Equipment & Dimensions: EH1600

STANDARD EQUIPMENT

GENERAL

Air conditioning
All-hydraulic braking
Automatic transmission shifting
Battery disconnect switch
Body down indicator, mechanical
Body prop cable
Body up and down cushioning
Body up speed restriction w/light
Canopy spill guard
Continuous heated body
Cooling system surge tank
Dagger clamps (rear wheels)
Driveline guard, front
Dual cab access ladders (shown in dimensions only)
Electric horns
Electric start
Electronic hoist control
Engine belt protection
Fan guard
Fenders
Fixed steering stops
Front brake cut-off switch
Fuel tank sight gauge
Guard rails
HID headlights
Hoist interlock
Hoist tank sight gauges
ISO decals
LED taillights
Load/dump brake
Mirrors (front)
Mirrors right and left, hand adjustable
Mud flaps-extended
NEOCON suspension struts
Park brake, dry disc
Park brake interlock
Radiator grill guard
Radiator, premium core
Reverse alarm
Rock ejector bars
Steering accumulator
Steering tank sight gauge
Swing-out grille
Tires 27.00R49(**)E4
Tow points, front
Transmission guard
Transmission sight gauge
Water to oil transmission cooler
Wet disc brake wear indicators

CAB

Acoustical lining
Air filtration/replaceable element
Ash tray
Cab interior light
Cigar lighter, 12-volt
Door locks
Foot rest (left and right)
Heater and defroster 7.6 kW 26,000 btu
Integral ROPS/FOPS cab
ISO driver envelope
Liquid Crystal Display (CONTRONIC II)
- Clutch pressure
- Distance traveled
- Engine oil pressure
- Fuel gauge
- Gear selection
- Integrated transmission diagnostics
- Load counter
- Service intervals, job site adjustable
- Total engine hours
- Total idle hours
- Voltmeter

Modular instrumentation
Quick connect test ports
Roll down windows
Rubber floor mat
Safety glass
Seat belts, retractable (operator and trainer)
Seat, mechanical 6 position
Sun visor
Tilt/telescopic steering wheel
Tinted glass all windows
Trainer seat
Windshield washer
Windshield wiper, intermittent
12-volt 50 amp circuit
12-volt accessory connection

Gauges and Indicators

CONTRONIC II monitoring and alarm system, multi-function indicator lights:
- Air filter restriction
- Alternator
- Body up
- Brake pressure
- Central warning
- Converter temperature
- Cooling temperature
- Do not shift
- Engine oil pressure
- High beam indicator
- Hydraulic filter
- Parking brake applied
- Retard oil temperature
- Steering filter
- Steering pressure
- Steering temperature
- Transmission filter
- Transmission oil pressure
- Turn signals/hazard
- Transmission malfunction

Gauges:
- Brake temperature
- Converter temperature
- Coolant temperature
- Hourmeter (LCD)
- Speedometer
- Steering/brake pressure
- Tachometer

MACHINE LIGHTS

Back-up lights, (2)
Clearance lights (LED), (4)
Dual combination stop and taillights (LED), (2)
HID Headlights, (4)
Turn signals and four-way flashers

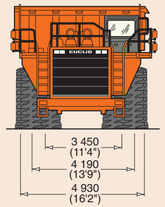
OPTIONAL EQUIPMENT

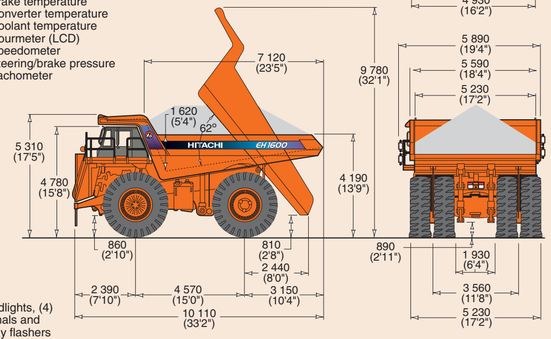
ACTIVE TRACTION CONTRAL (ATC) W/ELECTRONIC DOWNHILL SPEED CONTROL (EDSC)
Air suspension seat
Body liners (400 BHN) plates, regular and heavy duty
Canopy spill guard extension
Cold starting aid
Engine compartment lights
Engine, ground level shut-off
Engine heater (oil & coolant)
Extra reverse alarm
Fast fueling, fuel only
Fast coupling service center
HAULTRONIC II load weighing system
Lube system, automatic
Lube system, centralized
Radio & tape player
Tires (size, type & rating)

Standard and optional equipment may vary from country to country. Special options provided on request. All specifications are subject to change without notice.

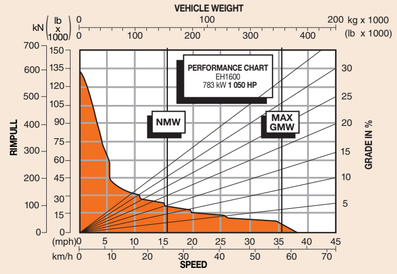
unit:mm (ft in)

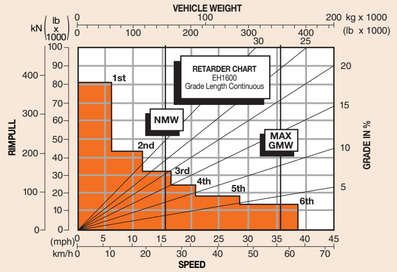
Note: *Dimensions shown are for empty machine with 27.00R49(**)E4 tires.*

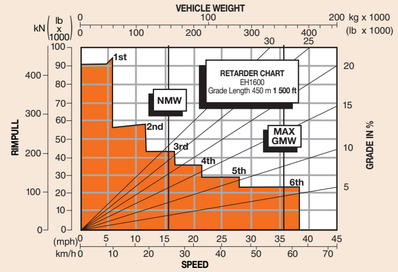




Performance Data: EH1600







NOTES:

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

1. Find the total resistance on diagonal lines on right-hand border of rimpull 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 rimpull or retarder curve.
4. Read down for machine speed.

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HITACHI

EH1600

Nominal Payload with Standard Equipment
80.7 tonnes (89.0 tons)

Maximum GMW with Standard Tires
160 670 kg (354 200 lb)

Engine
Cummins QST 30
Rated Power 783 kW (1 050 HP)

Specifications: EH1600

ENGINE

Model	Cummins QST 30
Type	4 Cycle
Aspiration	Turbocharged/Aftercooled
Rated Power @2 100 min^{-1}(rpm)	
Gross power (SAE J1995)	783 kW (1 050 HP)
Net power (SAE J1349)	732 kW (982 HP)
Maximum Torque @1 300 min^{-1}(rpm)	
	4 630 N·m (472 kgf·m,3 415 lbf·ft)
No. Cylinders	12
Bore & Stroke	140 x 165 mm (5.5 in x 6.5 in)
Displacement	30.5 L (1 861 in³)
Torque Rise	30%
Starting	Electric

TRANSMISSION

Allison DP-8963, planetary type, full automatic shift. Integral torque converter with automatic lock-up to lock-up shifting in all ranges. Remote mounted, 6 forward speeds, 1 reverse. Allison Commercial Electronic Control provides park brake interlock and hoist interlock as well as built in diagnostics.

Maximum Speeds @ Governed Engine Speed with standard 27.00R49(**)E4 tires or Michelin 31/80R49E4 Tires.

		27.00R49(**)E4	31/80R49E4
Range	**Gear Ratio**	km/h (mph)	km/h (mph)
1	4.24	10.0 (6.2)	9.5 (5.9)
2	2.32	18.2 (11.3)	17.4 (10.8)
3	1.69	24.9 (15.5)	23.8 (14.8)
4	1.31	32.2 (20.0)	30.7 (19.1)
5	1.00	42.2 (26.2)	40.2 (25.0)
6	0.72	58.6 (36.4)	55.8 (34.7)
R	5.75	7.4 (4.6)	6.9 (4.3)

DRIVE AXLE

Power is transferred to wheels through a Hitachi model 2657 differential with an externally removable pinion seal and roller bearing open differential. Full floating axle shafts drive the Hitachi model 1080 heavy duty planetaries in each wheel. The parallel link mounting with an "A-frame" top member reduces "roll-steer" effect.

Ratios	**Standard**
Differential	3.15:1
Planetary	8.00:1
Total Reduction	25.20:1
Maximum Speed	
with 27.00R49(**)E4 Tires	58.6 km/h 36.4 (mph)
with 31/80R49E4 Tires	55.8 km/h 34.7 (mph)

TIRES

Standard – Front and Rear	**Rim Width**
27.00R49(**)E4 Radial	495 mm (19.5 in)
Optional	
31/80R49E4 Radial Michelin	559 mm (22.0 in)

Certain job conditions may require higher TKPH(TMPH) in order to maintain maximum production. Hitachi recommends evaluating the job conditions and consulting the tire manufacturer to make proper tire selection.

ELECTRICAL SYSTEM

Twenty-four volt lighting and accessories system. 100-ampere alternator with integral transistorized voltage regulator. Two 1150-ampere, cold cranking, 12-volt, maintenance-free, heavy-duty batteries connected in series/parallel. Standard CONTRONIC II monitoring and central warning system with built-in diagnostics and a standard Liquid Crystal Display (LCD) in the cab.

BODY CAPACITY

	m³ (yd³)
Struck (SAE)	35.4 (46.3)
Heap 3:1	50.0 (65.4)
Heap 2:1 (SAE)	57.1 (74.6)

Body capacity and payload subject to change based on customer specific material density and application.

WEIGHTS

	kg	(lb)
Chassis with Hoist	57 085	(125 850)
Body	13 835	(30 500)
Net Machine Weight	70 920	(156 350)
Maximum GMW with Std. Tires [27.00R49(**)E4] Including Options, 50% Fuel, Operator & Payload Not to Exceed.	160 664	(354 200)

Weights given are for standard options, standard body and tires. Net machine weight changes will directly effect the payload. Material density will determine body volume figures.

Payload with Standard Equipment
89.7 tonnes (98.9 tons)

Note: Nominal Payload on front cover shows 90% of Payload with Standard Equipment.

Load Weight Distribution	FRONT	REAR
	33%	67%

Major Options Approximate change in Net Machine Weight: Regular Duty Body Liners - 400 BHN Steel	kg 4 030	(lb) (8 884)

STEERING SYSTEM

Closed-center, full-time hydrostatic power steering system using two double-acting cylinders, pressure limit compensated piston pump, and a brake actuation/steering system reservoir. An accumulator provides supplementary steering in accordance with SAE J1511/ISO 5010. Tilt/telescopic steering wheel with 35° of tilt and 57.15 mm (2.25") telescopic travel is standard.

Steering Angle	38°
Turning Diameter (SAE)	21.8 m (71'6")
Steering Pump Output (@ 2100 min^{-1}(rpm))	158.1 L/min (41.8 gpm)
System Operating Pressure	18 961 kPa (2 750 psi)

HYDRAULIC SYSTEM

Two (2) Hitachi two-stage cylinders, double-acting in second stage, internal dampened (extend and retract) inverted and outboard-mounted. Separate hoist/brake cooling reservoir and independent tandem gear pump. Electronically operated control valve. Hoist lever can be mounted on left or right of seat. Equipped with body up speed restriction.

Body Raise Time (Loaded)	12.8 s
Body Float Down Time	12.1 s
Brake Cooling Pump Output (@ 2100 min^{-1}(rpm))	469.4 L/min (124.0 gpm)
Hoist Pump Output (@ 2100 min^{-1}(rpm))	449.0 L/min (118.4 gpm)
System Relief Pressure	20 340 kPa (2 950 psi)

BRAKE SYSTEM

Brake systems meet or surpass SAE J1473/ISO 3450.

The Hitachi EH1600 is equipped with an all-hydraulic actuated braking system providing precise braking control and quick system response. The brake control valve is actuated directly at the brake pedal. The controller has a unique variable front to rear brake proportioning that maximizes the stopping performance under slippery road conditions and accounts for weight transfer without having to deactivate front brakes.

Service
Service brakes are all hydraulically actuated. Front disc brakes have two calipers per disc that are internally ported, each containing three pairs of opposing pistons. Rear brakes are oil-cooled wet disc type.

Front Axle - Dry Disc		
Disc Diameter Each (2 discs/axle)	101.6 cm	(40 in)
Brake Surface Area Per Axle	14 194 cm²	(2 200 in²)
Lining Area Per Axle	4 129 cm²	(640 in²)
Brake Pressure (Max.)	13 790 kPa	(2 000 psi)

Rear Axle - Oil-Cooled Wet Disc		
Brake Swept Area Per Axle	79 282 cm²	(12 288 in²)
Brake Pressure (Max.)	10 515 kPa	(1 525 psi)

Secondary
Two independent circuits within the service brake system provide back-up stopping capability. System is manually or automatically applied to stop machine within prescribed braking distance.

Parking
Dry disc mounted on differential input shaft. Two heads, 90° apart, self-adjusting and spring applied, hydraulic release. Controlled by a toggle switch on the dash or automatically applied if brake hydraulic pressure is lost.

Size (Diameter)	685.8 mm	(27 in)

Retarder
Foot-operated valve controls all-hydraulic actuation of oil-cooled wet disc brakes on rear axle. System provides constant speed control on downhill hauls.

Capacity		
Continuous	1 051 kW	(1 410 HP)
Intermittent	1 820 kW	(2 440 HP)

Load/Dump Brake Apply
Through activation of a switch by the operator, a solenoid is energized, sending full brake pressure to apply the rear Wet Disc brakes. For use during the load and dump cycles.

WET DISC BRAKE

The Hitachi wet disc brake is engineered for long service life even in the most extreme environments. The wet disc brakes are located on the rear axle and provide service braking, secondary braking and retarding. The brakes are of a multi-plate design and continuously oil-cooled. The sealed design protects against environmental contamination for prolonged service life. The wet disc brake is designed with automatic retraction and self-adjusting features to prevent drag and compensate for wear. Separate pedals activate the service braking and retarding functions to help the operator keep both hands on the steering wheel.

COMMAND CAB III

COMMAND CAB III
Integral ROPS/FOPS (Rollover Protection Structure) is standard in accordance with SAE J1040/ISO 3471. Double wall construction of 11 gauge inner and outer steel panels, lends itself to a more structurally sound cab. Foam rubber lining material along with foam rubber-backed carpeting and multiple layered floor mat act to absorb sound and control interior temperature. A properly maintained cab from Hitachi, tested with doors and windows closed per work cycle procedures in SAE J1166, results in an operator sound exposure Leq (Equivalent Sound Level) of 80 dB(A). A three-point rubber iso-mount arrangement to the deck surface minimizes vibration to the operator compartment.

Excellent Serviceability
A removable front panel allows easy access to service brake valves, retarder valve and heater assembly. The upper dash utilizes four (4) removable panels that house gauges and customer options, each individually accessible. A removable panel located behind the seat provides easy access to the shifting control, CONTRONIC II, and all electrical junction points.

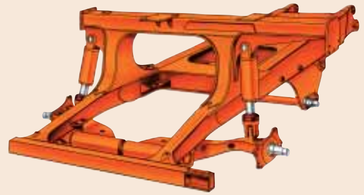
Comfort and Ease of Operation
A wrap-around style dashboard positions controls within easy reach and visual contact. A full complement of easy-to-read gauges, CONTRONIC II monitoring and warning system with Liquid Crystal Display (LCD), a spacious environment, six-way adjustable mechanical seat, tilt/ telescopic steering wheel, filtered ventilation, door locks, and a padded instructor's seat, all contribute to operator convenience and comfort.

SUSPENSION

Front Suspension
Independent trailing arm for each front wheel. NEOCON struts containing energy-absorbing gas and environmentally friendly compressible NEOCON-E™ fluid mounted between trailing arm and frame.

Rear Suspension
The cast rear axle housing has a parallel link mounting with an A-Frame top member. This provides a reduced "roll-steer" effect which results in a more stabilized ride and contributes to lower overall frame stress levels. Outboard-mounted NEOCON struts suspend drive axle from frame. NEOCON struts provide variable damping and rebound feature.

The unique trailing arm front suspension absorbs haul road input, minimizing suspension-induced frame twisting while providing independent tire action. Ride struts are mounted with spherical bushings, eliminating extreme sidewall forces by ensuring a purely axial input to the ride strut. The wide track stance of the trailing arm design and long wheel base assure a more stable, comfortable ride. The suspension struts employ gas and NEOCON-E™ fluid as the energy-absorbing media. This suspension continues to absorb energy when extreme dynamic loads are generated which significantly contributes to improved isolation of the operator and machine components.



The Hitachi frame and suspension are designed to work in unison to provide maximum structural integrity and operator comfort. The formed rectangular frame rail construction provides superior resistance to bending and torsional loads while eliminating unnecessary weight. Hitachi achieves long frame fatigue life through proven design and manufacturing practices. Smooth frame transitions minimize stress concentrations and steel castings effectively distribute input loads. Frame life is further enhanced by utilizing fatigue resistant weld joints and locating welds in low stress areas.

FRAME

Formed rectangular rails with section height tapered from rear to front, bridged by five cross members, front bumper and front suspension tube. Cross member to frame junctions use large radii to minimize stress. Frame utilizes 345 MPa (50,000 psi) yield strength steel.

BODY

Flat chute type, sloped floor, continuously exhaust heated. High tensile strength 400 BHN abrasion resistant alloy steel is used in thickness of:

	mm	(in)
Floor	17	(0.67)
Front	8	(0.31)
Sides	8	(0.31)
Canopy	5	(0.20)
Corner	11	(0.43)
Optional Body Liners (Regular Duty)		
Floor, Corners & Top Rails	10	(0.39)
Sides, Front, End Protection	6	(0.24)
Optional Body Liners (Heavy Duty)		
Floor & Corners	16	(0.63)
Top Rails	10	(0.39)
Sides, Front & End Protection	8	(0.31)
Canopy	6	(0.24)

The horizontal stiffener design of the Hitachi body minimizes stress concentrations in any one area. Load shocks are dissipated over the entire body length. The closely-spaced floor stiffeners provide additional protection by minimizing distances between unsupported areas.

SERVICE CAPACITIES

	L	(US gal)
Accumulator	37.9	(10.0)
Crankcase (incl. filters)	140.0	(37.0)
Transmission (incl. filters)	98.4	(26.0)
Cooling System	268.7	(71.0)
Fuel Tank	1 003.0	(265.0)
Hydraulic		
Hoist System	318.0	(84.0)
Steering System	117.0	(31.0)
Differential	140.1	(37.0)
Planetaries (both sides)	174.1	(46.0)
Windshield washer	7.6	(2.0)