

Product: KOMATSU 830E Rigid Dump Truck Service Repair Workshop Manual(CEBM008601)

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CEBM008601

Shop Manual

830E

DUMP TRUCK

SERIAL NUMBERS **A30650 - A30661**
A30663 - A30676

KOMATSU®

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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 $\pm 10\%$ 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” identifies a specific potential hazard WHICH WILL RESULT IN EITHER INJURY OR DEATH if proper precautions are not taken.



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



“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.

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KOMATSU MODEL 830E TRUCK

**SECTION A
GENERAL INFORMATION
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NOTES

MAJOR COMPONENT DESCRIPTION

The KOMATSU Model 830E Truck is an electric drive, off-highway, rear dump truck whose gross vehicle weight is 850,650 lbs. (385 848 kg) (240 - 255 ton nominal payload).

ENGINE

This Model 830E Truck is powered by a Komatsu SSDA16V160 diesel engine rated at 2500 hp (1864 kW) @ 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

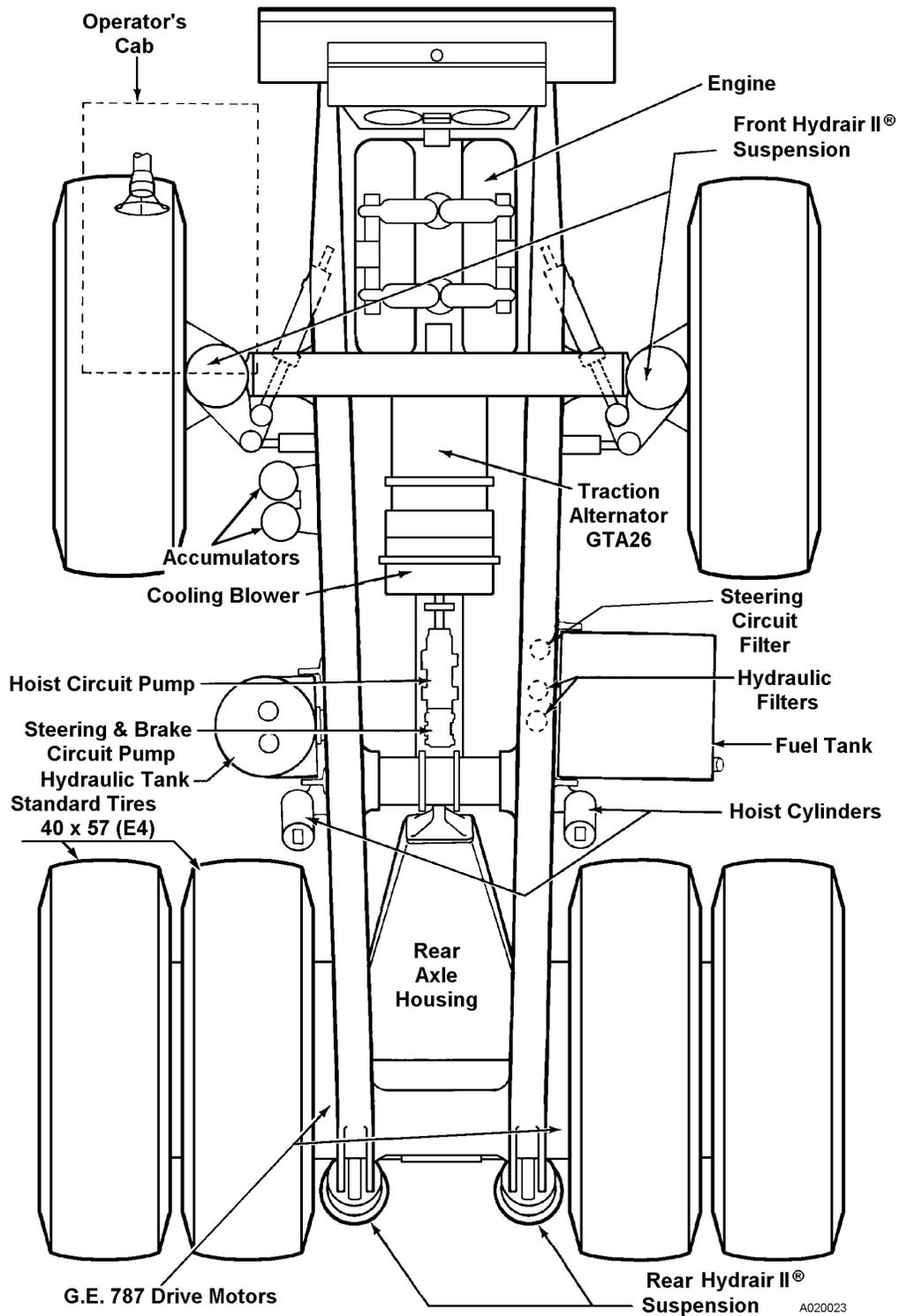
Dynamic retarding is used to slow the truck during normal operation or control speed coming down a grade. The dynamic retarding ability of the DC electric system is controlled by the operator by depressing the foot operated retarder pedal and/or setting the RSC (Retarder Speed Control) on the instrument 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 SSSDA16V160

No. of Cylinders 16
Operating Cycle 4-Stroke
Rated Brake HP. . 2500 HP (1887 kW) @ 1900 RPM
Flywheel HP 2409 HP (1818 kW) @ 1900 RPM
Weight* (Dry) 21,182 pounds (9 608 kg)

* 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 9000 cfm (255 m³/min)
Motorized Wheels General Electric 787
Ratio 28.125:1
Maximum Speed* 35.3 MPH (56.9 km/h)
(*w/40.00-57 Tires and 28.125:1 gear train)

DYNAMIC RETARDING

Extended Range Retarding with fully blown 18-Resistor grids and reverse retarding standard equipment.

Maximum Rating 4000 HP (2983 kW)

TIRES

Rock Service, Deep Tread. (E-4) Tubeless
Standard Tire 40.00 - 57, 68 Ply Rating

(w/787 Wheelmotor)

Separable Tire Rims *

5 Piece 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:

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

24 VDC ELECTRIC SYSTEM

Batteries . . . Four 12 Volt Batteries in Series/Parallel
. . . 220 Ampere-Hour Capacity w/Disconnect Switch
Alternator 24 Volt, 240 Ampere Output
Lighting 24 Volt
Starters (2) 24 Volt

SERVICE CAPACITIES

. U.S. Gallons. . . (Liters)
Crankcase * 74.0 280.0
* Includes Lube Oil Filters
Cooling System 150 568
Fuel 1200 4543
Hydraulic System 250 947
Hydraulic Tank 238 901
Wheel Motor Gear Box (each) 10.5 39.7

HYDRAULIC SYSTEMS*

Pumps

Hoist Tandem Gear Pumps
Rated @ 230 GPM (870 l/min.) @ 1900 RPM
Steering Radial Piston-Pressure Compensating
(also Brake) 65 GPM (246 l/min.) @ 1900 RPM

System Relief Pressures

Hoist/Steering 2500 psi (17.2 MPa)
Brakes 3500 psi (24.1 MPa)
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. . . 93 ft. (28.4 m)
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. 47.75 in. (1213 mm)
Rear Armature Speed, Dual Disc
 Disc Diameter, O.D. 25.00 in. (635 mm)
Emergency Brake-Automatically Applied (Standard)
Wheel Brake Lock. Manual Switch on Panel
 (Loading and Dumping)

DISC PARKING BRAKE

Each Rear Wheel Single Caliper
 Spring Applied, Hydraulically Released

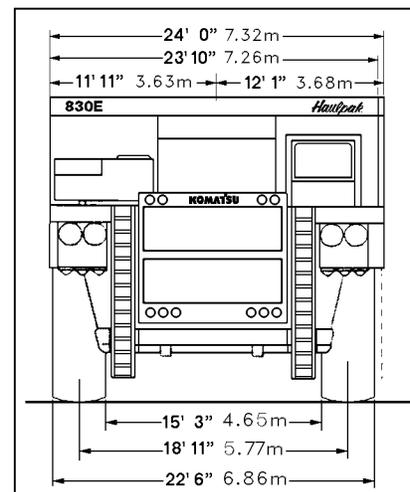
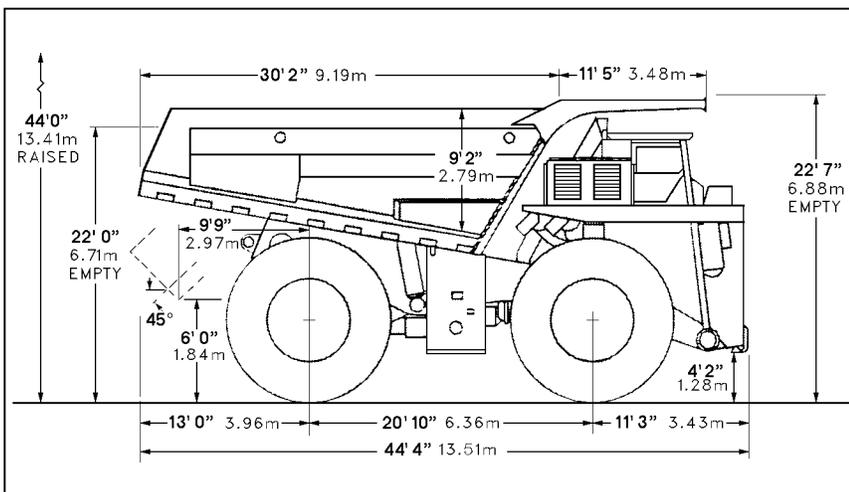
DUMP BODY CAPACITIES AND DIMENSIONS

Standard, Heaped @ 2:1 (SAE) . . 193 yd³ (147 m³)
 Struck 153 yd³ (117 m³)
 Loading Height Empty 22 ft. 1 in. (6.71 m)
 Dumping Angle 45
 Non-heated Body w/Exhaust Mufflers Standard

WEIGHT DISTRIBUTION

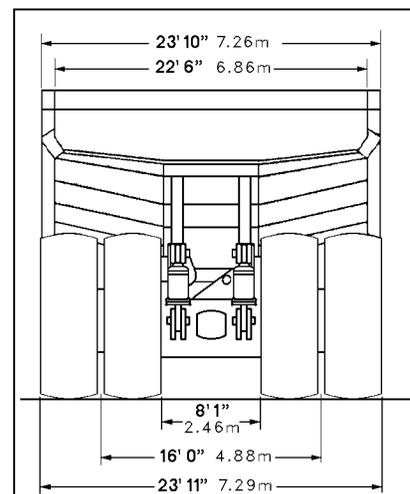
Empty Vehicle	Pounds.	(Kilograms)
Front Axle	173,593.	(78 638)
Rear Axle.	175,543.	(79 521)
Total.	349,136.	(158 159)
Loaded Vehicle	Pounds.	(Kilograms)
Front Axle	280,715.	(127 330)
Rear Axle.	569,935.	(258 518)
Total *	850,650.	(385 848)

*Not To Exceed 850,650 lbs. (385 848 kg) including options, liners, fuel and payload, and subject to approval by Komatsu.



**OVERALL TRUCK DIMENSIONS
 (Empty with Standard Body)**

Length 44 ft. 4 in. (13.51 m)
 Width 24 ft. 0 in. (7.32 m)
 Height with Canopy 22 ft. 7 in. (6.88 m)
 Height with Dump Body Up 44 ft. 0 in. (13.41 m)
 Turning Circle (on front track) 93 ft. 0 in. (28.35 m)



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GENERAL SAFETY

This safety section also contains precautions for optional equipment and attachments.



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

SAFETY RULES

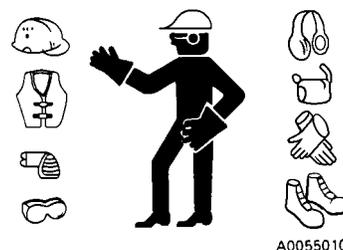
- ONLY trained and authorized personnel can operate and maintain the machine.
- Follow all safety rules, precautions and instructions when operating or performing maintenance on the machine.
- When working with another operator or a person on worksite traffic duty, be sure all personnel understand all 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 without authorization from Komatsu can create hazards.
- Before making a modification, consult your Komatsu distributor. Komatsu will not be responsible for any injury or damage caused by any unauthorized modification.

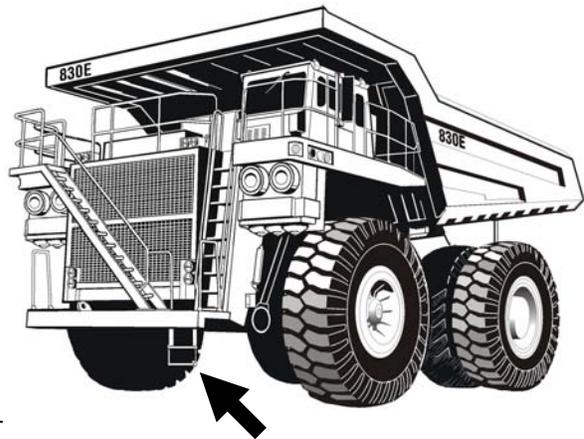
STANDING UP FROM THE SEAT

When preparing to leave the operator's seat, always carry out the following procedures to prevent accidental operations from occurring:

- Place the selector switch lever in the Neutral (N) position and apply the parking brake.
- Lower the dump body, set the dump lever to the HOLD 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

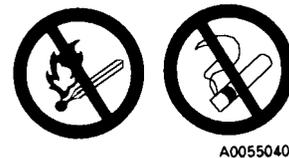
- NEVER jump on or off the machine. NEVER get on or off a moving machine.
- When getting on or off the machine, face the machine and use the handhold and steps.
- Never hold any control levers when getting on or off the machine.
- Always maintain three-point contact with the handholds and steps to ensure 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 handholds or steps, wipe it off immediately. Always keep these parts clean. Repair any damage and tighten any loose bolts.
- Use the step marked by the arrow in the illustration at the right. Use handrails when ascending or descending the ladder when getting on or off the truck.



FIRE PREVENTION FOR FUEL AND OIL

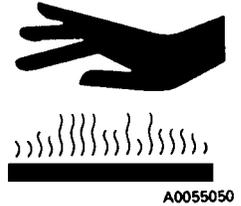
Fuel, oil, and antifreeze can be ignited by a flame. Fuel is particularly **FLAMMABLE** and can be **HAZARDOUS**.

- 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, differential and final drive case 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 go 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 go down.
 - 3) Turn the cap slowly to release the pressure before removing the cap.
- To prevent hot oil from spurting out:
 - 1) Stop the engine.
 - 2) Wait for the oil temperature to go down.
 - 3) Turn the cap slowly to release the pressure before removing the cap.

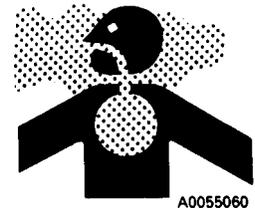


ASBESTOS DUST HAZARD PREVENTION

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.

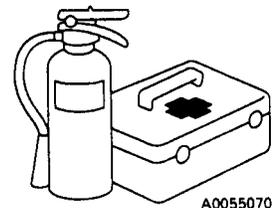


PREVENTION OF INJURY BY WORK EQUIPMENT

- 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.



PRECAUTIONS REGARDING ROPS (Roll Over Protective Structure)

- 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 Mining Systems, Inc. fulfills all of the regulations and standards for all countries, but if it is modified or repaired without authorization from Komatsu Mining Systems, Inc., or is damaged when the machine rolls over, the strength will be reduced and it will not be able to fulfill its function properly. It can only be effective if it is repaired or modified in the specified way.
- When modifying or repairing the ROPS, always consult the authorized regional Komatsu Mining Systems, Inc. distributor.
- Even if the ROPS is installed, it cannot provide full protection if the operator does not fasten the seat belt properly.

Always fasten the seat belt when operating the truck.

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 Mining Systems, Inc. or the authorized regional Komatsu Mining Systems, Inc. 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 Mining Systems, Inc. or the authorized regional Komatsu Mining Systems, Inc. distributor.

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 truck.

Safe practices start before the operator gets to the equipment!

SAFETY AT THE 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 jobsite 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 worksite traffic duty or by installing fences around the worksite.
- 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 worksite 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 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 items accumulated in the engine compartment. They 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.

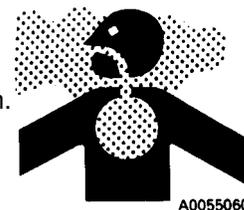


PREPARING FOR OPERATION

- Always mount and dismount facing the truck. Never attempt to mount or dismount the truck while it is in motion. Always use the ladder and handrails when mounting or dismounting 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 and 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.



IN OPERATOR'S CAB

- Do not leave tools or spare parts lying around in the operator's cab or allow trash to accumulate. 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 the truck.
- Read and understand the contents of this manual. Read 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 labels 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 washer reservoir 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, worklights 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 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.
- 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 the truck. Riders should be in the cab only and belted in the passenger seat.
- Do not allow anyone to get on or off the truck while it is in motion.
- Do not allow anyone to ride on decks or steps of truck.
- 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 the tire must be changed, do not stand in front of rim and locking ring when inflating a tire mounted on the truck. Observers should not be permitted in the area and should be kept away from the sides 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 rear), unless protected by use of large heavy equipment as a shield. Stay at least 50 ft. (15 m) from the tread of the tire.

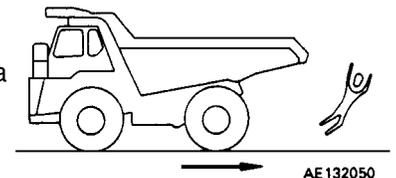
In the event of fire in the tire and wheel area (including brake fires), stay away from the truck at least 8 hours or until the tire and wheel are cool.

- Keep serviceable fire fighting equipment at hand.
- 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 worksite 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 backup 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 machine is traveling, the emergency steering system will be activated. Apply the brakes immediately and stop the machine as quickly and safely as possible, and off the haul road, if possible.

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. Take all possible steps to 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 brakes fully and apply the parking brake, to stop the machine.

ENSURE GOOD VISIBILITY

- When working in dark places, install working 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.

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 as indicated in the table between the machine and the electric cable.

Voltage	Min. 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 dumping 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 are loose. They can collapse under the weight or vibration of the machine.
- When operating in places where there is danger of falling rocks or danger of the machine turning over, always install ROPS and a seat belt.

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

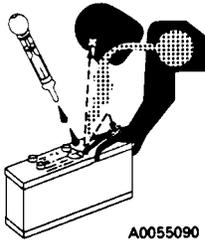
For towing instructions, refer to Section 3, “Operating Instructions”.

- Towing improperly may lead to serious personal injury or damage.
- When using another machine to tow this truck, use a tow bar with ample strength for the weight of this machine.
- Never tow a truck on a slope.
- Do not use any towing device that is damaged.
- Do not stand astride the towing device.
- When connecting a machine that is to be towed, do not let any one come between the towing machine and the truck that is being towed.
- Align the truck being towed in a straight line with the towing portion of the machine, and secure it in position.

BATTERY

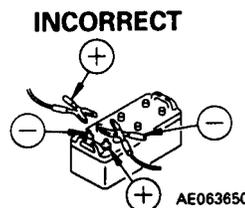
BATTERY HAZARD PREVENTION

- 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 key 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 caps securely.
- Tighten the battery terminals securely. Loosened terminals can generate sparks and lead to an explosion.



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.

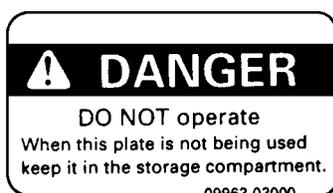


PRECAUTIONS FOR MAINTENANCE

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 in a prominent location 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 place the selector switch to the Neutral (N) position and the parking brake lever to the PARKING position. Always carry out the work with two people. One person should sit in the operator's seat so that the engine can be stopped, if necessary. NEVER move any controls not needed for operation.
- 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 insert the body-up safety pins (or cable) securely.

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, serious injury could result.



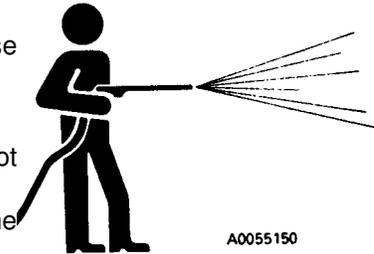
WORK UNDER THE MACHINE

- 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.



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.



RULES TO FOLLOW WHEN ADDING FUEL OR OIL

- Spilled fuel and oil may cause a person to slip. Always wipe it up immediately.
- Always tighten the cap of the fuel and oil fillers securely.
- Never use fuel for washing parts.
- Always add fuel and oil in a well-ventilated place.



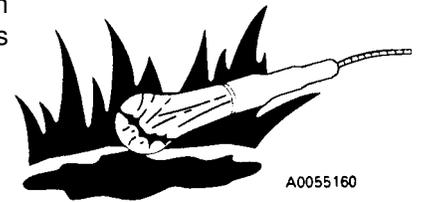
RADIATOR WATER LEVEL

- 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.



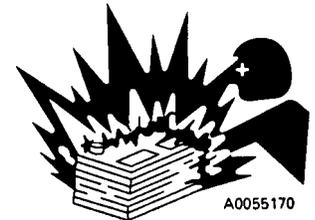
USE OF LIGHTING

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, open the battery disconnect switch or remove the negative (-) terminal of the battery to stop the flow of current.

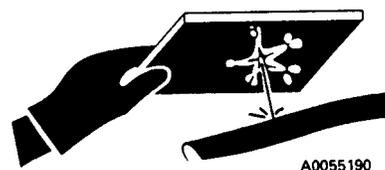


HANDLING HIGH-PRESSURE HOSES

- 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.

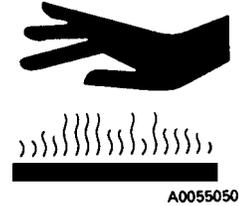
PRECAUTIONS WITH HIGH PRESSURE OIL

- Do not forget that hydraulic circuits are always under pressure with the engine running. **In addition, the steering and brake circuits may be pressurized even though the engine is stopped.**
- 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 your skin or enters your 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.



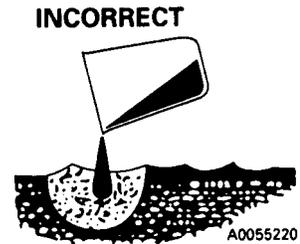
ROTATING FAN AND BELT

- 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.



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.



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.

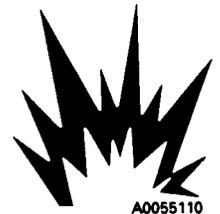
To maintain safety, always keep to the following conditions:

- 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:**

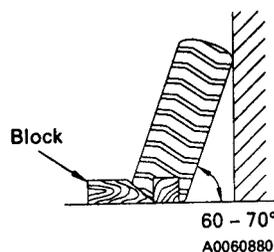
- Welding the rim
- Building fires or carrying out welding near the wheel or tire.



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 regional Komatsu Mining Systems, Inc. distributor or 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.



WHEN REPAIRS ARE NECESSARY

1. Only qualified maintenance personnel who understand the systems being repaired should accomplish repairs.
2. Many components on the Komatsu Truck are large and heavy. Insure that lifting equipment - hoists, slings, chains, lifting eyes - are of adequate capacity to handle the lift.
3. DO NOT WORK under a suspended load. Do not work under raised body unless body safety cables, props, or pins are in place to hold the body in up position.
4. Do not repair or service truck while engine is running, except when adjustments can only be made under such conditions. **Keep a safe distance from moving parts.**
5. When servicing any air conditioning system with refrigerant, wear a face shield and cold resistant gloves for protection against freezing. Be certain to follow all current regulations for handling and recycling refrigerants.
6. Follow package directions carefully when using cleaning solvents.
7. If an auxiliary battery assist is needed, first use one cable to connect the 24V positive (+) post of the disabled truck batteries to the 24V positive (+) post of the auxiliary assist. Use second cable to connect the 24V negative (-) post of the auxiliary assist battery to a **frame ground (-)** on the disabled truck *away from the battery*.
8. Always disconnect the positive and negative battery cables of the vehicle before doing any welding on the unit. Failure to do so may seriously damage the battery and electrical equipment. Disconnect battery charging alternator lead wire and isolate electronic control components before making welding repairs. (It is not necessary to disconnect or remove any control circuit cards on Komatsu Electric Drive Trucks or any of the "AID" circuit control cards.)

Always fasten the welding machine ground (-) lead to the piece being welded; **grounding clamp MUST BE ATTACHED AS NEAR AS POSSIBLE to the weld area**. Never allow welding current to pass through ball bearings, roller bearings, suspensions, or hydraulic cylinders. Always avoid laying welding cables over or near the vehicle electrical harnesses. Welding voltage could be induced into the electrical harness and possibly cause damage to components.
9. If truck is to be towed for any reason, use a rigid tow bar. Check truck cab for decal recommending special towing precautions. (Also refer to Towing Procedure in OPERATING INSTRUCTIONS.)
10. Drain, clean and ventilate fuel tanks and/or hydraulic tanks before making any welding repairs.

WARNING

Any operating fluid, such as hydraulic oil or brake fluid escaping under pressure, can have sufficient force to enter a person's body by penetrating the skin. Serious injury and possibly death may result if proper medical treatment by a physician familiar with this injury is not received immediately.

11. Relieve pressure in lines or hoses before making any disconnects.
12. After adjustments or repairs, replace all shields, screens and clamps.
13. Tire Care:

WARNING

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.

Do not weld or apply heat on the rim assembly with the tire mounted on the rim. Resulting gases inside the tire may ignite, causing explosion of tire and rim.

14. Only a qualified operator or experienced maintenance personnel who are also qualified in operation should move the truck under its own power in the repair facility or during road testing after repairs are complete.

Product: KOMATSU 830E Rigid Dump Truck Service Repair Workshop Manual(CEBM008601)

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