

# BH205E-AC

## ELECTRIC REAR DUMP TRUCK

### FIRST TIME DEVELOPED IN INDIA

- High Power Diesel Engine from Cummins/MTU & Electric Drive by GE
- High Power to weight Ratio
- Low maintainability and repairability indices
- Superior Operating Comfort
- Compliance to Safety norms

**205  
TON**



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**bhel**

NEW FRONTIERS. NEW DREAMS



|                               |   |                            |
|-------------------------------|---|----------------------------|
| Maximum Payload               | : | 186 MT (205 U.S. Ton)      |
| Capacity (Heaped) SAE/ISO 2:1 | : | 111m <sup>3</sup>          |
| Gross Power                   | : | 2300HP (1716kw) @ 1900 RPM |

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# BH205E-AC REAR DUMP TRUCK

## Salient Features :

### Performance:

High power diesel Cummins / MTU engine and world renowned General Electric for electric drive, provide smooth consistent gradeability and acceleration performance.

### Productivity :

High power to weight ratio gives ample reserve power for increased engine life. More target area, higher volumetric capacity and a low loading height ensures high productivity.

### Reliability :

Diesel-electric power module with few wearing parts offer more durability and high availability.

### Serviceability :

Low maintainability and repairability index makes easy serviceability.

### Maneuverability :

Power steering with wide steering angle, results in short turning radius.

### Comfort :

Ideally located spacious deluxe cabin, easy to read and easy to reach instrument panel and operation switches, large tinted glass windows with excellent visibility for increased operator's comfort.

### Safety :

Features include emergency power steering, electrical dynamic retarding with continuously rated blown grids and all hydraulic caliper disc brakes meet relevant safety standards.

## ENGINE

|                     |   |   |
|---------------------|---|---|
| Make                | MTU   | CUMMINS   |
| Model               | 12V4000C23<br>(TIER-II COMPLIANCE)  | QSK60C<br>(TIRE-II COMPLIANCE)  |
| Type                | Diesel, 4 stroke turbo-charged, after cooled, direct injection water cooled | Diesel, 4-stroke, turbo-charged, after cooled direct injection water cooled |
| Number of cylinders | 12  | 16  |
| Bore x stroke       | ∅ 170mm x 210 mm  | ∅ 159mm x 160 mm  |
| Displacement        | 57.2 ℓ  | 60 ℓ  |
| Gross power         | 2300 HP (1716 kW)<br>@ 1900 RPM   | 2300 HP (1716 kW)<br>@ 1900 RPM   |
| Maximum torque      | 9625 Nm @ 1700 rpm  | 9055 Nm @ 1500 rpm  |

## ELECTRIC DRIVE

|                       |   |
|-----------------------|---|
| Make                  | GE  |
| AC Current Alternator | 5GTA41H(MTU), 5GTA41B(CUMMINS)  |
| Control               | IGBT  |
| Motorized* wheel      | 5GEB25B   |
| Ratio                 | 31.875:1  |
| Speed (max.)          | 65 kmph   |
| <b>Electricals</b>    |   |
| Alternator            | 24V, 260A   |
| Lighting              | 24V   |
| Battery               | Four, 12V batteries in series/parallel<br>200Ah capacity with disconnect switch |

\* Wheel motor application depends upon gross vehicle weight haul road grade, haul road length, rolling resistance and other parameters. BEML and Drive system supplier must analyze each job condition to assure proper application.

## STEERING SYSTEM

|                           |  |
|---------------------------|--|
| Type                      | Accumulator assisted twin cylinder provide constant rate steering. |
| <b>Emergency steering</b> | Assisted by accumulators   |
| Turning Diameter          | 28 m   |

## BRAKES

|                                      |   |
|--------------------------------------|---|
| <b>Service brakes</b>                | All hydraulic actuated  |
| <b>Front</b>                         | 6-Caliper on a 46" O.D. single disc per wheel.  |
| <b>Rear</b>                          | 25" / 635mm dual disc-2 caliper/disc  |
| Parking brakes                       | Spring applied, hydraulically released  |
| Emergency Brakes                     | Automatically applied prior to hydraulic system pressure dropping below level required to meet secondary stopping distance. |
| Retarder                             | Electric dynamic retarder.  |
| <b>Brake system meets ISO : 3450</b> |   |

## OPERATOR ENVIRONMENT

Air conditioning  
Radio / CD player, MP3 input with speaker

**Gauges / Indicators :** Air cleaner service indicator, Autolube visual / audio alarm, Coolant temperature gauge, Volt meter, Fuel level gauge, Speedometer, odometer & hourmeter, Tachometer, Engine oil pressure gauge, Check engine indicator, High hydraulic temperature, Low blower pressure, Low brake pressure, Low steering pressure, Stop engine, Hoist lever, Horn, Light dome, Engine start / stop switch, Headlight / tail light switch, High low beam indicator and switch, Park brake switch, Turn indicator lights and lever, Rear view mirrors (left and right) ROPS / FOPS cab, Seat - Full air suspension type, Seat belt - Retractable, 3-point seat belt, Steering wheel, Sun visor, Windshield wiper (intermittent & washer) Service lights in rear axle, Underhood lights.

**Maintenance :** Lubrication automatic, Fuel fast fill - Quick change.

**Safety :** Fire extinguisher, Deck and hand rails, Dump body Locking - wire rope type, Reverse alarm, Reverse hoist interlock, Emergency Brake auto apply, Exhaust blankets, Fire suppressant system, Circuit breakers.

**ELECTRICAL :** Alternator, Ground level electric isolator switch, Ground level engine shutdown switch, Batteries - 4 x 200 Ah, HID headlights 4, (high/low beam), Lights - Service group, Lights - Access steps, Lights - rear, dynamic braking, service, brakes, backup, Braided conduit harness, Fog lights, Wheel chocks.

**Miscellaneous :** Access ladder, Automatic auxiliary steering (accumulators), Engine service ladder (left & right), Rear view mirrors (left & right), Skid resistant deck top, Converter 24 volt to 12 volt, 25 amp capacity, Dry air cleaners, Front wheel fender and mudguards, Fuel tank sight gauge, Hydraulic test ports, Rock ejectors.

**POWER TRAIN :** Engine prelube (Cum), Radiator, Engine shut down delay, Brakes - Front/rear dry disc, Brakes - parking, Brakes - Electric dynamic retard, Traction control system.

**Guards :** Radiator fan guard, Pump drive guard.

## OPTIONS

Brake release system for towing, Hot start (cold weather), Body liners, Jump start connector, Lighting - Backup (additional), Lights - Side profile marker, Hydraulic filter restriction indicator, 12 volt power port, Heater / defroster, Rear View Mirror.





## TYRES

|              |  |
|--------------|--|
| Front & Rear | 37 R 57 (190T)<br>40 R 57 (205T)                           |
| Rim          | 27" x 57" x 6" (37R57 TYRE)<br>29" x 57" x 6" (40R57 TYRE) |

\* BEML recommends the user to evaluate all job conditions and consult the tyre manufacturer to make proper tyre selection



## HYDRAULIC SYSTEM

|                        |   |
|------------------------|---|
| Pump                   | Tandem pump -Axial piston pump / Gear pump  |
| <b>Relief Pressure</b> |   |
| Steering/Brake         | 210 bar (3045 psi)  |
| Hoist                  | 175 bar (2538 psi)  |
|                        | Quick disconnects for system diagnostics.   |
| Hoist cylinders        | Two, 3-stage cylinders, Over centre damping provided for reliability and smooth dumping |
| <b>Hoist timing</b>    |   |
| Power up loaded        | 22 ± 2 sec  |
| Power - down           | 14 ± 2 sec  |



## SUSPENSION

|                       |  |
|-----------------------|--|
| Type                  | Variable rate hydro pneumatic with integral rebound control. |
| <b>Max. stroke</b>    |  |
| Front                 | 370 mm   |
| Rear                  | 90 mm  |
| Max. rear oscillation | ± 3.26 deg.  |



## BODY

Rugged bolster and sill construction. Rubber mounted body. Exhaust heated body.

|                            |   |                |                     |
|----------------------------|---|----------------|---------------------|
| Bottom plate               | 1000 MPa minimum yield strength steel, 20 mm Thick, two piece construction. |                |                     |
| Front plate                | 690 MPa yield strength steel, 12mm Thick.                                   |                |                     |
| Side plate                 | 690 MPa yield strength steel, 10 mm Thick                                   |                |                     |
| <b>Volumetric capacity</b> |   |                |                     |
| Body                       | Struck  | Heap SAE-2:1   | Loading height in m |
|                            | m <sup>3</sup>  | m <sup>3</sup> |                     |
|                            | <b>190T WITH 37R57 TIRES</b>  |                |                     |
| Standard                   | 69  | 103            | 5.46                |
|                            | <b>205T WITH 40R57 TIRES</b>  |                |                     |
| Standard                   | 77  | 111            | 5.61                |
| Optional                   | 92  | 123            | 6.15                |

\*Body weight does not include body liner. If used, will add considerable weight to the body.  
\* Exact loading height may vary due to tire make & inflation pressure.



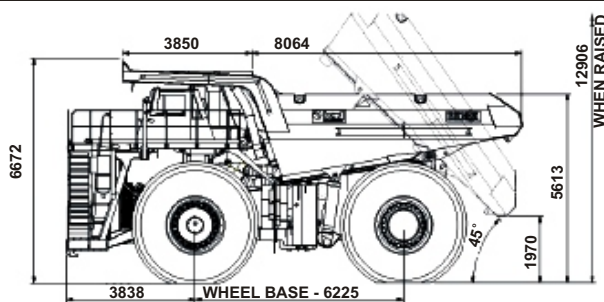
## FRAME

|                        |   |
|------------------------|---|
| Type                   | Box type section made of high tensile strength alloy steel with integral front bumper and rail beams with variable sections. Steel castings at critical stress transition zones |
| Plate Material         | 490 MPa tensile strength steel  |
| Top plate thickness    | 25 mm   |
| Bottom plate thickness | 32 mm   |
| Side plate thickness   | 16 mm   |
| Drive Axle alignment   | Swing link between frame & axle.  |



## CABIN

**Type** : Deluxe interior, fully enclosed, superb working comfort, adjustable operator seat with air suspension and lumbar support, rubber-mounted, padded armrest, (panel-mounted) circuit breaker, electric "wet" windshield wiper, Power Window(LH), sliding windows(RH), excellent visibility, adjustable steering wheel, tinted safety glass windshield, Standard ROPS/FOPS.



Material and specifications are subject to change without notice, Illustrations may include optional equipment & accessories



## MASS

|                          | 190T with 37 R 57 Tyre | 205T with 40 R 57 Tyre |                   |                  |
|--------------------------|------------------------|------------------------|-------------------|------------------|
| Net Vehicle weight       | 1,45,500 kg            | 1,49,000 kg            |                   |                  |
| Rated Payload (Target)   | 1,72,000 kg            | 1,86,000 kg            |                   |                  |
| Gross vehicle weight     | 3,17,500 kg            | 3,35,000 kg            |                   |                  |
| <b>Mass Distribution</b> | <b>Front Axle</b>      | <b>Rear Axle</b>       | <b>Front Axle</b> | <b>Rear Axle</b> |
| Empty (kg)               | 69840<br>(48%)         | 75660<br>(52%)         | 71520<br>(48%)    | 77480<br>(52%)   |
| Loaded (kg)              | 104775<br>(33%)        | 212725<br>(67%)        | 110550<br>(33%)   | 224450<br>(67%)  |

Nominal GVW not to exceed 3,35,000 kg including options, fuel & payload. Weights in excess of this amount require BEML / GE approval.



## SYSTEM REFILL CAPACITIES

| System                | Capacity (Litres) |
|-----------------------|-------------------|
| <b>Cooling System</b> |                   |
| Cummins               | 400               |
| MTU                   | 546               |
| <b>* Crank case</b>   |                   |
| Cummins               | 261               |
| MTU                   | 245               |
| Hydraulic system      | 950               |
| Motor gear box        | 40 each           |
| Fuel                  | 3550              |

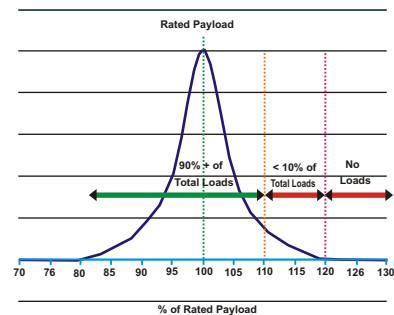
\* includes lube oil filters



## PAYLOAD POLICY

Loading policy is established considering the material density, fill factors and loading equipment. The loading policy is intended to identify the guidelines for the loading of BEML Trucks and is valid for approved applications and Haul profiles only.

The following graph illustrates an acceptable distribution of payloads on a monthly basis. The mean payload does not exceed the Rated Payload, no more than 10% of all loads exceeds 110% of the Rated Payload, and no load exceeds 120% of the Rated Payload.

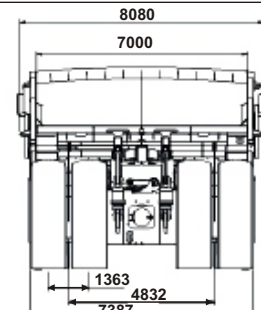
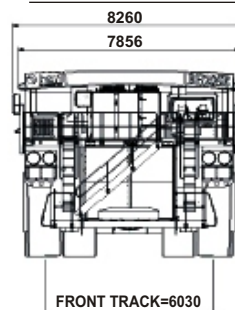


### Normal Distribution for Off-Highway Truck Payload

- The mean of all payloads for any calendar month shall not exceed the Rated Payload as defined above.
- Overloads between 10-20% of the Rated Payload are allowable on an infrequent basis but shall not exceed 10% of all loads in a given month.
- No single overload of 20% or greater of the Rated Payload is allowed.

### Implications of Overloading

- Overloads have a direct impact on overall cost of operations and life of components that have been specially designed based on a rated GVW.
- Operating outside the stated loading policy during any type of warranty period shall void Drive system and all component warranties
- Operation outside the stated loading policy during any type of guarantee period, including but not limited to service contracts and availability guarantees, can also void any such agreements or cause an adjustment thereof.



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# बी ई एम एल लिमिटेड

## BEML LIMITED

A Govt. of India Miniratna Company Under Ministry of Defence

Rear Dump Truck

BH35-2

BH40

BH60M

BH85-1

BH100

BH150E

BH205E-AC

Form No. BH205E-AC/002/11/2014