KOMATSU

980E-5SE

Electric drive truck

Gross horsepower
3 281 kW (4,400 HP)

Nominal GVW
635 029 kg (1,400,000 lbs.)

Walk-around

Safety

Reliability

Productivity

Productivity features

- High performance Komatsu SDA16V190-1 engine
- Gross horsepower: 3 281 kW (4,400 HP)
- Traction (spin-slide) control
- Cruise control (propulsion and retard)
- Komatsu-designed application-specific body
- Payload Meter IV (PLM IV)
- High torque for soft underfoot applications

Environmentally friendly

- Fuel-efficient engine
- Fewer fluids compared to mechanical drive trucks

Operator environment

- Ergonomically designed spacious cab with excellent visibility
- Fully adjustable driving position settings
- Four post ROPS/FOPS level two cab
- User-friendly display with payload information
- Komatsu Hydrair II suspensions designed for optimum ride comfort
- AM/FM/MP3/USB weather band radio
- Optional KomVision all-around monitoring system

Ease of maintenance

- Komtrax Plus helps to facilitate timely diagnostics of key engine, chassis and drive system components
- Oil-cooled wet disc braking system helps reduce wear and extend component replacement intervals
- Automatic lubrication system
- Eliminator oil filtration system
- Flange-mounted rims with optional Komatsu Smart type rims

Reliability features

- Redesigned frame supports 363 metric ton (400 short ton) payload
- Simple and reliable hydraulic system
- Steering and brake accumulators
- All-wheel hydraulically actuated multiple-disc wet brakes

Productivity features

Komatsu high horsepower engine

The 3 281 kW (4,400 HP) Komatsu SDA16V190-1 engine is designed to operate in most of today's mining applications without experiencing power derate. Fuel efficiency is maximized due to optimized air handling with single-stage turbocharging.

Standard features include:

- A standard pre-lube system designed to reduce start-up wear and increase overhaul life
- CENSE onboard monitoring of engine performance for each cylinder
- Eliminator filtration system helps reduce oil and filter changes by one half

AC electric drive system

The GTA63 traction alternator, coupled with the GDY108D wheel motors and Invertex IIe AC control system, provides reliable performance and easy maintenance. Invertex IIe offers independent control of the rear wheel motors, which provides outstanding traction capabilities during wet and slippery conditions, improving tire wear and operator confidence.

The air-cooled insulated gate bipolar transistor (IGBT) inverter system technology provides the highest available reliability. The IGBT inverter is more compact and much simpler than the design of its predecessor, the gate turn-off (GTO) inverter, which improves serviceability and routine maintenance.

Electric dynamic retarder

The 4 921 kW (6,600 HP) retarding system provides state-of-the-art braking capacity for navigating today's mining applications, which contain steep, continuous descents and sharp switchbacks. Continuous retarding capacity enhances the productivity of the vehicle operator while eliminating the need for excessive mechanical braking effort.

Traction (spin-slide) control

During slippery conditions, the 980E-5SE wheel traction control technology detects and corrects wheel spin or slide events. Traction control operates automatically and independently of the service brakes. During propulsion, wheel slip control reduces non-productive wheel spin in low traction conditions. During retarding, wheel slide control prevents wheel lockup and subsequent sliding.

Cruise control

Cruise control, both in propulsion and retarding, allows the operator to concentrate on steering and situational awareness while maintaining a constant speed. A set speed indicator provides confirmation the truck speed matches the desired speed selected by the operator, with simple automotive-style controls.

Komatsu-designed application-specific body

Utilizing the required body worksheet (BW) process, Komatsu ensures that each body is designed to meet the requirements for each specific application while carrying its rated payload. Komatsu works with each customer to understand all of the material properties at a mine site and to identify the appropriate liner package.

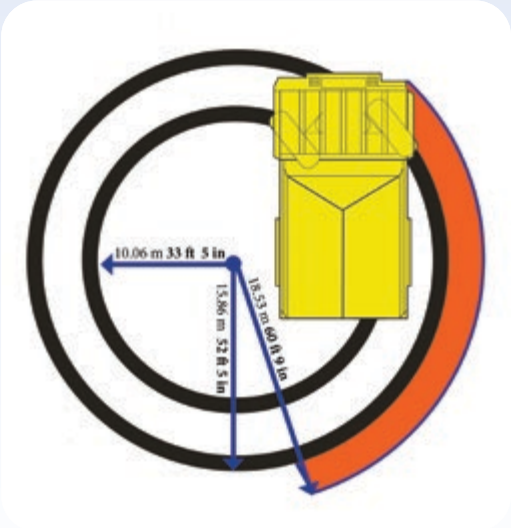
Komatsu offers standard all-welded steel, flat floor body with a full canopy and horizontal bolsters. This body includes a body up sling and rubber mounts on the frame.

- Standard body SAE heaped 2:1: 250 m^3 (327 yd^3)
- Standard Komatsu body weight: 42 637 kg (94,000 lbs.)

Productivity features

Tight turning radius

By using double-acting hydraulic steering cylinders with a six-point articulation linkage, the 980E-5SE power steering system provides positive steering control with minimal operator effort. The turning radius of the 980E-5SE is 15.9 m (52 ft. 2 in), which provides excellent maneuverability for tight loading and dumping conditions. The steering accumulators comply with ISO-5010 standards.



Payload Meter IV (PLM IV)

PLM IV 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 IV 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)
- Tons mile per hour (TMPH) estimate for front and rear tires
- Average speed (loaded and empty)

Hydrair II 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 environment

Ergonomically designed cab

The Komatsu 980E-5SE cab design provides a comfortable and productive environment to meet today's mining demands. The cab includes tinted safety glass windows, heating and air conditioning, acoustical insulation, double-sealed doors, and filtered and pressurized air to reduce dust.

User-friendly display

The 980E-5SE comes with a new operator-friendly dash configuration, which includes lighted gauges, switches and an information panel. This allows the operator to see the status of the machine during operation and informs them of any faults. An instructive message will appear after any fault is detected on the machine.

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 in) wide, blaze orange, three-point seat belt is provided as standard equipment.

Built-in ROPS and FOPS structure

These structures conform to ISO standards 3471 and 3449.

Photo may include optional equipment.

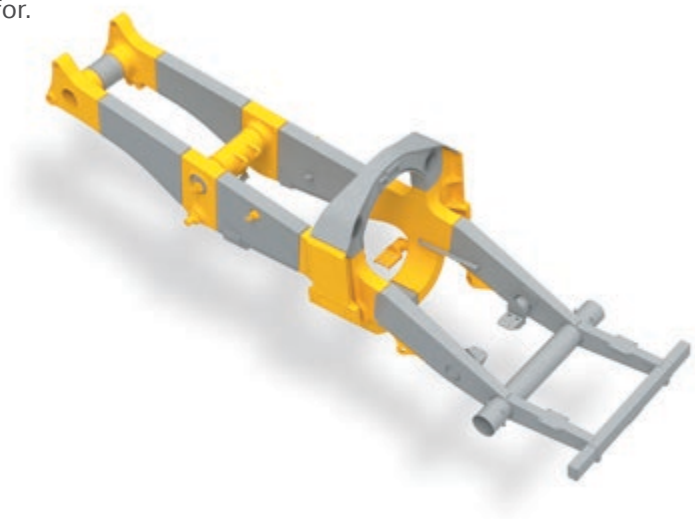
Reliability features

Structurally enhanced frame design

By using advanced computer-aided design, finite element analysis and full-scale dynamic testing, the frame has been designed to carry 363 metric tons (400 short tons) and provides the high structural reliability Komatsu is known for.

Castings used in high-stress areas

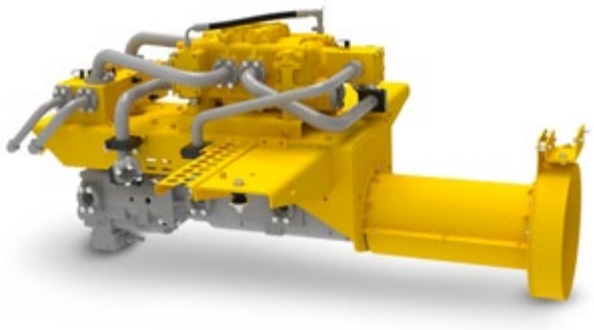
To increase frame reliability, steel castings have been incorporated at key frame pivot points and critical load-bearing portions of the structure. This includes the rear body pivot and horse-collar sections.



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 protect from hydraulic system contamination, making the system easier to service.

To help reduce downtime, Komatsu developed a subframe pump module that can be removed and replaced as a single unit. This reduces changeout time and allows easy access to the hydraulic pump module.



Proven wheel motor design

The GDY108D wheel motor builds on the success of its predecessor. 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 before production. By using planetary design, extensive machining is not required during a standard rebuild.

Fully hydraulic controlled multiple-disc wet brakes

Although the dynamic retarding system is the primary braking force, the 980E-5SE comes standard with four-wheel, hydraulically actuated, oil-cooled service brakes. If the truck's hydraulic system pressure drops below an acceptable level, accumulator tanks will automatically apply all-wheel brakes to bring the truck to a complete stop.

- Maximum service apply pressure: 18 960 kPa (2,750 psi)
- Total friction area per brake: 103 729 cm^2 (16,078 in^2)

The oil-cooled brake system helps provide lower maintenance costs and higher reliability versus dry disc brakes. This system is fully sealed to help keep contaminants out and reduce brake wear and maintenance. The brakes are hydraulically actuated; no pneumatic system is used. Three independent hydraulic circuits provide hydraulic backup.

The 980E-5SE braking system meets ISO 3450-2011.

Easy maintenance

Extended engine oil change

Eliminator is a self-cleaning filtration system that offers extended filter change intervals and superior serviceability.

Access, service and convenience

Located on the front left bumper, adjacent to the main entrance to the machine, Komatsu installs many service and convenience items. This central location simplifies maintenance events, reducing the time the truck is out of service for routine upkeep.

1. Auto-lubrication tank and controls
2. Power, starter and drive system lockout (lockout/tagout capable switches)
3. Ground-level engine shut-down
4. Fluid service center (coolant, engine oil, hydraulic oil, grease fill)
5. Hydraulic step-up/down switch (hydraulic stairs are optional)

Komtrax Plus

As part of a complete service and support program, Komatsu equips every mining and quarry-sized machine with Komtrax Plus. By using a satellite-based communication system, Komtrax Plus offers a new vision of monitoring your valuable assets. By providing insight into critical operating metrics, the user can manage increased availability, lower owning and operating costs, and maximize fuel efficiency.

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.

Komatsu Smart type rims (optional)

Komatsu Smart rim technology allows easy removal and installation of the tires to minimize the overall impact on downtime.

Drive system

Drive system (Invertex IIe)

- True quad chopper eliminates RP contactors
- Single stack IGBTs
- Increased cabinet rigidity
- Front placement of indicator and interface panels
- Front access for maintenance
- All LED lighting

Improved bus bar

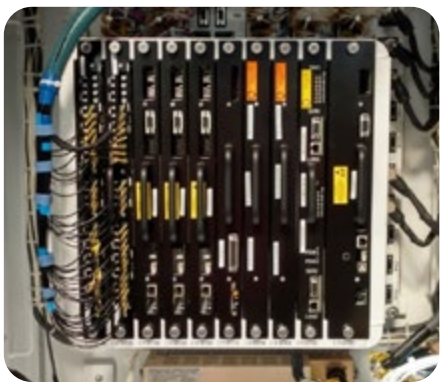
- Close molded design eliminates potting
- No soldered bushings
- Edge protection
- FR4 and abrasion protection
- Simplified, more robust bus bar design

Improved truck performance

- Retains wheel slip/slide control in all modes of operation
- Cruise control (both motoring and retarding)
- Fuel saver II built-in

Technology advancements

- Supports data collection and transmission for remote monitoring
- New generation technology for faster processing with higher capacity (90% faster data transfer)
- Common CAN network consists of an engine, truck and drive system
- Supports CAN, ethernet and USB



VID display

- Replaces DID panel
- In-cab touchscreen display for setup, maintenance and troubleshooting
- Access, download and update the system from the operator's cab
- Entry to control cabinet no longer required for basic troubleshooting

WebPTU

- Replaces wPTU
- Primary maintenance and troubleshooting tools for all future systems
- Browser-based access and visualization of truck system data
- Eliminates dependency on legacy PCs and operating systems
- Accessible in operators cab via ethernet

Additional features

Environmentally friendly

Fewer fluids than mechanical drives

Komatsu's 980E-5SE contains 63% less hydraulic fluid compared to similar class mechanical drive trucks, creating a lower environmental impact and making fluid replacement simpler, quicker and more economical.

Reduced fuel consumption

The engine and drive system are specifically tuned together, providing efficient power usage and minimizing fuel consumption.

Komatsu loading policy

In normal loading operations, variations in payloads occur. The loading policy identifies the guidelines and limitations for the loading of those Komatsu mining truck models specified.

Definitions:

- **Rated gross vehicle weight (GVW)** includes the chassis, body, tires, accessories (including local options), lube, fuel, operator, payload and any excess material buildup
- **Rated payload** is the resultant difference of rated GVW minus the empty vehicle weight (EVW)
- **Overload** refers to any payload amount above the rated payload
- **Never to exceed GVW** is the maximum allowable GVW under the guidelines of this policy

Actual payloads greater than the rated payload are allowable, but shall not result in a GVW that is greater than the "never to exceed" GVW.

No single payload that results in a GVW more than the "never to exceed" GVW is allowed under any circumstances.

The mean of all payloads for a rolling 30-day period shall not exceed the rated payload.

Truck model	980E-5SE	
Specification	**kg**	**lbs.**
Rated GVW	635 029	1,400,000
Standard tire size	59/80R63	
Rated / nominal payload	362 874	800,000
Never to exceed GVW	707 604	1,560,000

Engine

Make and model	SDA16V190-1
Fuel	Diesel
Number of cylinders	16
Operating cycle	4-Stroke
Gross horsepower*	3 281 kW (4,400 HP) @ 1,800 rpm
Net flywheel power**	3 169 kW (4,250 HP) @ 1,800 rpm
Weight (wet)	
Weight (dry)	13 585 kg (29,950 lbs.)

* Gross horsepower is the output of the engine as installed in this machine, at governed rpm and with engine manufacturer's approved fuel setting. Accessory losses included are water pump, fuel pump and oil pump.
**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.

Electric drive

AC/DC current	
Alternator	GTA-63
Single impeller in-line blower	127.4 m^3/min (4,500 CFM)
Control	1,800 V KG565
Motorized wheels*	GDY108D
Ratio	35.02:1
Speed (maximum)	64 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 proper application.

Tires and rims

Rock service, tubeless, radial tires Standard tire*	59/80 R63
Flange mount, five piece rim	1 118 x 1 600 x 140 mm (44 x 63 x 5.5") rim assembly
Rims rated at 758 kPa 110 psi cold inflation pressure Typical total tire weight	32 585 kg (71,838 lbs.)

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

Cab

Advanced operator environment with integral 4-post ROPS/FOPS level 2 structure (ISO 3449), isolation mounted, adjustable air suspension with lumbar support and arm rests, full-size passenger seat, maximum R-value insulation, tilt/telescopic steering column, single brake pedal, electric windshield wipers with washer, tinted safety glass, power windows, automotive styling, Payload Meter IV, Modular Mining display built-in dash assembly, 55,000 Btu/hr heater and defroster, 21,600 Btu/hr air conditioning (HFC –134A refrigerant).

* Optional: KomVision system built-in dash assembly

Suspension

Variable rate hydropneumatic with integral rebound control Maximum front stroke	303 mm (11.92")
Maximum rear stroke	239 mm (9.40")
Maximum rear axle oscillation	±6.5°

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 / 32mm (1.26") front
Drive axle mounting	Pin and spherical bushing
Drive axle alignment	Swing link between frame and axle

Body

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

Floor sheet	16 mm (0.63") outer/19 mm (0.75") center 1 379 MPa (200,000 psi) tensile strength steel
Front sheet	10 mm (0.39") outer/12 mm (0.47") center 1 379 MPa (200,000 psi) tensile strength steel
Side sheet	10 mm (0.39") 1 379 MPa (200,000 psi) tensile strength steel
Canopy sheet	6 mm (0.24") 690 MPa (100,000 psi) tensile strength steel
Struck	183 m^3 (240 yd^3)
SAE heaped 2:1	250 m^3 (327 yd^3)
Standard Komatsu body weight	42 637 kg (94,000 lbs.)

Braking system

Service brakes	Oil-cooled, hydraulic actuated, multiple disc brakes at each wheel
Traction system	Wheel spin-slide control
Max. service apply pressure	18 960 kPa (2,750 psi)
Total friction area per brake	103 729 cm^2 (16,078 in^2)
Auto apply system	Automatically applied prior to hydraulic system pressure dropping below level required secondary stopping requirements
Secondary brake system	Complies with ISO-3450 standards
Wheel brake lock	Switch-activated
Parking brakes	Multiple disc, spring-applied, hydraulically released, dry brakes on inboard end of each wheel motor rotor shaft. Rated to hold on ±15% grade at maximum gross vehicle weight
Electric dynamic retarder	4 854 kW (6,600 HP)

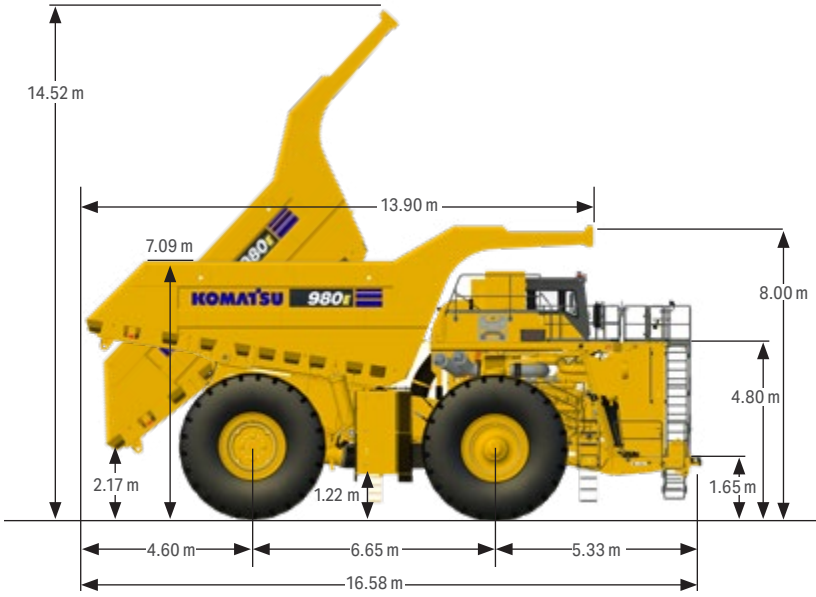
Cooling system

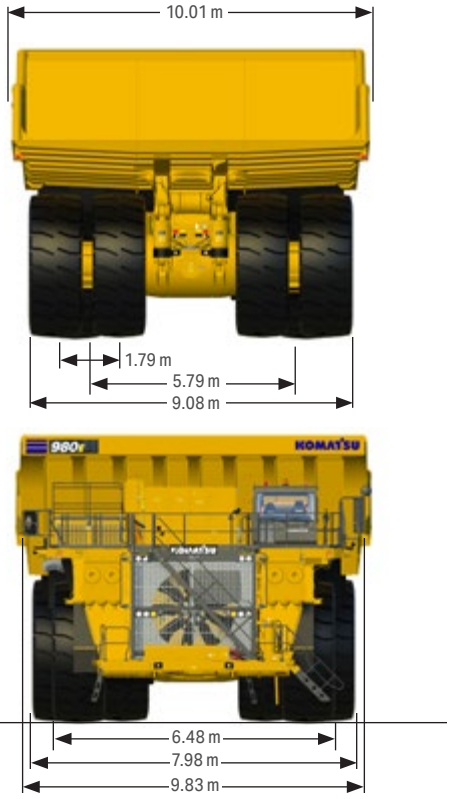
Replaceable core radiator assembly, split-flow, with deaerator-type top tank.

Radiator frontal area	8.46 m^2 (91 $ft.^2$)

980E-5SE

Body	Capacity		Loading height*
	Struck	2:1 Heap	
Standard	183 m³ (240 yd³)	250 m³ (327 yd³)	7.09 m (23' 3")





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 US gal)
Filtration Suction Hoist and steering	In-line replaceable elements Single, full flow, 100 mesh 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 Power-down (high idle) Float-down empty (low idle)	 26.5 s 15 s 22 s
Pumps	Two pumps, single package, in-line
Hoist and brake cooling	Tandem gear pump with output of 931 lpm (240 gpm) at 1,800 rpm and 18 960 kPa (2,750 psi)
Steering and brake	Pressure-compensating piston pump with output of 246 lpm (64 gpm) at 1,800 rpm and 20 685 kPa (3,000 psi)
System relief pressures Hoist and brake cooling Steering and brake	 17 237 kPa (2,500 psi) 20 685 kPa (3,000 psi)
Ports available for powering disabled truck and for system diagnostics	

Electrical system

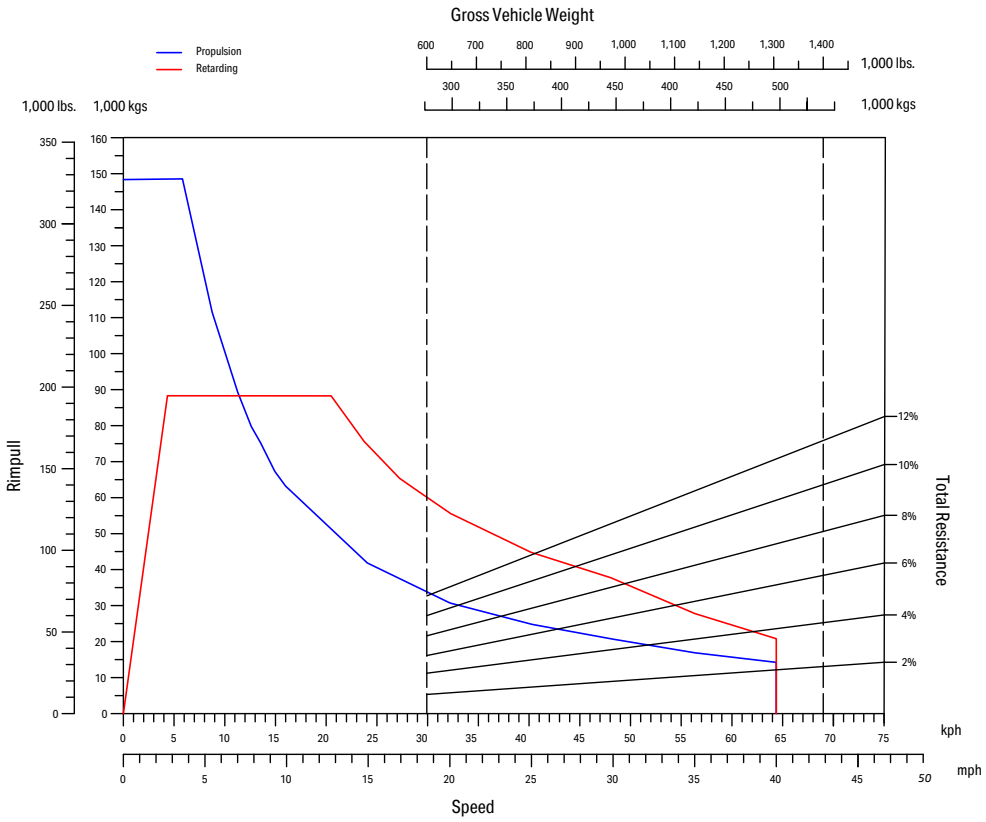
6 x 8D 1450 CCA, 12 V batteries, in series/parallel, bumper-mounted with disconnect switch Alternator	 24 V, 275 A
Lighting	24 V
Cranking motors	3 x 24 V

Service refill capacities

Cooling system	992 L (262 gal)
Crankcase*	500 L (132 gal)
Hydraulic system**	1 930 L (510 gal)
Drive system	90 L (24 gal)
Fuel	5 300 L (1,400 gal)

* Includes lube oil filters
** Includes tank

980E-5SE Performance
4,400 HP-59/80 R63 Tires



Empty vehicle weight

Front axle distribution (56%)	149 813 kg	330,282 lbs.
Rear axle distribution (44%)	117 710 kg	259,506 lbs.
Total EVW	267 523 kg	589,788 lbs.
Optional allowance	4 632 kg	10,212 lbs.

Gross vehicle weight

Front axle distribution (34%)	215 910 kg	476,000 lbs.
Rear axle distribution (66%)	419 119 kg	924,000 lbs.
Nominal GVW	635 029 kg	1,400,000 lbs.

Payload

Nominal payload	362.3 tonne	400 Short tons
	362 873 kg	800,000 lbs.

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 the basic product description purposes. Please contact your Komatsu distributor for specific application requirements.

Standard equipment

- Air cleaners with auto evacuators
- Alternator (24 V/1 x 275 A)
- Automatic lubrication system with ground-level fill, level indicator and dynamic timing
- Backup alarm
- Batteries — 6 x 8D (1,450 CCAs)
- Battery charging/jump start connector
- Body over — center device
- Body-up sling (with KAC supplied body)
- Brakes: oil-cooled, multiple disc front and rear
- Control cabinet
- Cruise control
- Electric start
- Eliminator, Cense
- Fast-fill fuel system (in tank and remote)
- Filters, high pressure hydraulic
- Ground-level radiator fill
- Hydraulic tank ladder
- Mirrors:
  - LH: Flat with convex aux mirror
  - RH: Heated, multi-cambered convex
- Mud flaps
- Muffled exhaust — deck-mounted
- Power supply, 24 V and 12 V DC
- Quick disconnects (steering, hoist and diagnostics)
- Radiator sight gauge
- Removable power module unit (radiator, engine, alternator)
- Reverse retarding
- Service center — LH
- Electronically controlled viscous fan clutch

Operator environment and control

- All hydraulic service brakes with auto apply
- Backup alarm
- Battery disconnect switch
- Brake lock and drive system interlock
- Circuit breakers, 24 V
- Diagonal staircase across grille
- Dynamic retarding with continuous-rated element grids
- Engine shutdown at ground level
- Hoist propulsion interlock
- Horns (electric–front)
- Integral ROPS/FOPS cab level 2
- Maintenance and power lockout
- Parking brakes with warning light and speed application protection
- Power steering with auto secondary steering
- Protective deck handrails
- Pump driveline protector
- Radiator fan guard
- Seat belts: operator and passenger 3-point
- Slip-resistant walkways

Lighting

- Backup lights — rear mount (2) LED
- Back-up lights — R and L — deck mount (2) LED
- Brake and retard lights on top of cab (LED)
- Clearance lights (LED)
- Control cabinet service light (LED)
- Dynamic retarding, rear (2) LED
- Engine compartment service lights (LED)
- Fog lights (2) LED
- Headlights (8) LED
- Manual backup light, switch and indicator
- Payload lights R and L (LED)
- Stairway lights (LED)
- Stop and tail lights (2) LED
- Turn signals (LED)

Standard high visibility deluxe cab

- AC drive interface display
- Air conditioner HFC-134A
- AM/FM radio with CD, USB and MP3
- Digital air cleaner restriction gauges
- Dome light
- Multifunctional operator display
  - Body up
  - Engine oil temperature (high)
  - Parking brake
  - Propulsion system not ready
  - No DC link voltage
  - No propel
  - Service brake applied
  - Wheel brake lock applied
  - Maintenance monitor
  - Engine hourmeter, oil pressure gauge, coolant temperature gauge, hydraulic oil temperature
- Engine shutdown with Smart Timer delay
- Floor mat (double barrier)
- Fuel gauge in cab
- Fuel low level light and buzzer
- Gauges (with backlight)
- Headlight switch
- Heater and defroster (heavy-duty)
- Heater switch
- High beam selector and indicator
- Horn (center of steering wheel)
- Indicator lights (blue)
  - Engine service
  - Komtrax Plus Snapshot (IM)
- Komatsu Payload Meter IV (PLM IV)
- Komtrax Plus
- Operator seat, adjustable with air suspension, lumbar support and arm rests
- Panel lighting (adjustable)
- Passenger seat, mechanical suspension
- Power windows
- Pressurized cab air system with fan on
- Single brake/retarder pedal
- Sunvisor (adjustable)
- Tilt and telescoping steering column
- Voltmeter (battery output)
- Windshield (tinted safety glass)
- Windshield wiper (dual) and washer (electric)

Optional equipment

Note: Optional equipment may change operating weight.

- 300 gpm fast fuel: RH in-tank, LH remote
- Amber beacon light
- Antifreeze: below 40 F
- Body group, OEM ship loose*
- Body liners
- Bumper access — hydraulic retractable steps
- Bumper-mounted headlights
- Cold weather suspensions — front and rear
- Double wall exhaust tubes
- Dump body — standard design
- Electric heater (coolant, hydraulic oil, engine oil)
- Engine access platform, LH
- Exhaust for heated body
- Fire extinguisher
- FLOC — LH service center
- Mud flaps — fuel and hydraulic tank
- Komatsu Smart type rims
- Komatsu wireless bridge
- KomVision all-around monitoring system
- PLM scoreboard displays — RH and LH
- Rock ejectors
- Service center — RH (replacing LH)
- Spare rim (1)
- Spare Komatsu Smart type rim (1)
- Suspension charging kit
- Tool group

*Mandatory for Komatsu supplied body. Recommended for Komatsu designed, locally manufactured body. Not applicable to third-party body.

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