SINOMACH

国机重工集团国际装备有限公司

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SINOMACH

GKA248X

Double-alxe rigid mining truck

Rated loading capacity:143000kg
Engine rated power:1163/1800kW/rpm
Cargo compartment capacity 2:1 heaped:86m³

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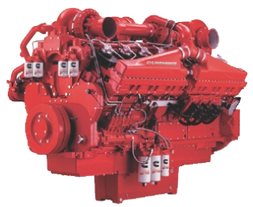
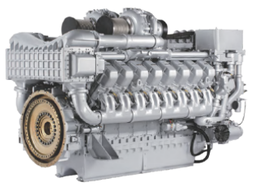
01 HIGH-PERFORMANCE ENGINE

High-performance engine

- There are two kinds of high-performed power assemblies for option: MTU and Cummins diesel engines with imported with original packaging. MTU meets China national off-road stage III and US EPA Tier4i stage; KTA50 of Cummins engine meets U.S.EPA Tier0 emission standard, QSK50 of Cummins engine meets U.S.EPA Tier2 stage emission requirements; both engines are reliable and powerful.
- They can generate clean, quiet and efficient power.
- Engines have reliable performance, advanced technologies, are convenient for fault diagnosis and simple for maintenance.





AC electric drive system

- 150AC electric drive system is designed, developed and integrated by SINOMACH. The system is integrated with generator, converter cabinet, traction motor and brake resistor and is under intelligent control, is characteristic of high power density, small volume, light weight, high efficiency, low rate of loss and long service life.
- Compared with mechanical drive system, electric drive system has a simpler structure, uses a smaller amount of service fluid, requires shorter time for maintenance and lower cost of maintenance.
- Main generator uses a three-phase brushless excitation alternator that has a long lifespan and requires less maintenance.
- Traction motor uses a three-phase squirrel-cage ac variable frequency induction motor that is technologically mature, durable and has a long performance life.
- System can detect the working condition of converter rectifier, generator and traction motor and has over-temperature protection; in addition, it has a longer expected service life and lower cost.

Electric retarder control system

The maximum braking power and continuous braking power of electric retarder system is 1800kW and 1400kW. When a fully-loaded vehicle is traveling on a continuous downhill, it can meet the corresponding braking requirements, which improves operating safety and production efficiency.

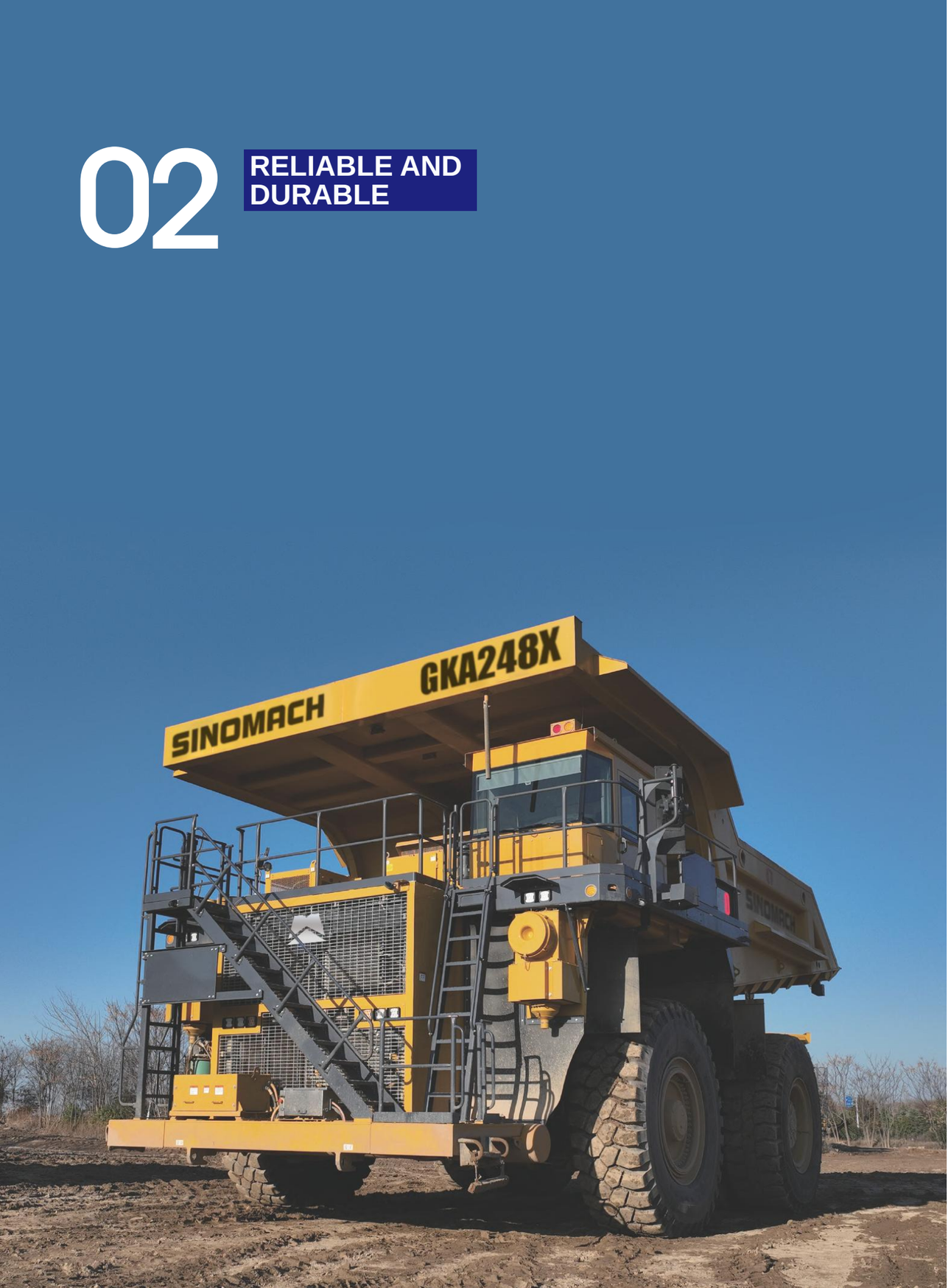
Weighing system

Vehicle-mounted weighing system is designed for detecting and analyzing vehicle load data, and is aimed to help optimize payload, maximize productivity and reduce life cycle cost of the machine.

Vehicle-mounted weighing system tracks and records following key production parameters:

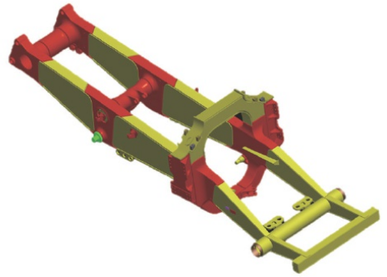
- Payload
- Total number of transport times
- Total transport weight
- Loading percentage distribution data
- Time and mileage of no-load & full-load transport

02 RELIABLE AND DURABLE



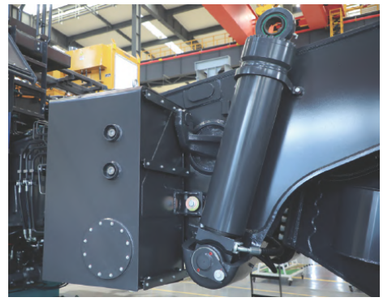
Long-life 150t-level frame design

GKA248X truck frame adopts advanced computer aided design, finite element method and has received full-work-condition dynamic testing, as a result, this frame obtains a structure strength that is capable of bearing a load of 154 tonnes. The truck has a box-section design and is made of high-quality alloy steel plates, which gives it anti-fatigue strength, low-temperature impact resistance and good welding performances. Steel castings are applied to 17 positions of key high-stress areas and forgings are applied to 2 positions of key high-stress areas, the expected service life passes 90000h.



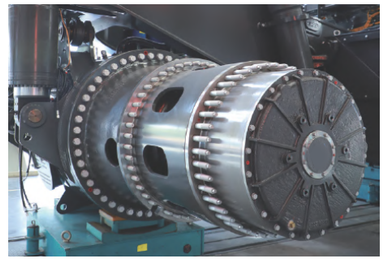
Simple and reliable hydraulic system

Hydraulic system is simple but reliable, with a less number of components adopted to obtain control of steering, braking and lifting functions. A modular design is used that integrates hydraulic pump with lifting valve group and gets them installed on the same support, which is convenient for quick maintenance and replacement. A multi-stage hydraulic oil filter element design that has high filtration accuracy, a large pollutant-holding capacity and a longer maintenance interval.



Gearbox with a two-stage NGW planet gear train

Gearbox for electric wheels of GKA248X has a power-split two-stage NGW planet gear train; high speed sun gear input, output power rate of high speed planet carrier is nearly as low as that of low speed sun gear, and torque is finally output by dual gear ring. NGW gearbox features compact structure, small volume, large transmission ratio, large output torque, stable operation, low noise, high efficiency, safe performance and long lifespan; the design life of gear is over 60,000h.



03 COMFORTABLE AND SAFE

Driver’s cab has an ergonomic design.

The design of driver’s cab offers a comfortable and safe environment for production, so as to meet mining require-ments. Cab is equipped with ROPS and FOPS that meet ISO 3471 and 3449 standards. Interior layout is an ergonomic design that allows components and parts to be reasonably arranged, which creates a super large interior space and allows a touch-screen display to be integrated. The air conditioner (with heating and cooling functions) meets the application requirements of most mining areas. Driver’s cab has a design of double laminated glass, cab door has a dual sealing structure; besides, cab turbo-charging system multi-directionally guarantees interior air tightness and reduces noise.

User-friendly display screen

GKA248X is equipped with a user-friendly instrument console that is composed of CAN bus liquid crystal combination instrument, display screen and function switches, which is convenient for the driver to observe vehicle status parameters and fault messages at any time during travel. The combina-tion instrument displays status and fault information of engine, hydraulic system, drive system and weighing system; besides, it displays information of devices and allows permis-sion setting of them.

Comfortable and durable sus-pension system

Suspension system that is made of 4 hydraulic oil cylinders with variable oil-nitrogen ratio mitigates the impact from both roads and loads, provides the driver with steady and comfort driving experience and extends frame lifespan. Front suspension is independent with variable stiffness, which is bilater-ally symmetrical. It guarantees reliable wheel positioning and stable comfortable driving experi-ence. Rear suspension is longitudinal triangular swing-arm suspension that allows rear axle case to swing in order to absorb bending and torsional stress generated from harsh road surfaces.

Multi-directionally adjustable seat

Operating comfort is a key factor for safety and efficiency of production, GKA248X is equipped with a luxurious air-suspending seat that can absorb vibration and relieve fatigue. The seat is multi-direc-
tionally adjustable, can be used together with telescoping/tilt steering column to meet the require-ment of adapting the seat to different driving postures. Attachments, such as seat armrest, seat belt and backrest.

Reliable and safe braking control

These trucks are coupled with a mature reliable braking system that guarantees safe and efficient travel, improves driver’s confidence and makes the driver more concentrated on the transportation task. Front and rear wheels of GKA248X are equipped with dry disc hydraulic brakes of outstanding performances, including service braking, loading braking, parking braking and emergency braking functions; coupled with electric retarder, mixed braking control can be realized, and as a result, the truck shows excellent braking performances under various operating speeds. Braking system is equipped with brake accumulator Braking system is in accordance with IS03450 standard.

Maneuverable flexible steering characteristic

GKA248X adopts an integral steering system; power steering is executed by a double-acting hydraulic steering cylinder; steering accumulator is equipped to provide emergency steering control which meets ISO 5010 standard. A turning radius of 12.5m and high mobili-ty guarantee safe and efficient traveling at road turns.

04 Convenient Mintenance

Convenient Maintenance Channels

GKA248X is designed with full consideration to maintain-ability for easy, quick and convenient maintenance. There are maintenance ladders on both sides of each left-right frame to facilitate engine overhaul and mainte-nance. The front part of the bumper is equipped with an engine emergency stop switch and a ladder light switch, and there are quick filling ports on both sides of the middle of the frame for easy operations of maintenance personnel on the ground.

Modular Design for Easy Disas-sembling and Installation

GKA248X adopts a modular design to facilitate disassem-bling, installation, transport and maintenance. In particu-
lar, the frame and the rear axle are equipped with mount-ed joint bearing support to facilitate disassembling and installation, reduce maintenance downtime, and improve the availability of the vehicle.

Centralized Filling System

The centralized oil filling system consists of a receiver, a dust-proof cap, a flange and a dust respirator. It includes the filling and discharge facilities for engine oil, hydraulic oil, fuel, grease and coolant. The centralized filling device is located on the right side of the front-after frame, with the working position close to the ground for easy operation.

Full-automatic Centralized Lubri-cation System

GKA248X is equipped with a full-automatic centralized lubrication system, which can fully lubricate 19 hinges at the key moving parts of the vehicle. This saves the maintenance time, improves the maintenance quality and reduces the maintenance intensity of the vehicle. The automatic lubrication system is designed the features of pressure detection, alarm and program-mable control of lubrication intervals.

LCD

- Cab instrument display for installation, maintenance and troubleshooting purposes
- Access to the control cabinet is no longer required for basic troubleshooting

GKA248X

Double-axle rigid mining truck

Technical Parameters

Engine

Model ①	MTU16V2000S96
Emission standard	China GB20891-2014 off-road national III
Fuel type	Diesel
Number of cylinders	16
Stroke	4-stroke
Total power*	1163kW(1560HP)@1800rpm
Flywheel net power**	1060kW(1420HP)@1800rpm
Weight (humid)	3600kg
Model ②	Cummins QSK50
Emission standard	GB20891-2014 China national III/U.S. EPA Tier2
Fuel type	Diesel
Number of cylinders	16
Stroke	4-stroke
Total power*	1193kW(1600HP)@1800rpm
Flywheel net power**	1079kW(1447HP)@1800rpm
Weight (humid)	6373kg
Model ③	Cummins KTA50
Emission standard	U.S. EPA Tier0
Fuel type	Diesel
Number of cylinders	16
Stroke	4-stroke
Total power*	1193kW(1600HP)@1900rpm
Flywheel net power**	1079kW(1447HP)@1900rpm
Weight (humid)	5150kg

** Total power rate is the output power of engine installed on this machine; engine speed is under control and fuel setting is permitted by engine manufacturer. Attachment loss includes water pump, fuel pump and oil pump.

**Flywheel net power = rated power of engine flywheel - average attachment loss. Attachments include fan and charging alternator. Up to SAEJ1349 standard

Electric drive system

AC-DC-AC electric drive	
Alternator	SINOMACH-A1100
Cooling fan built in the generator	217m³/min
Electric control cabinet	SINOMACH-D150AC
AC electric wheel*	SINOMACH-M480
Speed ratio	33.85:1
Speed (max.)	58km/h

Tire and rim

Without inner tube, radial tire, standard tire*	33.00R51
Flange mounting, five-piece type wheel rim	24.00/5.0
Rated cold air inflation pressure of wheel rim is 758kpa	
100pound/square inch Total weight of typical tire (6)	13824kg

*Tire should meet tkph/tmph, tread, rubber material, inflation pressure, radial ply level or equivalent.

Driver's cab

Cab is in accordance with ISO 3471/ISO 3449 (Level I) ROPS/-FOPS standards, and has a wide space and a wide view. It has a complete set of devices: displaying meters, alarm, lighting, control switches and radio, etc. Driver's seat is adjustable air-suspension type with high backrest and shock absorber. Another seat is available for front passenger. The cab is equipped with vehicle-mounted computer, power window, tilting and adjustable steering wheel, electric windshield wiper and washer, colored glass and air conditioner (cooling and heating). Vehicle travel data and failure warning items are displayed mostly on LCD and partially on controllable instruments.

Suspension

Suspension oil cylinder with variable oil-nitrogen ratio and overall rebound control

Front suspension max. stroke	330mm
Rear suspension max. stroke	276mm
Rear axle max. transverse swing angle	±5°

Frame

Truck frame is made of a pair of front-after frames and five left-right frames, which form into an enclosed structure. Front-after frames and left-right frames have a box-type section structure, which helps eliminate bending and cracking stress concentration. Frame is made of premium low-alloy high-strength steel, whose high stress positions are reinforced with castings that increase frame strength. Key seams have 100% received ultrasonic flaw detection.

Installation of drive axle	Connected with pin, knuckle bearing and bushing
Transverse orientation of drive axle	Connected with transverse stabilizer bar

Cargo compartment

Made of high-strength bottom plates and side plates that are over 1000Mpa, as well as high-strength wear resistant liner plate that has solid structure; cargo compartment has a long service life: bottom surface is a single slope structure that can thoroughly dump materials; besides, a safety-rope seat is attached. Heating type cargo compartment is for option.

Bottom plate	Thickness20mm
Front plate	Thickness12mm
Side plate	Thickness10mm
Cap plate	Thickness6mm
Struck	62m³
Heaped (SAE 2:1)	86m³
Standard weight of SINOMACH cargo compartment	26000kg

Electric system

6 pieces of 975CCA, 12V maintenance-free batteries in serial/parallel connection, mounted on bumpers, isolation switches are built in them.

Alternator	24V/140A
Lighting device	24V
Starting motor	2/24V

Braking system

Braking system is in accordance with ISO3450-2011 standard.

Service brake: full hydraulic drive

Front brakes	Brake disc diameter of 1060mm; 3 calipers/disc
Front braking pressure	15mPa
Rear brakes	Brake disc diameter of 635mm; 2 discs/wheel; 1 caliper/disc
Rear braking pressure	10mPa
Auxiliary braking system	Hydraulic system pressure is below specified value; automatic engagement (pressure is provided by accumulator)
Loading brake	Switch activation; rear-wheel service brake engaged
Parking brake	Spring loaded, hydraulic release
Electric retarder	Max. power 1800kW

Hydraulic system

Steering	Variable plunger pump offers steering oil source; load-sensing flow amplification power steering system; steering wheel requires a little controlling moment to get quick steering response, high accuracy and stable smooth steering performance. Accumulator offers emergency steering oil source.
Turning diameter (SAE)	25m
Filter	Suction oil filter 250μm Return oil filter 12μm High-pressure filter for lifting and steering 12μm
Brake components cabinet	Located on the deck and is behind driver's cab, easy for diagnosis.
Lifting	Two 3-stage double-acting exterior oil cylinders, with cushion valve built in
Lifting time	
- Lifting (load)	21s
- Lowering (high idle speed)	22s
- Lowering (low idle speed)	25s
Pump	Double-pump direct drive
- Lifting pump	Gear pump in series connection Flow rate: 730L/min@1800rpm Max. working pressure: 20mPa
- Steering pump	Variable plunger pump Flow rate: 260L/min@1800rpm Max. working pressure: 24mPa
System relief pressure	
- Lifting system	20mPa
- Steering system	28mPa

Quick interface helps offer power to the faulty truck and for system diagnosis.

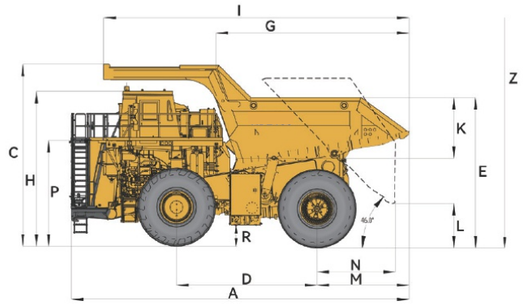
Oil/fuel/service liquids filling amount

Cooling system	600L
Crankcase*	154L
Hydraulic system	800L
Front wheel (each)	21L
Electric wheel (each)	50L
Fuel tank	2400L

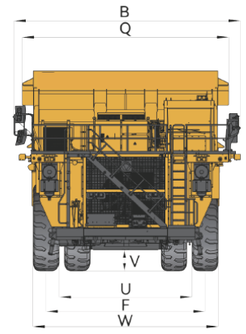
Cooling system

Buffered tube-band type radiator is integrated with top mounted expansion tank, standard pressure cover of 14PSI with manual bleeding valve.

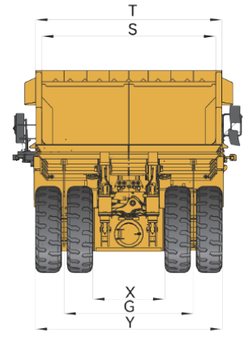
Radiator front face area	4.88㎡



C:6875 H:5840 P:3935 I:11830
G:7475 R:660 D:5440 A:13205
N:3035 M:3565 K:2365 L:1630
E:5660 Z:12953



B:8160 Q:7330 V:640
U:4720 F:5710 W:6560

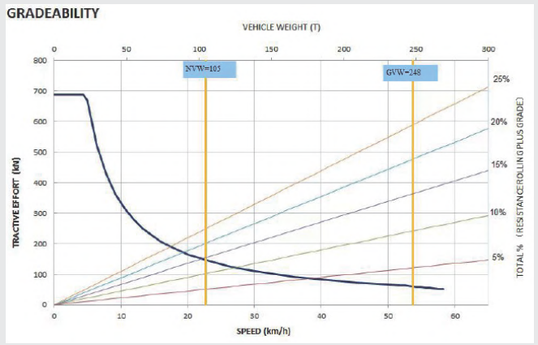


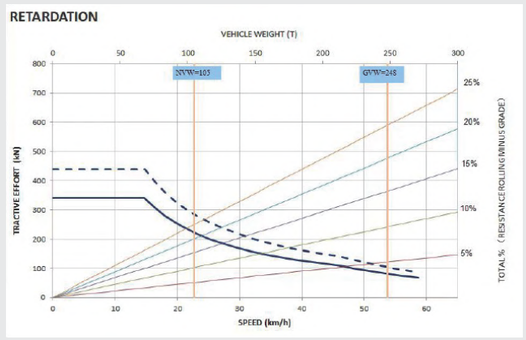
T:6565 S:6140 X:2530
G:4580 Y:6570

*Standard cargo compartment, struck of 62m³/SAE 2:1 Heaped of 86m³

*Tires 33.00R51

Characteristic performance curve





No-load weight (NVW)

Front axle distribution (48%)	50500 kg	111332 lbs
Rear axle distribution (52%)	54500 kg	120151 lbs
Total weight of no-load vehicle	105000 kg	231483 lbs

Full load weight (GVW)

Front axle distribution (33%)	81840 kg	180424 lbs
Rear axle distribution (67%)	166160 kg	366316 lbs
Total weight	248000 kg	546741 lbs

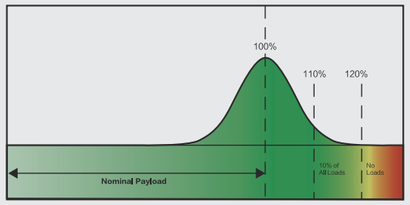
Loading capacity

Payload	143000 kg	315258 lbs

Equipment operation and notes

SINOMACH mining truck loading specifications

Loading specifications specify loading guide and limits of SINOMACH mining truck



- Total weight (GVW) includes chassis, cargo compartment, tires, attachments, lubricants, fuels, operator's payload and any excess material.
- Monthly average payload shall not exceed the rated payload of the truck.
- Actual payload ≤ 110% of rated payload, the proportion shall be no less than 90%
- 110% of rated payload ≤ actual payload ≤ 120% of rated payload, the proportion shall be no more than 10%
- In all cases, actual payload ≯ 120% of rated payload

* Rated payload includes all optional accessories.

Notes:

1. Figures and information included in this brochure manifests the technical features and configuration standards of part of models of the time; the information and data are from standard application tests. Above-mentioned data and information are for reference only; please take the actual object as final.
2. This brochure is for reference only and doesn't have validity of a contract. For detailed information, please contact the authorized local dealer of SINOMACH Mining Machinery Co., Ltd.
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Standard configuration

Self-cleaning air filter
Alternator (24V/140A)
Automatic lubrication system, liquid level indicator
Back-up alarm
Battery-6 pieces 975CCA
Battery charging/jump-start connector
Cargo compartment position limiting device
Cargo compartment safety rope
Front brake: Dry disc brake
Rear brake: Dry disc brake
Electric control cabinet
Electric retarder cruise system
Electric start
Quick filling fuel system (on fuel tank and at hydraulic oil tank side)
Hydraulic high-pressure filter
Mirror:
- Left side: flat mirror with heating function
- Right side: convex mirror with heating function

Mudguard
Muffler - mounted on the deck
Power supply, 24V, 12V dc
Quick coupling (for lifting and diagnosis)
Radiator liquid level indicator
Detachable power assembly (engine, alternator)
Electric retarder
Fan clutch

Operating environment and control

Full hydraulic service brake, automatically applied type
Power switch
Brake and traction interlock
24V circuit breaker
Boarding ladder
Dynamic deceleration
Engine emergency stop button - ground
Lifting and towing interlocking device
Horn (electric - front)
Integral ROPS/FOPS (standard) driver's cab
Parking brake with warning lamp and speed application protection
Power steering system with automatic auxiliary steering
Deck handrail
Transmission shaft shield
Radiator fan cover
Seat belt: standard three-point type
Anti-skid passage
Engine access platform, left/right

Lighting device

Backup light - LED is rear mounted (2)
Backup light - left and right - LED is deck mounted (2)
Brake and deceleration lamp LED mounted on top of driver's cab
Turn/marker lamp LED (8)
Dynamic deceleration lamp, rear (2) LED
Engine compartment inspection lamp (4) LED
Axle inspection lamp (LED)
Fog lamp (2) LED
Head lamp (8) LED
Ladder lamp and platform lamp LED
Brake lamp, rear (2) LED

Standard luxurious driver's cab

Ac drive interface display screen
Air conditioner R-134A
AMFM radio, equipped with USB and MP3
Turbocharger plugged alarm
Roof light
Multi-purpose driver's display panel
- Light status
- Engine hour, oil pressure, coolant temperature, oil temperature and fuel level

Standard luxurious driver's cab

Multi-purpose driver's display panel
- Mileage, speed and duty load
- Ambient temperature and time
- System voltage
- Engine red light alarm and yellow light alarm
- Low system voltage
- Low engine coolant level
- Gear position indicator
- Excitation indicator
- Parking brake indicator, service braking indicator, electric braking indicator, loading brake indicator

Delayed engine shutdown
Floor mat (two-floor baffle)
Fuel gauge of the driver's cab
Low fuel level indicator lamp and buzzer
Instrument (with backlight)
Front headlamp switch
Heater and defroster (heavy duty)
Radiator switch
High beam light selector and indicator
Horn (steering wheel center)
Weighing system display
Driver's seat, adjustable, with air suspension, waist support and armrest panel lighting (adjustable)
Co-driver's seat
Power window
Positive pressure driver's cab
Electric retarder brake pedal
Hydraulic brake pedal
Sun visor (adjustable)
Telescoping/tilting adjustable steering column
Voltmeter (voltage output)
Windshield glass (colored safety glass)
windshield wiper (double) and washer (electric drive)

Optional devices

Note: Optional devices may change working weight.
1000L/min Quick filling fuel system (on fuel tank and at hydraulic oil tank side)
Amber signal lamp
Power switch lockset
Antifreeze solution: below -40C
Cargo compartment I standard design
Cargo compartment heating
Cargo compartment component, OEM bulk shipment
Anti-wear plate of cargo compartment
Stone deflector/stone chain
Hydraulic ladder
Hydraulic oil tank ladder
Fuel tank ladder
Low-temperature suspension system I - front and rear
Electric heater (engine coolant, engine oil, hydraulic oil and fuel)
Liquid fuel heater (engine coolant)
Fire extinguisher
Full-automatic centralized fire extinguishing
Centralized filling - right (coolant, engine oil, hydraulic oil and grease)
Mudguard I - fuel tank and hydraulic oil tank
Seven-piece type quick-mounting wheel rim
SINOMACH- 360° panoramic image system
Weighing display I - right side and left side
Suspension inflation kit
Tool box
Tires
Driver's behavior monitoring system
Anti-collision warning system
Blind zone monitoring system
Tire temperature monitoring system
Tire pressure monitoring system

• They are compulsory to a cargo compartment provided by SINOMACH; cargo compartments designed by SINOMACH and manufactured locally are recommended. Not applicable to a third party.