, variable piston pump mounted on the transmission's power take-off. Priority is always given to the steering system over the hoist system.

**Supplementary steering:** A supplementary steer pump is activated when the pressure in the system falls below 0,5 MPa **73 psi**.



## ELECTRICAL SYSTEM

Two 12-volt batteries connected in series.

Voltage	V	24		
Battery capacity	Ah	160		
Alternator	W	1 680		
Starter motor	kW	hp	7.5	<b>10.1</b>



## CAB

ROPS-tested and approved steel cab. Cab mounted on rubber pads in the center-of-gravity line. Heat and sound insulated. Heater and defroster. All windows of tinted safety glass.

**Operator's seat:** Sprung and shock-absorbed with arm rests, head restraint and seat belt. Adjustable to operator's weight. Individual adjustment of both seat and backrest. Seat for instructor.

Sound level in cab max.	dB (A)	75
Operator's seat		ISRI 6000
Number of exits		1



## SUSPENSION

Same suspension cylinders on all four wheels.

**Front axle:** A fabricated box beam A-frame connects the wheels to the machine frame through a well-sealed spherical bearing, and gas-over-oil suspension cylinders. This three-point mounted axle provides excellent oscillation and stability.

**Rear axle:** Similar to the front axle, the rear suspension utilizes an A-frame structure bolted to the rear axle. The assembly is connected to the main frame by a spherical bearing at the front, and two air-over-oil suspension cylinders in the rear.

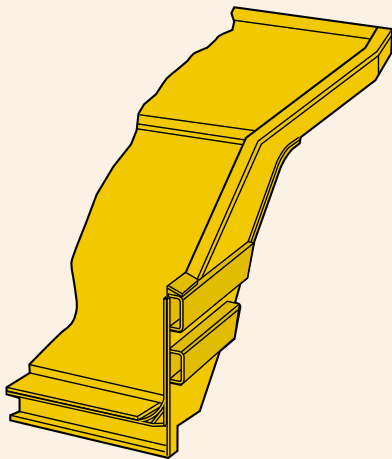
When the machine is loaded, the main frame rests on the rear axle for maximum stability.



## BODY

**Dumper body:** Robust body made of hardened and tempered abrasion-resistant steel plate. The longitudinal stiffeners, made of high-grade steel, eliminate stress concentrations and distribute the force from impacts over the entire length of the body. A flat, sloping floor with rugged, uniformly spaced stiffeners ensures high durability.

The body is geometrically optimized to provide a compact yet spacious unit with a low load height and a low center of gravity for efficient loading. Rubber pads between body and frame. Exhaust-heated body.



Body				
Tensile strength	N/mm <sup>2</sup>	<b>psi</b>	1 250	<b>181 265</b>
Hardness	HB		360-440	
Plate Thickness				
Front & Sides	mm	<b>in</b>	10	<b>0.39</b>
Floor	mm	<b>in</b>	20	<b>0.79</b>



## FRAME

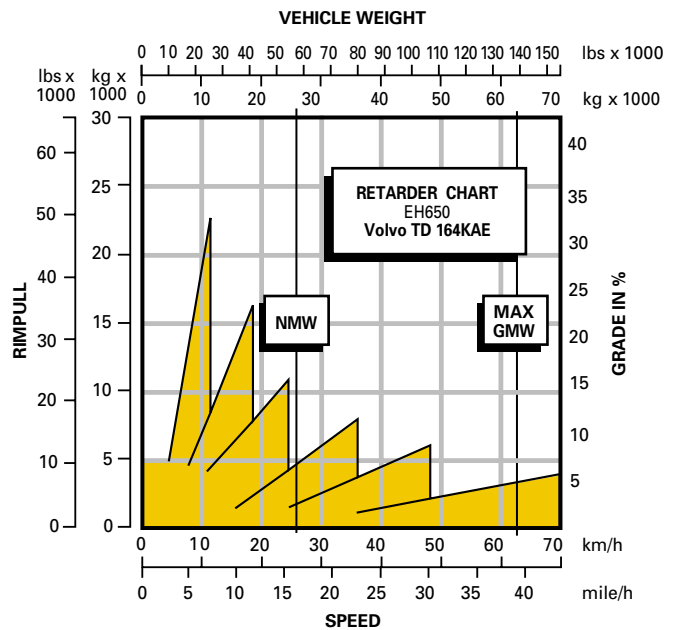
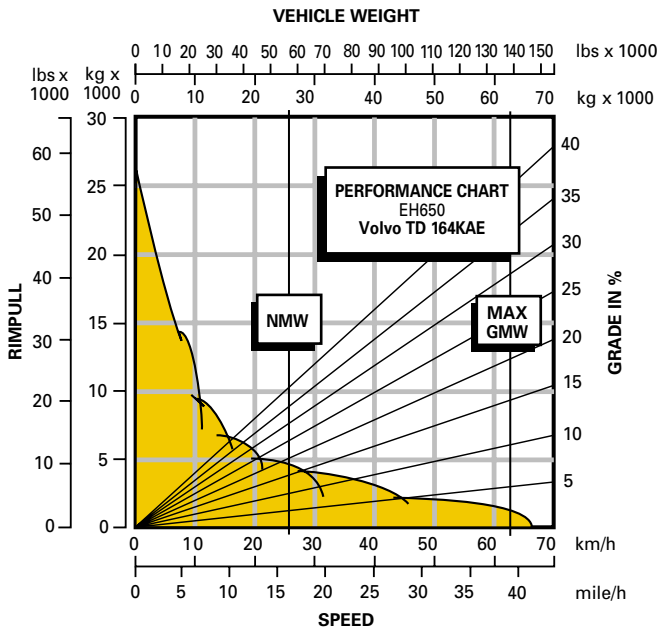
Robust construction with beams of carefully selected steel grade with high yield strength. Main beams of all-welded box section with a minimum of joints. Cross members, gussets and brackets have smooth junctions to the frame. Stresses are distributed evenly over the entire frame.



## SERVICE CAPACITIES

	L	U.S.gal
Crankcase (incl. filters)	60.0	<b>15.9</b>
at change	58.0	<b>15.3</b>
Transmission (incl. filters)	85.0	<b>22.5</b>
at change	50.0	<b>13.2</b>
Rear Axle, Total	60.0	<b>15.9</b>
Cooling System	96.0	<b>25.4</b>
Fuel Tank	550.0	<b>145.0</b>
Hydraulic Tank	75.0	<b>19.8</b>
Hydraulic System (incl. tank)	110.0	<b>29.0</b>

# Performance Data: EH650



## INSTRUCTIONS:

Diagonal lines represent total resistance (Grade % plus rolling resistance %). Charts based on 0% rolling resistance, standard tires and gearing unless otherwise stated.

1. Find the total resistance on diagonal lines on right-hand border of performance or retarder chart.
2. Follow the diagonal line downward and intersect the NMW or GMW weight line.
3. From intersection, read horizontally right or left to intersect the performance or retarder curve.
4. Read down for machine speed.

**NOTE:** Photos and illustrations throughout may show optional equipment.

*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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KR-E117

01.6 (KA/KA, FT<sub>3</sub>)

Printed in Japan