GROSS HORSEPOWER
2610 kW 3,500 HP

NOMINAL GVW
576072 kg 1,270,000 lb

960E-1K

Photo may include optional equipment.
Productivity Features

- High performance Komatsu SSDA18V170 engine
  Gross horsepower 2610 kW **3,500 HP**
- Komatsu Insulated-Gate Bipolar Transistor (IGBT)
  AC electric drive system
- Advanced Hill Start
- 4620 kW **6,196 HP** continuous retarding capability
- Traction control
- Propulsion/retard speed control
- Customer specific body
- Hydropneumatic suspension designed for optimum performance and ride
- Tight turning radius 16 m **52' 6"**
- Payload Meter III®

Environmentally Friendly

- Komatsu SSDA18V170 engine is compliant with US EPA emissions regulations
- Fuel efficient engine
- 57 % less fluids compared to similar class mechanical drive trucks
- Low noise retarding
- Electrically driven main blower

Reliability Features

- Frame structurally enhanced for 327 metric ton **360 short ton** payload
- Proven and reliable hydraulic system
- Steering and brake accumulators
- Hydraulically actuated multiple-disc wet brakes
**Operator Environment**
- Ergonomically designed spacious cab with excellent visibility
- Fully adjustable driving position settings
- Four post ROPS/FOPS Level 2 Cab
- Advanced dash panel with payload display
- AM/FM/CD/MP3/USB radio

**Easy Maintenance**
- KOMTRAX Plus allows immediate diagnostics of key engine, chassis, and drive system components
- Oil-cooled wet disc braking system reduces wear and extends component replacement intervals
- Extended oil change intervals based on the Centinel® and Reserve systems
- Automatic lubrication system
- Eliminator® oil filtration system
- In-tank fast fuel system

Photos may include optional equipment
**Komatsu SSDA18V170 High Horsepower Engine**

Komatsu’s SSDA18V170 engine was designed and developed by Industrial Power Alliance (IPA) technical joint venture between Komatsu and Cummins®. This 2610 kW 3,500 HP engine will operate in most of today’s mining applications without experiencing power derate. Fuel efficiency is maximized due to optimized air handling with two-stage turbocharging. A standard pre-lube system is designed to eliminate start-up wear and increase overhaul life. Standard features include:

- CENSE® on board monitoring of engine performance for each cylinder
- CENTINEL® Advanced Engine Oil Management System with Reserve oil
- ELIMINATOR® filtration system reduces oil and filter changes by one-third

**Komatsu Drive**

Field tested in the toughest applications, Komatsu Drive is a unique system that features:

- Improved torque capacity
- Top speed of 64 kph 40 mph
- Independent control of the rear wheel motors
- Siemens liquid cooled IGBT inverter system and Traction Control algorithms

These features come together to deliver higher reliability and superior performance in applications ranging from high rolling resistance to long flat hauls.

**Electric Dynamic Retarder**

The 4620 kW 6,196 HP retarding system provides state-of-the-art braking capacity for navigating today’s mining operations which contain steep continuous descents and sharp switchbacks.

The power capacity, coupled with the low noise high volume fan, makes it possible for the operator to maintain control with confidence while hauling downhill. The dynamic electric retarder reduces the need for service brake applications.

**Hill Start**

An innovative feature the Komatsu drive system provides is the Hill Start logic. This built in functionality will help reduce rollback in the event of a stop while the truck is ascending a ramp. Additionally, the feature automatically controls the braking function when an operator that is stopped on grade wants to continue up the ramp.
Traction Control
During slippery conditions, the 960E-1K wheel traction control technology detects and corrects wheel spin or slide events. Traction Control operates automatically and independently of the service brakes, providing a means of controlling the machine in slippery conditions.

Propulsion/Retard Speed Control
Propulsion/Retard Speed Control allows the operator to set a desired speed. This function monitors the speed of each wheel independently for immediate adjustments in propulsion or retarding effort in order to maintain the desired speed.

Customer Specific Body
Komatsu works with each customer to meet all of the criteria for body capacity and distribution. The Komatsu Body Worksheet (BW) process obtains the appropriate information from the customer about key factors that will help to determine the correct body for their site.

Komatsu offers a standard all-welded steel, flat floor body with an over the cab canopy and horizontal bolsters.
- Standard Body Struck Capacity: 149 m³ 195 yd³
- Standard Body SAE Heaped 2:1: 214 m³ 280 yd³
- Standard Komatsu Body Weight: 40823 kg 90,000 lbs
Payload Meter III® (PLM III)

PLM III is an electronic system that monitors and records payload information for Komatsu's off-highway mining trucks. The accurate and reliable payload measurement system is designed to help optimize payload, maximize productivity and reduce the life cycle cost of the machine. PLM III tracks and records the following key production parameters:

- Payload
- Empty Carry-Back
- Operator Identification
- Haul Cycle, Loading, Dumping Time and Date
- Distance Traveled (Loaded and Empty)
- Cycle Time Information
- Maximum Speeds (Loaded and Empty)
- TMPH Estimate for Front and Rear Tires
- Average Speed (Loaded and Empty)

Steering

By using double acting hydraulic steering cylinders with a six-point articulation linkage, the 960E-1K power steering system provides steering control with minimal operator effort. The turning radius of the 960E-1K is 16 m 52' 6"", which provides excellent maneuverability for tight loading and dumping conditions. The steering accumulators comply with ISO-5010 standards.

Hydropneumatic Suspension

Hydrair II® is a suspension system that utilizes four nitrogen-over-oil cylinders. This suspension system is designed to maximize machine productivity by providing the operator with a smooth and comfortable ride. By absorbing shocks to the chassis during operation, Hydrair II® contributes to the durability of the machine’s frame and components.
Operator Seat
Komatsu recognizes that operator comfort is a key to productivity in today’s mining environment. The five-way adjustable operator seat and the tilt-telescopic steering column provide an optimum driving posture for increased operator comfort and control over the machine. The air suspension seat absorbs vibrations transmitted from the machine, reducing operator fatigue. A 51 mm 2” wide three-point seat belt is provided as standard equipment.

Ergonomically Designed Cab
The Komatsu 960E-1K cab design provides a comfortable and productive environment to meet today’s mining demands. The cab includes tinted windows, heating and air conditioning, acoustical insulation, double sealed doors, and provides filtered and pressurized air.

Built-in ROPS and FOPS Structure
Integral ROPS/FOPS Level 2 cab. These structures conform to ISO standards 3471 and 3449.
**Structurally Enhanced Frame Design**

By using advanced computer-aided design, finite element analysis, and full-scale dynamic and static testing, the frame has been designed to carry 327 metric tons \(360\) short tons and provides the high structural reliability Komatsu is known for.

**Castings Used in High Stress Areas**

To increase frame reliability, steel castings have been incorporated at key frame pivot points and key load bearing critical portions of the frame. This includes the rear body pivot and horsecollar sections.

**Simple and Reliable Hydraulic System**

The hydraulic system is a proven and reliable design with fewer parts than other OEMs. The system utilizes a single tank, providing one common source of fluid for steering, braking, and hoisting. In-line, replaceable filtration elements provide protection from hydraulic system contamination. This makes the system easier to service.

To keep downtime to a minimum, Komatsu developed a sub-frame pump module that can be removed and replaced as a single unit. This reduces change-out time and allows easy access to the hydraulic pump module.

**Komatsu Transmission**

Our new transmission is designed to provide the reliability and high quality Komatsu is known for. Held to the highest standards, the transmission was subjected to extensive testing and quality confirmation, both on the bench and in the field. A full scale bench durability test was conducted during development to evaluate design quality prior to production. By using planetary design, extensive machining is not required during a standard rebuild.
Service Brakes
The 960E-1K comes standard with four-wheel, hydraulically actuated, oil-cooled service brakes.

- Max. service apply pressure: 18960 kPa  2,750 psi
- Total friction area per brake: 103729 cm²  16,078 in²

By using a fully hydraulic braking system, the formation of water and sediments - typical in air actuated braking systems - is no longer present. This prevents contamination, freezing and corrosion from affecting service brake component life.
**Easy Maintenance**

**Extended Oil Change System**

CENTINEL® is a continuous oil management system that extends oil change intervals for up to 4,000 hours. Engine oil is injected into the fuel system for consumption at a rate proportional to fuel burn. Make-up oil is supplied from the Reserve System to keep the engine sump at the proper level. ELIMINATOR® is a self-cleaning filtration system that offers extended filter change intervals and superior serviceability.

**Automatic Lubrication System**

The automatic lubrication system is designed to reduce service downtime and improve durability of all pin joints by having a centralized module that automatically distributes grease at adjustable intervals. In addition, this hydraulically activated system can be adjusted to deliver the precise amount of grease required by each joint.

**KOMTRAX Plus**

As part of a complete service and support program, Komatsu equips every truck with KOMTRAX Plus. By using a satellite-based communication system, KOMTRAX Plus provides access to machine health parameters and trends, payloads, and critical faults in a user friendly web interface.

The information available through KOMTRAX Plus allows service personnel to review faults and trends, improve the quality of the troubleshooting process and reduce unscheduled machine downtime.
**Environmentally Friendly**

**Noise Reduction**
The 960E-1K comes with a remarkably quiet retarding package, designed to reduce noise through the low speed high volume fan.

**U.S. EPA Compliant**
The Komatsu SSDA18V170 engine is compliant with the U.S. EPA emissions regulations.

**Less Fluids Than Mechanical Drives**
Komatsu electric drive trucks contain 57% less fluid compared to similar class mechanical drive trucks, creating a lower environmental impact and makes fluid replacement simpler, quicker and more economical.

**Reduced Fuel Consumption**
An electrically driven, more efficient main blower reduces fuel consumption and lowers operating costs.

**Payload Policy**

**10-10-20 Load Policy Criteria**
Recognizing that variation occurs naturally in material density, fill factors, and loading equipment, Komatsu America Corp. deems it necessary to establish a consistent payload policy. This payload policy is intended to identify the guidelines and limitations for the loading of Komatsu mining trucks, and is valid for approved applications and haul profiles only.

1) The average monthly payload must not exceed the rated payload of the truck
2) 90% of all loads must be below 110% of the rated payload of the truck
3) 10% of all loads may be between 110% and 120% of the rated payload of the truck
4) No single payload may exceed 120% of the rated payload of the truck

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**Additional Features**

960E-1K Electric Drive Truck

- **Noise Reduction**
- **U.S. EPA Compliant**
- **Less Fluids Than Mechanical Drives**
- **Reduced Fuel Consumption**

---

**Productivity**

- 90% of Loads

**Durability**

- 10% of Loads

**No Loads**

---

Percent of Rated Payload
**ENGINE**

Make and model: Komatsu SSDA18V170
Fuel: Diesel
Number of cylinders: 18
Gross horsepower*: 2610 kW @ 1900 rpm
Net flywheel power**: 2495 kW @ 1900 rpm

* Gross horsepower is the output of the engine as installed in this machine, at governed rpm
** Net flywheel power is the rated power at the engine flywheel minus the average accessory losses. Accessories include fan and charging alternator. Rating(s) represent net engine performance in accordance with SAE J1349 conditions.

**AC/DC CURRENT**

Drive System: Komatsu AC Drive
Alternator: Siemens
Dual Fan Main Blower: 419 m³/min 1480 cfm
Control: IGBT AC Torque Control System
Ratio: 38:12
Speed (maximum): 64.5 km/h 40 mph

* Drive system performance depends upon gross vehicle weight, haul road grade, haul road length, rolling resistance and other parameters. Komatsu must analyze each job condition to assure acceptable application.

**BODY**

All-welded steel flat floor body with horizontal bolsters and full canopy. Rubber mounts on frame are standard. Eyebrow, body up slang, extended canopy and pivot exhaust heating are optional.

- Floor sheet: 16 mm 0.63" Outer 19 mm 0.75" Center
- Front sheet: 10 mm 0.39" Outer 12 mm 0.47" Center
- Side sheet: 10 mm 0.39" Outer
- Canopy sheet: 6 mm 0.24"
- Capacity struck: 149 m³ 195 yd³
- SAE heaped: 214 m³ 280 yd³
- Standard Komatsu body weight: 40823 kg 90,000 lb

**COOLING SYSTEM**

L&M radiator assembly, split-flow, with deaerator-type top tank.

- Radiator frontal area: 7.02 m² 75.5 ft²

**CAB**

Advanced Operator Environment with integral 4-post ROPS/FOPS
Level 2 structure (ISO 3449), adjustable air suspension seat w/lumbar support and arm rests, full-size passenger seat, maximum R-value insulation, tilt and telescoping steering column, electric windshield wipers w/washer, tinted glass, power windows, Payload Meter III, 61,000 Btu/hr heater and defroster, 19,900 Btu/hr air conditioning (HFC - 134A refrigerant).

**TIRES AND RIMS**

- Rock service, tubeless, radial tires
- Standard tire*: 56/80 R63
- Flange mount, five (5) piece rim
- 1041 mm x 1600 mm x 140 mm 41" x 63" x 5.5" rim assembly

* Tires should meet application requirements for mph/kph, tread, compound, inflation pressure, ply rating or equivalent, etc.

**FRAME**

Advanced technology, full butt-welded box sectional ladder-type frame with integral ROPS supports, integral front bumper, rear tubular cross members, steel castings at all critical stress transition zones, rugged continuous horsecollar.

- Plate material: 482.6 MPa 70,000 psi tensile strength steel
- Casting material: 620.5 MPa 90,000 psi tensile strength steel
- Rail width: 305 mm 12"
- Rail depth (minimum): 864 mm 34"
- Top and bottom plate thickness: 45 mm 1.77"
- Side plate thickness: 25 mm 0.98" Rear 32 mm 1.26" Front

**SUSPENSION**

Variable rate hydro-pneumatic with integral rebound control
Max. front stroke: 328 mm 12.92"
Max. rear stroke: 239 mm 9.40"
Max. rear axle oscillation: ±6.5"

**ELECTRIC DRIVE**

**SUSPENSION**

...
**ELECTRICAL SYSTEM**

4 x 8D 1450 CCA, 12 volt, in series/parallel, bumper-mounted with disconnect switch.

- Alternator: 24 volt, 140 amp
- Lighting: 24 volt
- Cranking motors: Two/24 volt

**SERVICE CAPACITIES**

- Cooling system: 719 L (190 U.S. gal)
- Crankcase: 341 L (90 U.S. gal)
- Hydraulic system: 1325 L (350 U.S. gal)
- Motor gear box (each): 140 L (37 U.S. gal)
- Fuel tank: 5300 L (1400 U.S. gal)

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**HYDRAULIC SYSTEM**

Steering: Accumulator assisted with twin double acting cylinders provide constant rate steering. Secondary steering automatically supplied by accumulator.

- Turning circle diameter (SAE): 32 m (105')
- Reservoir: 947 L (250 U.S. gal)
- Filtration: In-line replaceable elements
- Suction: Single, full flow, 100 mesh
- Hoist and steering: Dual, in-line, high pressure
- Brake component cabinet: Above deck, easily accessible with diagnostic test connections

- Hoist: Two 3-stage dual-acting outboard cylinders, internal cushion valve, over-center dampening

- Hoist times:
  - Power-up loaded: 23 sec
  - Power-down: 14 sec
  - Float-down empty: 24 sec

- Pumps: Two pumps, single package, in-line

- Hoist and brake cooling: Tandem gear pump with output of 931 lpm (246 gpm) at 1900 rpm and 18960 kPa (2,750 psi)

- Steering and brake: Pressure-compensating piston pump with output of 246 lpm (65 gpm) at 1900 rpm and 20685 kPa (3,000 psi)

- System relief pressures:
  - Hoist and brake cooling: 17237 kPa (2,500 psi)
  - Steering and brake: 20685 kPa (3,000 psi)

Ports available for powering disabled truck and for system diagnostics.

---

**DIMENSIONS**

All dimensions are for unladen truck with standard body.

<table>
<thead>
<tr>
<th>Body</th>
<th>Capacity</th>
<th>Loading Height*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Struck</td>
<td>149 m³ (195 yd³)</td>
<td>7.14 m (23'5'')</td>
</tr>
<tr>
<td>2:1 Heap</td>
<td>214 m³ (280 yd³)</td>
<td></td>
</tr>
</tbody>
</table>

*Exact load height may vary due to tire make, type, and inflation pressure.

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**Body Struck 2:1 Heap Height**

- Standard: 149 m³ (195 yd³)
- 214 m³ (280 yd³)
- 7.14 m (23'5'')

*Exact load height may vary due to tire make, type, and inflation pressure.
KOMATSU PRODUCT LINE LOADER/TRUCK MATCHING

Typical Number of Passes to Load

<table>
<thead>
<tr>
<th>Komatsu Trucks</th>
<th>HD785 100 ton</th>
<th>HD1500 150 ton</th>
<th>730E 203 ton</th>
<th>830E-AC 244 ton</th>
<th>860E-1K 286 ton</th>
<th>930E-4 320 ton</th>
<th>930E-4SE 325 ton</th>
<th>960E 360 ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD785 100 ton</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>HD1500 150 ton</td>
<td>7</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>730E 203 ton</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>830E-AC 244 ton</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>860E-1K 286 ton</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>930E-4 320 ton</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>930E-4SE 325 ton</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>960E 360 ton</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Nominal truck payload rating (short tons)
Bucket ratings are based on 1780 kg/lcm 3,000 lbs/lcy material density.
## Empty Vehicle Weight

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Weight (kg)</th>
<th>Weight (lbs)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Axle Distribution</td>
<td>123490</td>
<td>272,250</td>
<td>49.5%</td>
</tr>
<tr>
<td>Rear Axle Distribution</td>
<td>125985</td>
<td>277,750</td>
<td>50.5%</td>
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<tr>
<td><strong>Total EVW</strong></td>
<td>249475</td>
<td>550,000</td>
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</tr>
</tbody>
</table>

## Gross Vehicle Weight

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Weight (kg)</th>
<th>Weight (lbs)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Axle Distribution</td>
<td>190104</td>
<td>419,100</td>
<td>33.0%</td>
</tr>
<tr>
<td>Rear Axle Distribution</td>
<td>385968</td>
<td>850,900</td>
<td>67.0%</td>
</tr>
<tr>
<td><strong>Nominal GVW</strong></td>
<td>576072</td>
<td>1,270,000</td>
<td></td>
</tr>
</tbody>
</table>

## Payload

<table>
<thead>
<tr>
<th>Payload</th>
<th>Weight (kg)</th>
<th>Weight (lbs)</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Payload</td>
<td>32685</td>
<td>720,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>327 metric tons</td>
<td>360 short tons</td>
<td></td>
</tr>
</tbody>
</table>

Nominal payload is defined by Komatsu America Corp’s payload policy documentation. In general, the nominal payload must be adjusted for the specific vehicle configuration and site application. The figures above are provided for basic product description purposes. Please contact your Komatsu distributor for specific application requirements.
STANDARD EQUIPMENT

• Air cleaners, Donaldson® SSG
• Alternator (24 volt/140A)
• Automatic lubrication system w/ground level fill & level indicator
• Back up alarm
• Batteries–4 x 8D (1450 CCA's)
• Battery charging cable and socket
• Body impact plate
• Body over center device
• Brakes: oil-cooled, multiple disc front & rear
• Deck guardrails
• Electric start
• Eliminator®, Centinel®, Cense®
• Fast-fill fuel system (in tank and left side remote)
• Filters, high pressure hydraulic
• Ground level radiator fill
• Mirrors, LH flat and RH rectangular convex
• Mud flaps
• Muffled exhaust–deck-mounted
• Power supply, 24 volt and 12 volt DC
• Propel/retard speed control
• Quick disconnects (hoist and diagnostics)
• Radiator sight gauge
• Refill location
• Removable power module unit (radiator, engine, alternator)
• Reverse retarding
• Service center–LH
• Seat belts
• Slip-resistant / dimpled surface on walkways
• Standard High Visibility Deluxe Cab
• Air cleaner vacuum gauges
• Air conditioner HFC-134A
• AM/FM radio with CD, USB & MP3
• Dome light
• Electronic Dash & Status Panel
• Engine hourmeter, oil pressure gauge, coolant temperature gauge, hydraulic oil temperature gauge
• Engine shutdown w/ “Smart Timer” delay
• Fuel gauge in cab
• Fuel low level light and buzzer
• Gauges (w/backlight)
• Headlight switch
• Heatilator fender (heavy-duty)
• Headlight switch
• High beam selector and indicator
• Horn switch (center of steering wheel)
• Indicators lights (blue)
• Power supply, 24 volt and 12 volt DC
• Propel/retard speed control
• Quick disconnects (hoist and diagnostics)
• Radiator sight gauge
• Removable power module unit (radiator, engine, alternator)
• Reverse retarding
• Service center–LH
• Slid resistant / dimpled surface on walkways

OPTIONAL EQUIPMENT

• Accumulators (cold weather)
• Body liners
• Body up sling
• Extended canopy
• Eyebrow
• Fire extinguisher 9 kg 20 lb
• Heated body
• Hot start engine oil (220V 2-500W)
• Hot start hydraulic oil
• Hot start engine coolant (220V 2-2500W)
• Hubodometer
• Lights (HID)
• Mufflers between frame rails
• ORBCOMM®
• PLM III® scoreboards
• Reverse access ladder
• Service center–RH
• Shutters (radiator)
• Special language decals
• Suspensions (cold weather)

Note: Optional equipment may change operating weight.