CEBM016701

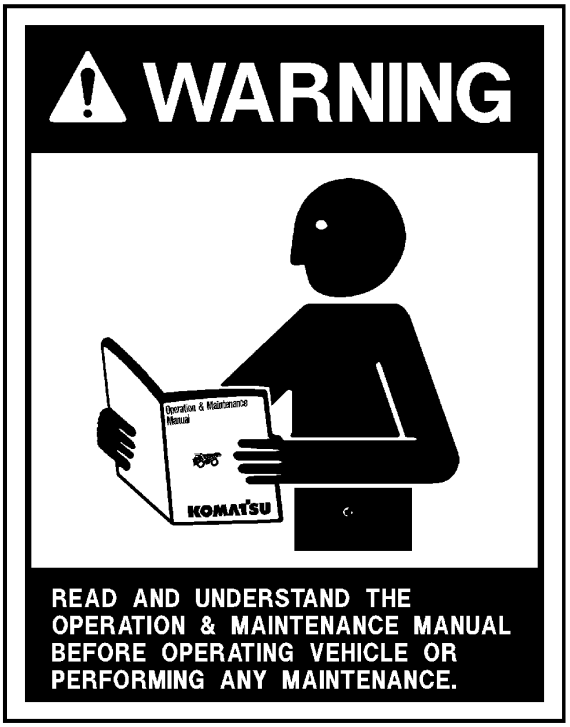
Shop Manual

830E

DUMP TRUCK

SERIAL NUMBERS **A30816** & **UP**

KOMATSU®



Unsafe use of this machine may cause serious injury or death. Operators and maintenance personnel must read and understand this manual before operating or maintaining this machine.

This manual should be kept in or near the machine for reference, and periodically reviewed by all personnel who will come into contact with it.

CALIFORNIA
Proposition 65 Warning

Diesel engine exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

CALIFORNIA
Proposition 65 Warning

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

⚠WARNING

NON-OEM PARTS IN CRITICAL SYSTEMS

For safety reasons, Komatsu America Corp. strongly recommends against the use of non-OEM replacement parts in critical systems of all Komatsu equipment. Critical systems include but are not limited to steering, braking and operator safety systems.

Replacement parts manufactured and supplied by unauthorized sources may not be designed, manufactured or assembled to Komatsu's design specifications; accordingly, use of such parts may compromise the safe operation of Komatsu products and place the operator and others in danger should the part fail.

Komatsu is also aware of repair companies that will rework or modify an OEM part for reuse in critical systems. Komatsu does not generally authorize such repairs or modifications for the same reasons as noted above.

Use of non-OEM parts places full responsibility for the safe performance of the Komatsu product on the supplier and user. Komatsu will not in any case accept responsibility for the failure or performance of non-OEM parts in its products, including any damages or personal injury resulting from such use.

FOREWORD

This Shop Manual is written for use by the service technician and is designed to help the technician become fully knowledgeable of the truck and all its systems in order to keep it running and in production. All maintenance personnel should read and understand the materials in this manual before performing maintenance and/or operational checks on the truck. All safety notices, warnings and cautions should be understood and followed when accomplishing repairs on the truck.

The first section covers component descriptions, truck specifications and safe work practices, as well as other general information. The major portion of the manual pertains to disassembly, service and reassembly. Each major serviceable area is dealt with individually. For example: The disassembly, service and reassembly of the radiator group is discussed as a unit. The same is true of the engine and engine accessories, and so on through the entire mechanical detail of the truck. Disassembly should be carried only as far as necessary to accomplish needed repairs.

The illustrations used in this manual are, at times, typical of the component shown and may not necessarily depict a specific model.

This manual shows dimensioning of U.S. standard and metric (SI) units throughout and all references to “Right”, “Left”, “Front”, or “Rear” are made with respect to the operator's normal seated position, unless specifically stated otherwise.

Standard torque requirements are shown in torque charts in the general information section and individual torques are provided in the text in bold face type, such as **100 ft.lbs. (135 N.m)** torque. All torque specifications have ±10% tolerance unless otherwise specified.

A Product Identification plate is normally located on the truck frame in front of the right side front wheel and designates the Truck Model Number, Product Identification Number (vehicle serial number), and Maximum G.V.W. (Gross Vehicle Weight) rating.

The KOMATSU Truck Model designation consists of three numbers and one letter (i.e. 830E). The three numbers represent the basic truck model. The letter “E” designates an Electrical propulsion system.

The Product Identification Number (vehicle serial number) contains information which will identify the original manufacturing bill of material for this unit. This complete number will be necessary for proper ordering of many service parts and/or warranty consideration.

The Gross Vehicle Weight (GVW) is what determines the load on the drive train, frame, tires, and other components. The vehicle design and application guidelines are sensitive to the **total maximum Gross Vehicle Weight (GVW)** and this means **the total weight:** the Empty Vehicle Weight + the fuel & lubricants + the payload.

To determine allowable payload: Service all lubricants for proper level and fill fuel tank of empty truck (which includes all accessories, body liners, tailgates, etc.) and then weigh truck. Record this value and subtract from the GVW rating. The result is the allowable payload.

NOTE: Accumulations of mud, frozen material, etc. become a part of the GVW and reduces allowable payload. To maximize payload and to keep from exceeding the GVW rating, these accumulations should be removed as often as practical.

Exceeding the allowable payload will reduce expected life of truck components.

This "ALERT" symbol is used with the signal words, "DANGER", "WARNING", and "CAUTION" in this manual to alert the reader to hazards arising from improper operating and maintenance practices.

⚠ DANGER

"DANGER" identifies a specific potential hazard WHICH WILL RESULT IN EITHER INJURY OR DEATH if proper precautions are not taken.

⚠ WARNING

"WARNING" identifies a specific potential hazard WHICH MAY RESULT IN EITHER INJURY OR DEATH if proper precautions are not taken.

⚠ CAUTION

"CAUTION" is used for general reminders of proper safety practices OR to direct the reader's attention to avoid unsafe or improper practices which may result in damage to the equipment.

TABLE OF CONTENTS

SUBJECT . . . . . SECTION

GENERAL INFORMATION . . . . . A

STRUCTURES . . . . . B

ENGINE, FUEL, COOLING AND AIR CLEANER C

ELECTRIC SYSTEM (24 VDC. NON-PROPULSION) . . . . . D

ELECTRIC PROPULSION AND CONTROL . . . . . E

DRIVE AXLE, SPINDLES AND WHEELS . . . . . G

HYDRAIR® II SUSPENSIONS . . . . . H

BRAKE CIRCUIT . . . . . J

HYDRAULIC SYSTEM L

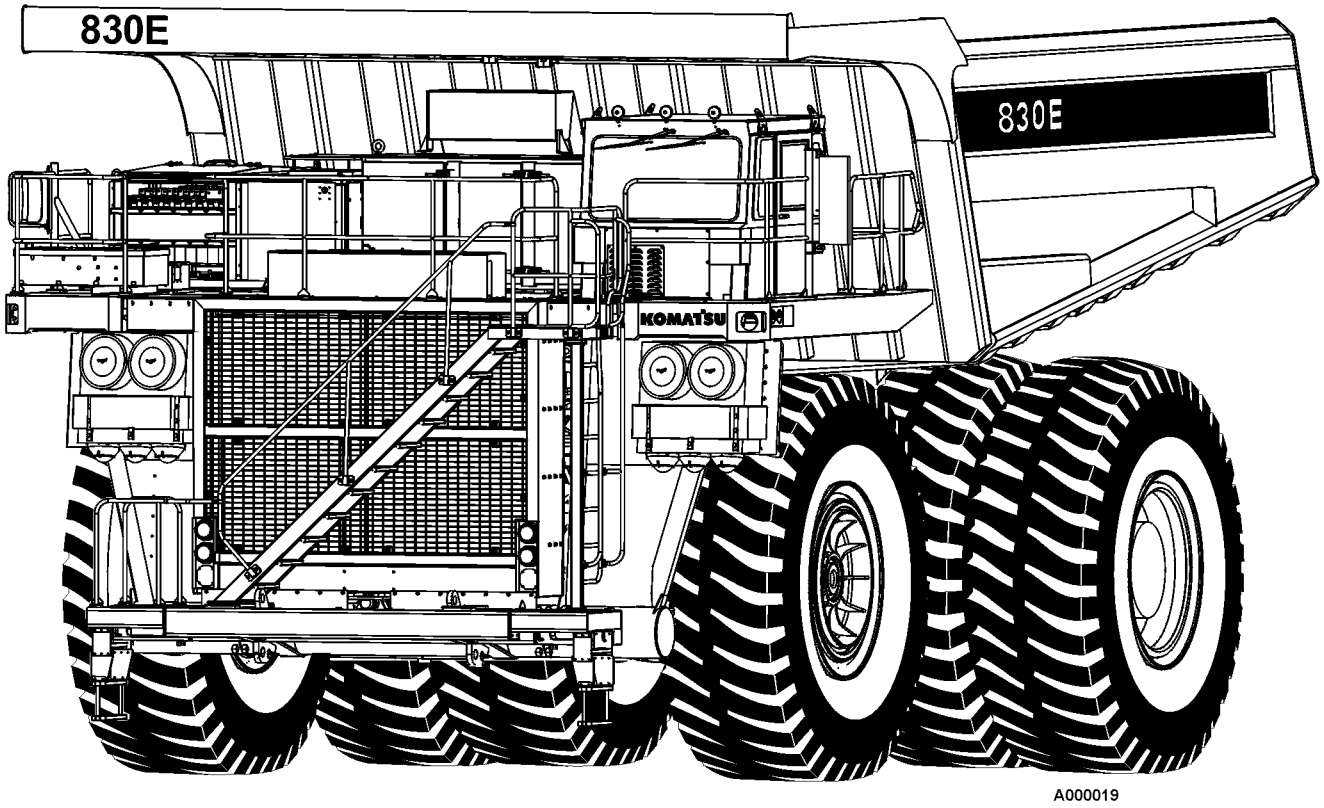
OPTIONS AND SPECIAL TOOLS . . . . . M

OPERATOR'S CAB . . . . . N

LUBRICATION AND SERVICE . . . . . P

ALPHABETICAL INDEX . . . . . Q

SYSTEM SCHEMATICS . . . . . R



A000019

KOMATSU MODEL 830E TRUCK

SECTION A
GENERAL INFORMATION
INDEX

MAJOR COMPONENTS & SPECIFICATIONS A2

GENERAL SAFETY AND OPERATION A3

WARNINGS AND CAUTIONS. A4

STANDARD TORQUE CHARTS AND CONVERSION TABLES. A5

STORAGE PROCEDURES. A7

NOTES

MAJOR COMPONENT DESCRIPTION

The KOMATSU Model 830E Truck is an electric drive, off-highway, rear dump truck whose gross vehicle weight is 385 852 kg (850,650 lbs.) (246 ton nominal payload).

ENGINE

This Model 830E Truck is powered by a Komatsu SDA16V160 diesel engine rated at 1865 kW (2500 hp) @ 1900 rpm. The radiator, engine, alternator, and blower are mounted on a separate subframe to provide fast, easy removal and installation of the power module.

ALTERNATOR (G.E. GTA-26)

The alternator is mounted in-line with the engine. The alternating current (AC) output of the alternator is rectified to direct current (DC) and sent to the wheel mounted DC drive traction motors.

BLOWER

The dual impeller, in-line blower supplies cooling air for the alternator, rectifiers, and both traction motors. The air is exhausted to atmosphere through the wheel motors.

WHEEL MOTORS

Traction motors located within each rear wheel structure receive electrical energy from the alternator. The two traction motors convert electrical energy back to mechanical energy through built-in gear trains within the wheel structure. The direction of the drive motors is controlled by a forward or reverse hand selector switch located on a console in the cab to the right side of the operator.

POWER STEERING

The Komatsu truck is equipped with a full time power steering system which provides positive steering control with a minimum of effort by the operator. The system includes a nitrogen-charged accumulator which automatically provides emergency power if the steering hydraulic pressure is reduced below an established minimum.

OPERATOR'S CAB

The Operator's Cab has been engineered for operator comfort and to allow for efficient and safe operation of the truck. The cab contains an integrated ROPS and is fully insulated to reduce noise and vibration. The tinted safety-glass windshield and side windows provide excellent visibility. The seat is a comfortable, adjustable suspension seat, the steering wheel provides tilt and telescoping adjustments and controls are mounted within easy reach of the operator. The instrument panel provides the operator with instruments and gauges that are necessary to control and monitor the truck's operating systems and is marked with international symbols for easy identification of functions.

DYNAMIC RETARDING

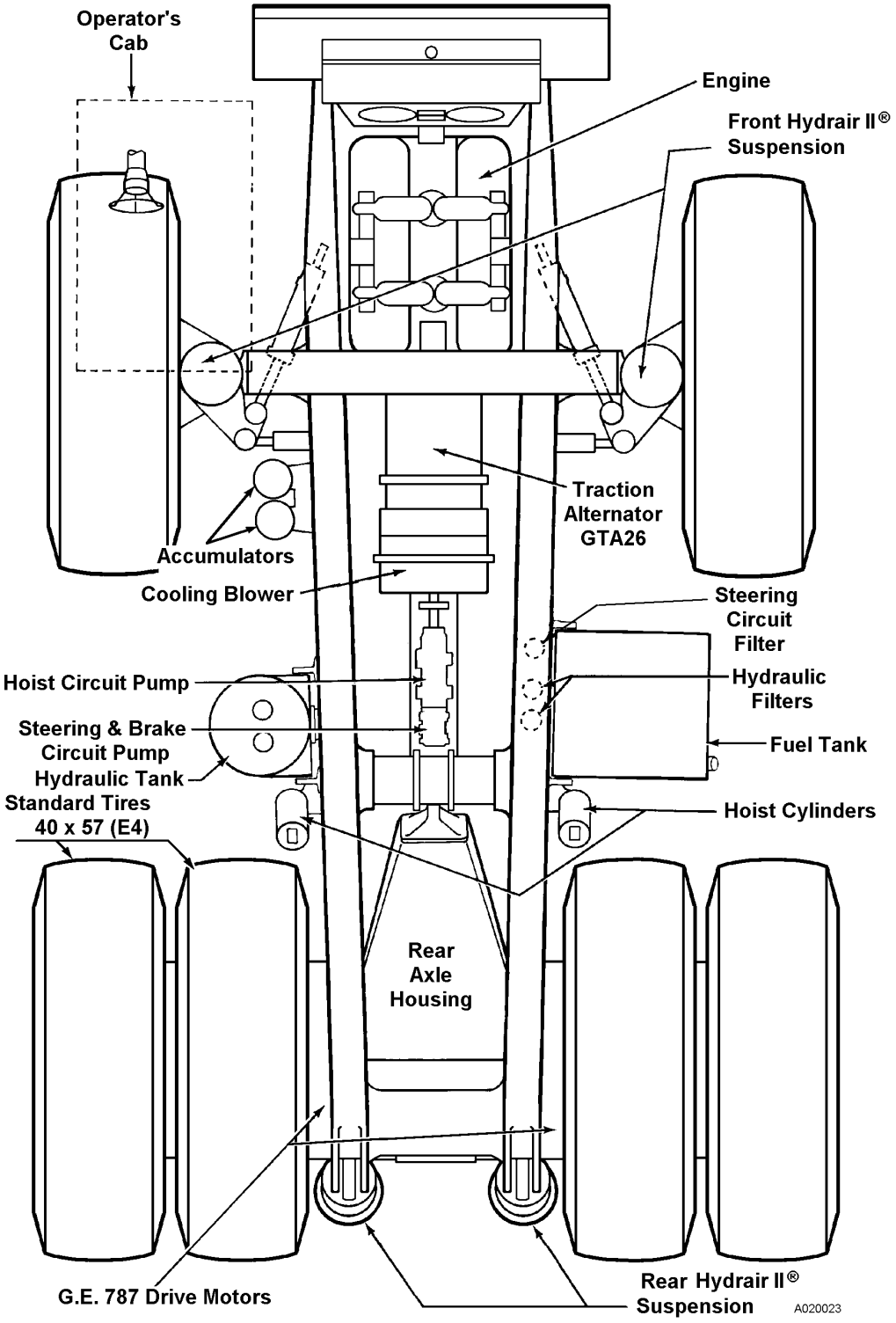
Dynamic retarding is used to slow the truck during normal operation or control speed coming down a grade. The dynamic retarding ability of the DC electric system is controlled by the operator by depressing the foot operated retarder pedal and/or setting the RSC (Retarder Speed Control) on the instrument panel. Dynamic Retarding is automatically activated if truck exceeds the overspeed setting.

BRAKE SYSTEM

The braking system consists of an all hydraulic actuation system. Depressing the brake pedal actuates wheel-speed single disc front brakes and armature-speed dual disc rear brakes. The brakes can also be activated by operating a switch on the instrument panel. The brakes will be applied automatically if system pressure decreases below a preset minimum.

SUSPENSION

HYDRAIR® II suspension cylinders located at each wheel provide a smooth and comfortable ride for the operator and dampens shock loads to the chassis during loading.



830E MAJOR COMPONENTS

SPECIFICATIONS

These specifications are for the standard Komatsu 830E Truck. Customer Options may change this listing.

ENGINE

Komatsu SDA16V160
(Optional SSDA16V160)
No. of Cylinders 16
Operating Cycle 4-Stroke
Rated Brake HP . . . . 1865 kW (2500 hp)@ 1900 rpm
Flywheel HP . . . . . 1761 kW (2360 hp) @ 1900 rpm
Weight* (Wet) 9 608 kg (21,182 lbs)

* Weight does not include Radiator, Sub-frame, or Alternator

ELECTRIC DRIVE SYSTEM - STATEX III

(AC/DC Current)

Alternator . . . . . General Electric GTA - 26
Dual Impeller, In-Line Blower 255 m^3/min (9000 cfm)
Motorized Wheels . . . . . General Electric 787
Ratio 31.875:1
Maximum Speed* . . . . . 48.8 km/h (30.3 mph)
(*w/40.00-57 Tires and 31.875:1 gear train)

DYNAMIC RETARDING

Extended Range Retarding with fully blown 14-Resistor grids and reverse retarding standard equipment.

Maximum Rating . . . . . 2983 kW (4000 hp)

TIRES

Rock Service, Deep Tread. . . . . (E-4) Tubeless
Standard Tire . . . . . 40.00 - R57, 68 Ply Rating

(w/787 Wheelmotor)
Standard 5 piece patented Phase II New Generation™ Rims *

Rims* are interchangeable with different positions on the truck, but due to improved design for greater load support, rims are not interchangeable with other manufacturer's rims.

Rim Size:
737 mm (29 in.) X 1448 mm (57 in.) X 152 mm (6 in.)

24 VDC ELECTRIC SYSTEM

Batteries . . Four 12 Volt Batteries in Series/Parallel
. . . 220 Ampere-Hour Capacity w/Disconnect Switch
Alternator . . . . . 24 Volt, 260 Ampere Output
Lighting . . . . . 24 Volt
Cranking Motors . . . . . (2) 24 Volt

SERVICE CAPACITIES

	Liters.	(U.S. Gal.)
Crankcase *	280.0	(74.0)
* Includes Lube Oil Filters		
Cooling System	568	(150)
Fuel	4542	(1200)
Hydraulic System	946	(250)
Hydraulic Tank	901	(238)
Wheel Motor Gear Box (each)	39.7	(10.5)

HYDRAULIC SYSTEMS*

Pumps

Hoist . . . . . Tandem Gear Pump
Rated @ . . . . . 851 lpm (225 gpm) @ 1900 rpm and
. . . . . 17 240 kPa (2,500 psi)
Steering & Brake . . Piston, Pressure Compensating
. . . . . 246 lpm (65 gpm) @ 1900 rpm and
. . . . . 18 961 kPa (2,750 psi)

System Relief Pressures

Hoist . . . . . 17 240 kPa (2,500 psi)
Steering/Brakes . . . . . 27 580 kPa (4,000 psi)
Hoist Cylinders (2) 3-Stage
Tank (Vertical/Cylindrical) . . . . . Non-Pressurized
Filtration . Remote-mounted, Replaceable, Elements
Suction . . . . . Single, Full Flow, 100 Mesh
Hoist & Steering . . . . . Full Flow, Dual In-Line,
. . . . . High Pressure Beta 12 Rating =200

*With Quick Disconnects for powering disabled truck and system diagnostics.

STEERING (w / Accumulators)

Turning Circle - Front Wheel Track. . . 28.4 m (93 ft.)
Full Time Power Steering . . . . . Twin Cylinders
Automatic Emergency Steering . . . . . Standard

SERVICE BRAKES

Actuation. . . . . .All Hydraulic
Front . . . . . .Wheel Speed, Single Disc
Inboard Mounted . . . . . 3 Calipers
Disc Diameter, O.D. . . . . 1213 mm (47.75 in.)
Rear . . . . . Armature Speed, Dual Disc
Disc Diameter, O.D. . . . . 635 mm (25.00 in.)
Emergency Brake- Automatically Applied (Standard)
Wheel Brake Lock. . . . . Manual Switch on Panel
. . . . . .(Loading and Dumping)

DISC PARKING BRAKE

Each Rear Wheel . . . . . Dual Caliper
. . . . . .Spring Applied, Hydraulically Released

DUMP BODY CAPACITIES AND DIMENSIONS

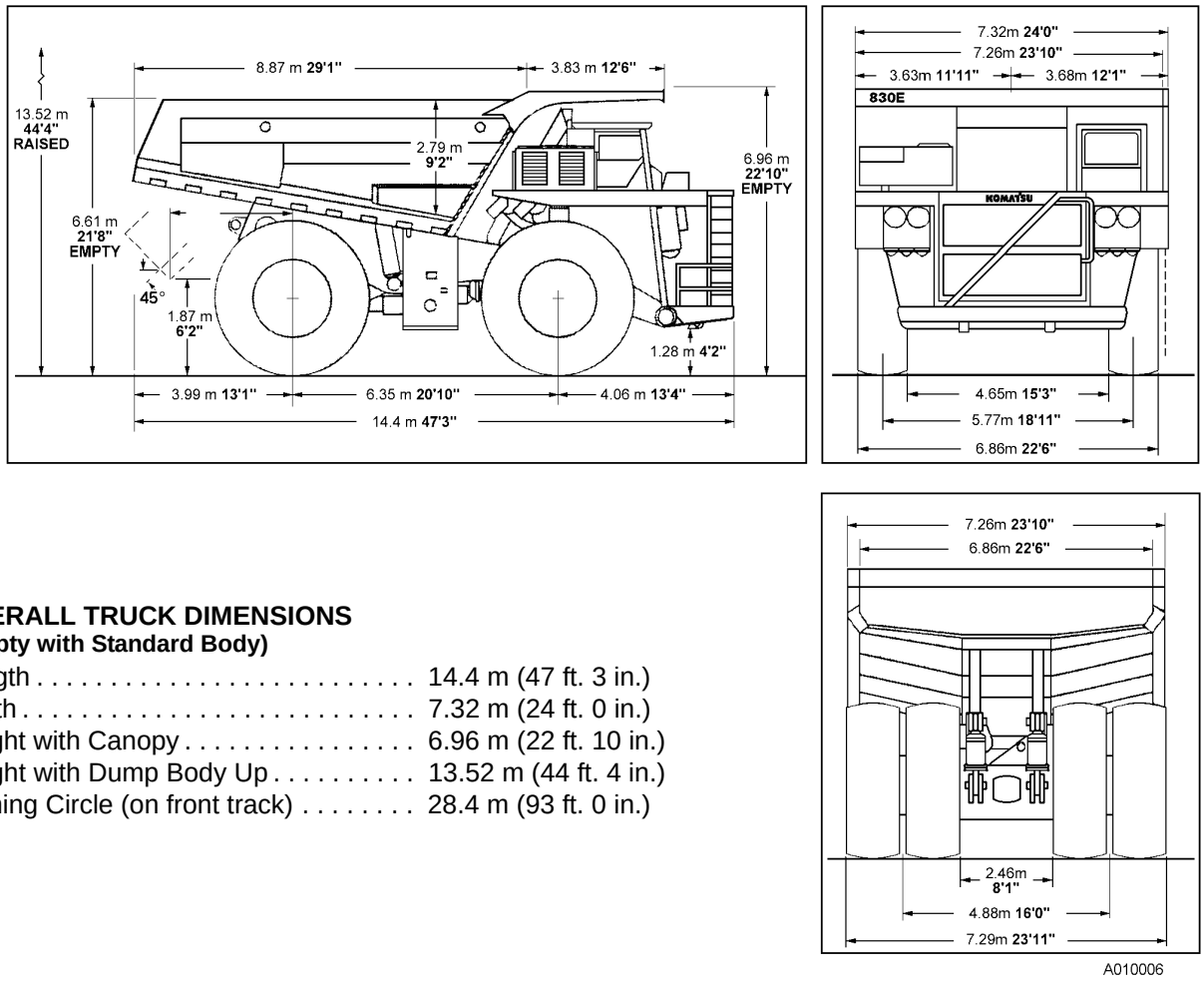
Standard, Heaped @ 2:1 (SAE) . . 147 m^3 (193 yd^3)
Struck . . . . . 117 m^3 (153 yd^3)
Loading Height Empty . . . . . 6.61 m (21 ft. 8 in.)
Dumping Angle. 45
Non-heated Body w/Exhaust Mufflers . . . . Standard

WEIGHT DISTRIBUTION

Empty Vehicle . . . . Kilograms. . . . . (Pounds)		
Front Axle	81 823.	(180,387)
Rear Axle.	80 682.	(177,872)
Total (100% Fuel)	162 505.	(358,259)

Loaded Vehicle . . . Kilograms. . . . . (Pounds)		
Front Axle	127 330.	(280,715)
Rear Axle.	258 522.	(569,935)
Total *	385 852.	(850,650)
Nominal Payload *. . . .	223 347.	(492,391)
. . . . .	(246 U.S. Ton)	

*Nominal payload is defined by Komatsu America Corporation'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.



OVERALL TRUCK DIMENSIONS
(Empty with Standard Body)

Length . . . . . 14.4 m (47 ft. 3 in.)
Width . . . . . 7.32 m (24 ft. 0 in.)
Height with Canopy . . . . . 6.96 m (22 ft. 10 in.)
Height with Dump Body Up . . . . . 13.52 m (44 ft. 4 in.)
Turning Circle (on front track) . . . . . 28.4 m (93 ft. 0 in.)

GENERAL SAFETY

Safety records of most organizations will show that the greatest percentage of accidents are caused by unsafe acts of persons. The remainder are caused by unsafe mechanical or physical conditions. Report all unsafe conditions to the proper authority.

The following safety rules are provided as a guide for the operator. However, local conditions and regulations may add many more to this list.

⚠WARNING

Read and follow all safety precautions. Failure to do so may result in serious injury or death.

SAFETY RULES

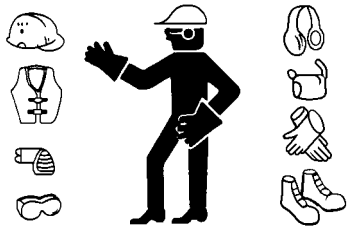
- ONLY trained and authorized personnel can operate and maintain the machine.
- Follow all safety rules, precautions and instructions when operating or performing maintenance on the machine.
- When working with another operator or a person on work site traffic duty, be sure all personnel understand all hand signals that are to be used.

SAFETY FEATURES

- Be sure all guards and covers are in their proper position. Have guards and covers repaired if damaged. (See Walk-Around Inspection, Operating Instructions - Section 3)
- Learn the proper use of safety features such as safety locks, safety pins, and seat belts, and use these safety features properly.
- NEVER remove any safety features. ALWAYS keep them in good operating condition.
- Improper use of safety features could result in serious bodily injury or death.

CLOTHING AND PERSONAL PROTECTIVE ITEMS

- Avoid loose clothing, jewelry, and loose long hair. They can catch on controls or in moving parts and cause serious injury or death. Also, do not wear oily clothes because they are flammable.
- Wear a hard hat, safety glasses, safety shoes, mask or gloves when operating or maintaining the machine. Always wear safety goggles, hard hat and heavy gloves if your job involves scattering metal chips or minute materials--this is so particularly when driving pins with a hammer and when cleaning the air cleaner element with compressed air. Check also that there is no one near the machine.



UNAUTHORIZED MODIFICATION

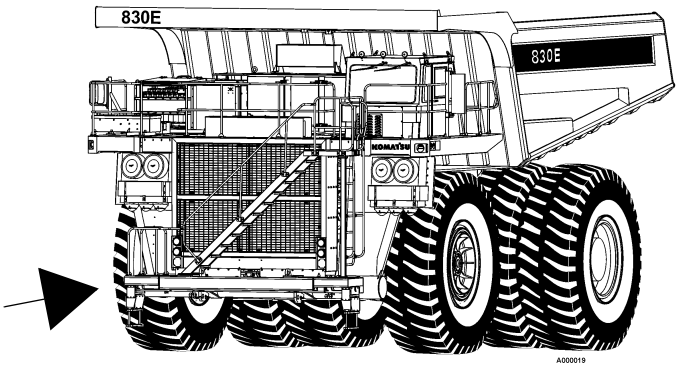
- Any modification made to this vehicle without authorization from Komatsu can possibly create hazards.
- Before making any modification, consult the authorized regional Komatsu distributor. Komatsu will not be responsible for any injury or damage caused by any unauthorized modification.

LEAVING THE OPERATOR'S SEAT

- When preparing to leave the operator's seat, do not touch any control lever that is not locked. To prevent accidental operations from occurring, always carry out the following:
- Move the shift control lever to Neutral (N) and set the parking lever/switch to the PARKING position.
- Lower the dump body, set the dump lever to the FLOAT position.
- Stop the engine. When leaving the machine, always lock everything. Always remember to take the key with you. If the machine should suddenly move or move in an unexpected way, this may result in serious bodily injury or death.

MOUNTING AND DISMOUNTING

- NEVER jump on or off the machine. NEVER get on or off a moving machine.
- When getting on or off the machine, face the machine and use the hand-hold and steps.
- Never hold any control levers when getting on or off the machine.
- Always maintain three-point contact with the hand-holds and steps to ensure that you support yourself.
- When bringing tools to the operator's compartment, always pass them by hand or pull them up by rope.
- If there is any oil, grease, or mud on the hand-holds or steps, wipe it off immediately. Always keep these parts clean. Repair any damage and tighten any loose bolts.
- Use the handrails and steps marked by arrows in the diagram below when getting on or off the machine.



FIRE PREVENTION FOR FUEL AND OIL

- Fuel, oil, and antifreeze can be ignited by a flame. Fuel is particularly FLAMMABLE and can be HAZARDOUS.
- Keep flame away from flammable fluids.
- Stop the engine and do not smoke when refueling.
- Tighten all fuel and oil tank caps securely.
- Refueling and oiling should be made in well ventilated areas.
- Keep oil and fuel in the determined place and do not allow unauthorized persons to enter.

PRECAUTIONS WHEN HANDLING AT HIGH TEMPERATURES

- Immediately after operations, the engine cooling water, engine oil, and hydraulic oil are at high temperature and are under pressure. If the cap is removed, or the oil or water is drained, or the filters are replaced, there is danger of serious burns. Always wait for the temperature to cool down, and carry out the operation according to the specified procedure.
- To prevent hot water from spurting out:
  1) Stop the engine.
  2) Wait for the water temperature to cool down.
  3) Turn the cap slowly to release the pressure before removing the cap.
- To prevent hot engine oil from spurting out:
  1) Stop the engine.
  2) Wait for the oil temperature to cool down.
  3) Turn the cap slowly to release the pressure before removing the cap.


A0055050

ASBESTOS DUST HAZARD PREVENTION

Asbestos dust can be HAZARDOUS to your health if it is inhaled.If you handle materials containing asbestos fibers, follow these guidelines as given below:

- NEVER use compressed air for cleaning.
- Use water for cleaning to keep down the dust.
- Operate the machine with the wind to your back, whenever possible.
- Use an approved respirator if necessary.

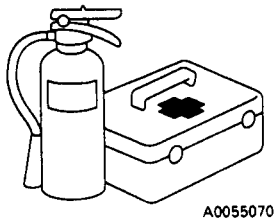

A0055060

PREVENTION OF INJURY BY WORK EQUIPMENT

- Never enter or put your hand or arm or any other part of your body between movable parts such as the dump body and chassis or cylinders. If the work equipment is operated, the clearance will change and this may lead to serious bodily injury or death.

FIRE EXTINGUISHER AND FIRST AID KIT

- Be sure fire extinguishers have been provided and know how to use them.
- Provide a first aid kit at the storage point.
- Know what to do in the event of a fire.
- Be sure you know the phone numbers of persons you should contact in case of an emergency.


A0055070

PRECAUTIONS WHEN USING ROPS

- If ROPS is installed, the ROPS must never be removed when operating the machine.
- The ROPS is installed to protect the operator if the machine should roll over. It is designed not only to support the load if the machine should roll over, but also to absorb the impact energy.
- The ROPS installed on equipment manufactured and designed by Komatsu America Corp. fulfills all of the regulations and standards for all countries, but if it is modified or repaired without authorization from Komatsu America Corp., or is damaged when the machine rolls over, the strength will drop and it will not be able to fulfill its function properly. It can only display its performance if it is repaired or modified in the specified way.
- When modifying or repairing the ROPS, always consult the authorized regional Komatsu distributor.
- Even if the ROPS is installed, it cannot show its full effect if the operator does not fasten the seat belt properly. Always fasten the seat belt when operating.

PRECAUTIONS FOR ATTACHMENTS

- When installing and using optional equipment, read the instruction manual for the attachment and the information related to attachments in this manual.
- Do not use attachments that are not authorized by Komatsu America Corp., or the authorized regional Komatsu distributor. Use of unauthorized attachments could create a safety problem and adversely affect the proper operation and useful life of the machine.
- Any injuries, accidents, and product failures resulting from the use of unauthorized attachments will not be the responsibility of Komatsu America Corp., or the authorized regional Komatsu distributor.

PRECAUTIONS ON STARTING MACHINE

- START THE ENGINE FROM THE OPERATOR'S SEAT ONLY.
- NEVER ATTEMPT TO START THE ENGINE BY SHORTING ACROSS THE STARTER TERMINALS. This may cause fire, or serious injury or death to anyone in machine's path.

PRECAUTIONS DURING OPERATION

SAFETY IS THINKING AHEAD

Prevention is the best safety program. Prevent a potential accident by knowing the employer's safety requirements and all necessary job site regulations. In addition, know the proper use and care of all the safety equipment on the truck. Only qualified operators or technicians should attempt to operate or maintain the Komatsu Truck.

Safe practices start before the operator gets to the equipment!

SAFETY AT WORKSITE

- When walking to and from the truck, maintain a safe distance from all machines even if the operator is visible.
- Before starting the engine, thoroughly check the area for any unusual conditions that could be dangerous.
- Examine the road surface in the job site and determine the best and safest method of operation.
- Choose an area where the ground is as horizontal and firm as possible before carrying out the operation.
- If you need to operate on a road, protect pedestrians and cars by designating a person for work site traffic duty or by installing fences around the work site.
- The operator must check personally the work position, roads to be used, and existence of obstacles before starting operations.
- Always determine the travel roads in the work site and maintain them so that it is always safe for the machines to travel.
- If travel through wet areas is necessary, check the depth and flow of water before crossing the shallow parts. NEVER be in water which is in excess of the permissible water depth.

FIRE PREVENTION

- Thoroughly remove wood chips, leaves, paper and other flammable things accumulated in the engine compartment. These could cause a fire.
- Check fuel, lubrication, and hydraulic systems for leaks. Have any leaks repaired. Wipe up any excess oil, fuel or other flammable fluids.
- Be sure a fire extinguisher is present and working.
- Do not operate the machine near any flame.

A0055020

PREPARING FOR OPERATION

- Always mount and dismount facing the truck. Never attempt to mount or dismount the truck while it is in motion. Always use handrails and ladder when mounting or dismounting from the truck.
- Check the deck areas for debris, loose hardware or tools. Check for people and objects that might be in the way.
- Become familiar with and use all protective equipment devices on the truck and insure that these items (anti-skid material, grab bars, seat belts, etc.) are securely in place.

VENTILATION FOR ENCLOSED AREAS

- If it is necessary to start the engine within an enclosed area, provide adequate ventilation. Exhaust fumes from the engine can KILL.

A0055060

IN OPERATOR'S CAB - BEFORE STARTING ENGINE

- Do not leave tools or spare parts lying around in the operator's compartment or allow trash to accumulate in cab of truck. Keep all unauthorized reading material out of truck cab.
- Keep the cab floor, controls, steps, and handrails free of oil, grease, snow, and excess dirt.
- Check the seat belt, buckle and hardware for damage or wear. Replace any worn or damaged parts. Always use seat belts when operating your machine.
- Read and understand the contents of this manual. Read the Section 3 pertaining to safety and operating instructions with special attention. Become thoroughly acquainted with all gauges, instruments and controls before attempting operation of the truck.
- Read and understand the **WARNING** and **CAUTION** decals in the operator's cab.
- Insure steering wheel, horn, controls and pedals are free of any oil, grease or mud.
- Check operation of windshield wiper, condition of wiper blades, and check washer reservoir for fluid level.
- Be familiar with all steering and brake system controls and warning devices, road speeds and loading capabilities, before operating the truck.

KEEP MIRRORS, WINDOWS, AND LIGHTS CLEAN

- Remove any dirt from the surface of the windshield and all cab windows and lights. Good visibility may prevent an accident.
- Adjust the rear view mirror to a position where the operator can see best from the operator's seat, and keep the surface of the mirror clean. If any glass or light should break, replace it with a new part.
- Insure headlights, work lights and taillights are in proper working order. Check that the machine is equipped with the head lamps and working lamps needed for the operating conditions.

OPERATING THE MACHINE

WHEN STARTING ENGINE

- NEVER ATTEMPT TO START THE ENGINE BY SHORTING ACROSS THE STARTER TERMINALS. This may cause fire, or serious injury or death to anyone in machine’s path.
- NEVER start the engine if a warning tag has been attached to the control.
- When starting the engine, sound the horn as an alert.
- Start and operate the machine only while seated in the operator’s seat.
- Do not allow any person other than the operator in the operator's compartment or any other place on the machine.

Truck Operation - General

- **WEAR SEAT BELTS AT ALL TIMES.**
- Only authorized persons are allowed to ride in truck. Riders should be in cab only and belted in passenger seat.
- Do not allow anyone to ride on decks or steps of truck.
- Do not allow anyone to get on or off truck while it is in motion.
- Do not move truck into or out of a building without a signal person present.
- Know and obey the hand signal communications between operator and spotter. When other machines and personnel are present, the operator should move in and out of buildings, loading areas and through traffic, under the direction of a signal person. **Courtesy at all times is a safety precaution!**

- Report immediately to supervisor any conditions on haul road, pit or dump area that may cause an operating hazard.
- Check for flat tires periodically during shift. If truck has been run on a “flat”, **it must not be parked in a building until the tire cools**. If tire must be changed, do not stand in front of rim and locking ring when inflating tire mounted on the machine. Observers should not be permitted in the area and should be kept away from the side of such tires.

⚠DANGER

Tire and rim assembly may explode if subjected to excessive heat. Personnel should move to a remote or protected location if sensing excessively hot brakes, smell of burning rubber or evidence of fire near tire and wheel area.

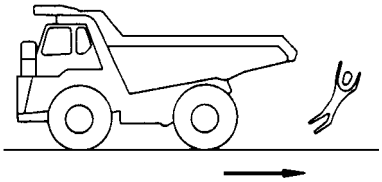
If the truck must be approached, such as to fight a fire, those personnel should do so only while facing the tread area of the tire (front or back), unless protected by use of large heavy equipment as a shield. Stay at least 50 ft. (15 m) from the tread of the tire.

In the event of fire in the tire and wheel area (including brake fires), stay away from the truck at least 8 hours or until the tire and wheel are cool.

- Keep serviceable fire fighting equipment at hand. Report used extinguishers for replacement or refilling.
- Always have parking brake applied when the truck is parked and unattended. **DO NOT** leave truck unattended while engine is running.
- When parking, park a safe distance from other vehicles as determined by supervisor.
- Stay alert at all times! In the event of an emergency, be prepared to react quickly and avoid accidents. If an emergency arises, know where to get prompt assistance.

CHECK WHEN TRAVELING IN REVERSE

Before operating the machine or work equipment, do as follows:



- Sound the horn to warn people in the area. For machines equipped with a back-up alarm, check that the alarm works properly.
- Check that there is no one near the machine. Be particularly careful to check behind the machine.
- If necessary, designate a person to check the safety. This is particularly necessary when traveling in reverse.
- When operating in areas that may be hazardous or have poor visibility, designate a person to direct work site traffic.
- Do not allow any one to enter the line of travel of the machine. This rule must be strictly observed even on machines equipped with a back-up alarm or rear view mirror.

TRAVELING

- When traveling on rough ground, travel at low speed. When changing direction, avoid turning suddenly.
- Lower the dump body and set the dump lever to the FLOAT position when traveling.
- If the engine should stop when the truck is traveling, the steering and brakes will continue to operate, but only for a fixed amount of oil consumption. Steer immediately to a safe spot and stop the truck. As soon as the truck has made a complete stop, apply parking brake.

TRAVELING ON SLOPES

- Traveling on slopes could result in the machine tipping over or slipping.
- Do not change direction on slopes. To ensure safety, go down to level ground before turning.
- Do not travel up and down on grass, fallen leaves, or wet steel plates. These materials may make the machine slip on even the slightest slope. Avoid traveling sideways, and always keep the travel speed low.
- When traveling downhill, use the retarder to reduce speed. Do not turn the steering wheel suddenly. Do not use the foot brake except in an emergency.
- If the engine should stop on a slope, apply the service brakes fully stop the machine and apply the parking brake after the machine has stopped.

ENSURE GOOD VISIBILITY

- When working in dark places, install work lamps and head lamps, and set up lighting in the work area if necessary.
- **Stop operations if the visibility is poor, such as in mist, snow, or rain, and wait for the weather to improve to a condition that allows the operation to be carried out safely.**

OPERATE CAREFULLY ON SNOW

- When working on snowy or icy roads, there is danger that the machine may slip to the side on even the slightest slope, so always travel slowly and avoid sudden starting, turning, or stopping.
- Be extremely careful when carrying out snow-clearing operations. The road shoulder and other objects are buried in the snow and cannot be seen. When traveling on snow-covered roads, always install tire chains.

AVOID DAMAGE TO DUMP BODY

- When working in tunnels, on bridges, under electric cables, or when entering a parking place or any other place where there are height limits, always drive extremely carefully and lower the dump body completely before driving the machine.

DO NOT GO CLOSE TO HIGH-VOLTAGE CABLES

- Going close to high-voltage cables can cause electric shock. Always maintain the safe distance given below between the machine and the electric cable.

Voltage	Minimum Safety Distance	
6.6 kV	3 m	10 ft.
33.0 kV	4 m	14 ft.
66.0 kV	5 m	17 ft.
154.0 kV	8 m	27 ft.
275.0 kV	10 m	33 ft.

- The following actions are effective in preventing accidents:

  1) Wear shoes with rubber or leather soles.

  2) Use a signalman to give warning if the machine approaches too close to the electric cable.
- If the work equipment should touch the electric cable, the operator should not leave the operator's compartment.
- When carrying out operations near high voltage cables, do not let anyone come close to the machine.
- Check with the electrical maintenance department about the voltage of the cables before starting operations.

WHEN DUMPING

- Before starting the dumping operation, check that there is no person or object behind the machine.
- Stop the machine in the correct position, and check again that there is no person or object behind the machine. Give the determined signal, then slowly operate the dump body. If necessary, use blocks for the wheels or position a flagman.
- When carrying out dumping operations on slopes, the machine stability will become poor and there is danger that it may tip over. Always carry out such operations extremely carefully.
- Do not travel with the dump body raised.

WORKING ON LOOSE GROUND

- Avoid operating the machine too close to the edge of cliffs, overhangs, and deep ditches. If these areas collapse, the machine could fall or tip over and result in serious injury or death. Remember that the soil after heavy rain or blasting is weakened in these areas.
- Earth laid on the ground and the soil near ditches is loose. It can collapse under the weight or vibration of the machine. Avoid these areas, if possible.

WHEN LOADING

- Check that the surrounding area is safe, stop the machine in the correct loading position, then load the body uniformly.
- Do not leave the operator's seat during the loading operation.

PARKING THE MACHINE

- Choose a horizontal road surface to park the machine. If the machine has to be parked on a slope, always put blocks under all the wheels to prevent the machine from moving.
- When parking on public roads, provide fences and signs, such as flags or lights, on the machine to warn pedestrians and other vehicles. Be sure that the machine, flags, or lights do not obstruct the traffic.
- Before leaving the machine, lower the dump body fully, set the parking lever to the PARKING position, stop the engine, then lock everything. Always take the key with you.

TOWING

WHEN TOWING, FIX WIRE TO HOOK

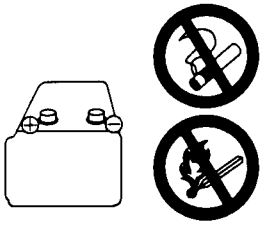
- Towing in the wrong way may lead to serious personal injury or damage.
- When using another machine to tow this machine, use a towing device with ample strength for the weight of this machine.
- Never tow a machine on a slope.
- Do not use any towing rope that has kinks or is twisted.
- Do not stand astride the towing cable or wire rope.
- When connecting a machine that is to be towed, do not let any one come between the towing machine and the machine that is being towed.
- Set the coupling of the machine being towed in a straight line with the towing portion of the machine, and secure it in position.

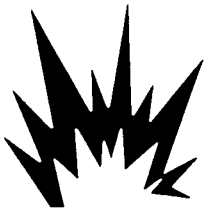
(For towing method, see Section A, “Operating Instructions, TOWING”.)

BATTERY

BATTERY HAZARD PREVENTION

- Battery electrolyte contains sulfuric acid and can quickly burn the skin and eat holes in clothing. If you spill acid on yourself, immediately flush the area with water.
- Battery acid could cause blindness if splashed into the eyes. If acid gets into the eyes, flush them immediately with large quantities of water and see a doctor at once.
- If you accidentally drink acid, drink a large quantity of water or milk, beaten egg or vegetable oil. Call a doctor or poison prevention center immediately.
- When working with batteries ALWAYS wear safety glasses or goggles.
- Batteries generate hydrogen gas. Hydrogen gas is very EXPLOSIVE, and is easily ignited with a small spark of flame.
- Before working with batteries, stop the engine and turn the starting switch to the OFF position.
- Avoid short-circuiting the battery terminals through accidental contact with metallic objects, such as tools, across the terminals.
- When removing or installing, check which is the positive (+) terminal and negative (-) terminal.
- Tighten the battery cap securely.
- Tighten the battery terminals securely. Loosened terminals can generate sparks and lead to an explosion.

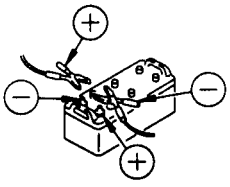




A030005

STARTING WITH BOOSTER CABLES

- ALWAYS wear safety glasses or goggles when starting the machine with booster cables.
- When starting from another machine, do not allow the two machines to touch.
- Be sure to connect the positive (+) cable first when installing the booster cables. Disconnect the ground or negative (-) cable first when removing them.
- If any tool touches between the positive (+) terminal and the chassis, it will cause sparks. This is dangerous, so be sure to work carefully.
- Connect the batteries in parallel: positive to positive and negative to negative.
- When connecting the ground cable to the frame of the machine to be started, be sure to connect it as far as possible from the battery.



A030006

PRECAUTIONS FOR MAINTENANCE

BEFORE CARRYING OUT MAINTENANCE

WARNING TAG

- If others start the engine or operate the controls while you are performing service or lubrication, you could suffer serious injury or death.
- ALWAYS attach the WARNING TAG to the control lever in the operator's cab to alert others that you are working on the machine. Attach additional warning tags around the machine, if necessary.
- These tags are available from your Komatsu distributor.
- Part No. 09963-03000

PROPER TOOLS

- Use only tools suited to the task. Using damaged, low quality, faulty, or makeshift tools could cause personal injury.

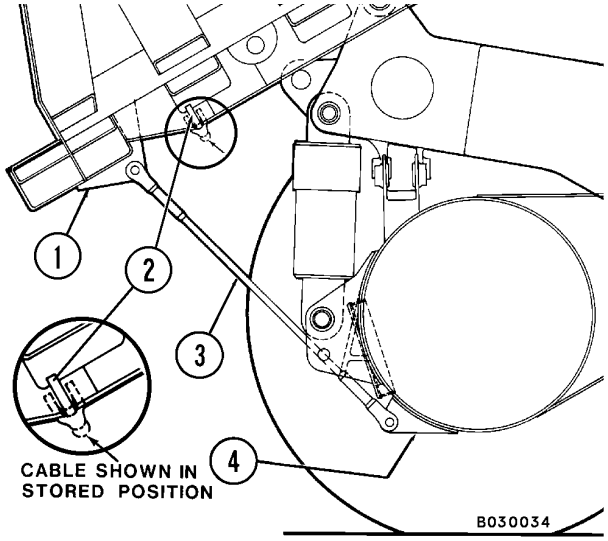
STOPPING THE ENGINE BEFORE SERVICE

- When carrying out inspection or maintenance, always stop the machine on firm flat ground, lower the dump body, then stop the engine.
- If the engine must be run during service, such as when cleaning the radiator, always move the shift control lever to the Neutral (N) position and set the parking brake lever to the PARKING position. Always carry out the work with two people. One person should sit on the operator's seat to stop the engine if necessary. NEVER move any controls not needed to operate.
- When servicing the machine, be careful not to touch any moving part or get clothing caught.
- Put blocks under the wheels.
- When carrying out service with the dump body raised, always place the dump lever at the HOLD position, and apply the lock (if equipped). Install the body-up safety pins (or cable) securely.

SECURING THE DUMP BODY

Any time personnel are required to perform maintenance on the vehicle with the dump body in the raised position, the body-up retention cable MUST be installed.

1. To hold the dump body in the up position, raise the body to it's maximum height.
2. Remove cable (3) from its stored position on the body, and install between rear body ear (1) and axle housing ear (4).
3. Secure the cable clevis pins with cotter pins.
4. Return the cable to stored position (2) after maintenance is complete.



DURING MAINTENANCE

PERSONNEL

- Only authorized personnel can service and repair the machine. Extra precaution should be used when grinding, welding, and using a sledge-hammer.

ATTACHMENTS

- Place attachments that have been removed from the machine in a safe place so that they do not fall. If they fall on you or others, serious injury could result.

A0055130

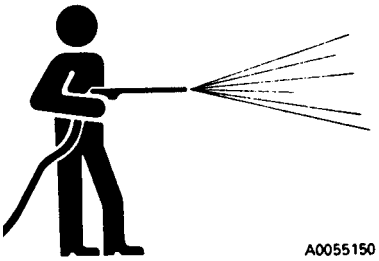
WORK UNDER THE MACHINE

- Always lower all movable work equipment to the ground or to their lowest position before performing service or repairs under the machine.
- Always block the tires of the machine securely.
- Never work under the machine if the machine is poorly supported.

A0055140

KEEP THE MACHINE CLEAN

- Spilled oil or grease, or scattered tools or broken pieces are dangerous because they may cause you to slip or trip. Always keep your machine clean and tidy.
- If water gets into the electrical system, there is danger that the machine may not move or may move unexpectedly.Do not use water or steam to clean the sensors, connectors, or the inside of the operator's compartment.
- Use extreme care when washing the electrical control cabinet. Do not allow water to enter the control cabinet around the doors or vents. Do not allow any water to enter the cooling air inlet duct above the electrical control cabinet. If water enters the control cabinet (through any opening or crevice) major damage to the electrical components is possible.
- Never spray water into the rear wheel electric motor covers. Damage to the wheel motor armature can occur.
- Do not spray water into the retard grids. Excess water in the retard grids can cause a ground fault, which will prevent propulsion.



A0055150

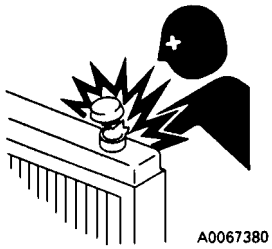
RULES TO FOLLOW WHEN ADDING FUEL OR OIL

- Spilled fuel and oil may cause slipping. Always clean up spills immediately.
- Always tighten the cap of the fuel and oil fillers securely.
- Never use fuel for washing any parts.
- Always add fuel and oil in a well-ventilated place.

A030004

RADIATOR WATER LEVEL

- If it is necessary to add water to the radiator, stop the engine and allow the engine and radiator to cool down before adding the water.
- Slowly loosen the cap to relieve pressure before removing the cap.

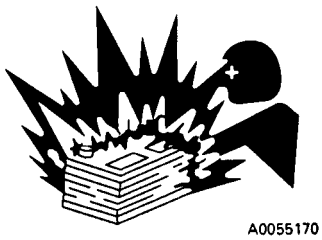


USE OF LIGHTING

When checking fuel, oil, coolant, or battery electrolyte, always use lighting with anti-explosion specifications. If such lighting equipment is not used, there is danger or explosion.

PRECAUTIONS WITH BATTERY

- When repairing the electrical system or when carrying out electrical welding, remove the negative (-) terminal of the battery to stop the flow of current.

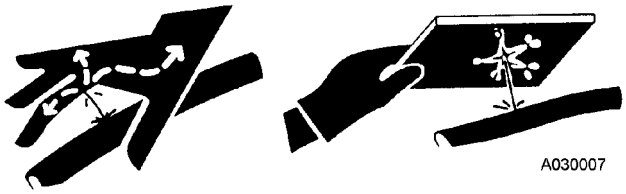


HANDLING HIGH-PRESSURE HOSES

- Do not bend high-pressure hoses or hit them with hard objects. Do not use any bent or cracked piping, tubes or hoses. They may burst during use.
- Always repair any loose or broken fuel hoses or oil hoses. If fuel or oil leaks, it may cause a fire.

PRECAUTIONS WITH HIGH PRESSURE OIL

- Do not forget that the work equipment circuits are always under pressure.
- Do not add oil, drain oil, or carry out maintenance or inspection before completely releasing the internal pressure.
- If oil is leaking under high pressure from small holes, it is dangerous if the jet of high-pressure oil hits the skin or enters the eyes. Always wear safety glasses and thick gloves, and use a piece of cardboard or a sheet of wood to check for oil leakage.
- If you are hit by a jet of high-pressure oil, consult a doctor immediately for medical attention.



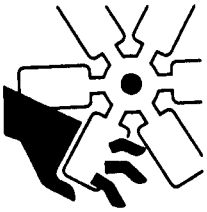
PRECAUTIONS WHEN CARRYING OUT MAINTENANCE AT HIGH TEMPERATURE OR HIGH PRESSURE

- Immediately after stopping operations, the engine cooling water and oil at all parts are at high temperature and under high pressure.In this condition, if the cap is removed, or the oil or water are drained, or the filters are replaced, it may result in burns or other injury. Wait for the temperature to go down, then carry out the inspection and maintenance in accordance with the procedures given in this manual.


A0055050

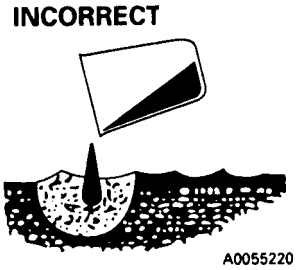
ROTATING FAN AND BELT

- Keep away from rotating parts and be careful not to let anything get caught in them.
- If your body or tools touch the fan blades or fan belt, they may be cut off or sent flying, so never touch any rotating parts.


A0063830

WASTE MATERIALS

- Never dump waste oil in a sewer system, rivers, etc.
- Always put oil drained from your machine in containers. Never drain oil directly on the ground.
- Obey appropriate laws and regulations when disposing of harmful objects such as oil, fuel, coolant, solvent, filters, batteries, and others.



A0055220

TIRES

HANDLING TIRES

If tires are not used under the specified conditions, they may overheat and burst or be cut and burst by sharp stones on rough road surfaces. This may lead to serious injury or damage.

To maintain safety, always keep to the following conditions:

- Inflate the tires to the specified pressure. Abnormal heat is generated particularly when the inflation pressure is too low.
- Use the specified tires.

The tire inflation pressure and permissible speeds are general values. The actual values may differ depending on the type of tire and the condition under which they are used. For details, please consult the tire manufacturer.

If the tires become hot, a flammable gas is produced, and this may ignite. It is particularly dangerous if the tires become overheated when the tires are under pressure. If the gas generated inside the tire ignites, the internal pressure will suddenly rise, and the tire will explode, and this may lead to serious personal injury. Explosions differ from punctures or tire bursts, because the destructive force is extremely large. Therefore, the following operations are strictly prohibited when the tire is under high internal pressure:

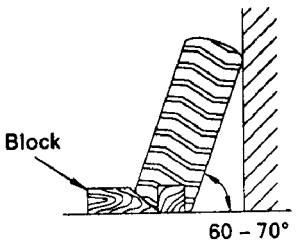
- Welding the rim
- Building fires or carrying out welding near the wheel or tire.

A0055110

If the proper procedure for carrying out maintenance or replacement of the wheel or tire is not used, the wheel or tire may burst and cause serious injury or damage. When carrying out such maintenance, please consult the authorized regional Komatsu America Corp. distributor, or the tire manufacturer.

STORING TIRES AFTER REMOVAL

- As a basic rule, store the tires in a warehouse which unauthorized persons cannot enter. If the tires are stored outside, always erect a fence around the tires and put up “No Entry” and other warning signs that even young children can understand.
- Stand the tire on level ground, and block it securely so that it cannot roll or fall over.
- If the tire should fall over, get out of the way quickly. The tires for construction equipment are extremely heavy, so trying to hold the tire may lead to serious injury.



A0300008

ADDITIONAL JOB SITE RULES

- Use this space to add any ADDITIONAL Job Site Rules not covered in any of the previous discussions.
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________