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DAEWOO

MEGA 300-III

MECHATROPIA™



D A E W O O W H E E L L O A D E R

Shop Manual

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Serial Number 0001 and Up

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To the Operator of a Daewoo Wheel Loader



Improper use of the Wheel Loader could cause serious injury or death. Before operating the wheel loader, or performing maintenance, the operator or technician must read and understand the entire Operation and Maintenance Manual.

Any Operation, Maintenance, Traveling or Shipping methods that do not follow the Safety guidelines printed in this Manual could cause serious injury or death.

Basic Wheel Loader Operating Safety

The safety information on the following pages is organized into the following topics.

- I. **General Safety Essentials**
- II. **Locations of Safety Labels**
- III. **Summary of Safety Precautions for Lifting**
- IV. **Operation**
- V. **Equipment**
- VI. **Maintenance**
- VII. **Shipping and Transportation**

General Safety Essentials

Accessory Applications

The wheel loader has been designed primarily for moving earth with a bucket. For use as a grapple or for other object handling, contact Daewoo. Lifting-work applications are permitted in approved lift configuration, to rated capacity only, with no side-loading (unless prohibited by local regulation). DO NOT use the machine for activities for which it was not intended. DO NOT use the bucket for lifting work, unless lift slings are used in the approved configuration.

Working in rough terrain, use of an accessory hydraulic hammer (breaker), demolition applications, or other hazardous operation may require installation of additional protective structures to safeguard the operator.

Static Tipping Load

The machine can lift a maximum of 14,500 kg (31,967 lb) with the bucket in the Straight Ahead position, and a maximum of 12,000 kg (26,455 lb) with the bucket in the Fully Turned position. Hooks and slings must be attached to an eye that is in the center of the bucket. All lifts must be made with the machine standing on a firm and level surface. Loads must be balanced and supported evenly. Use taglines to keep the load steady if wind conditions and large surface area are a problem. Work crew hand signals, individual tasks and safe procedures should all be universally understood before the lift is made.

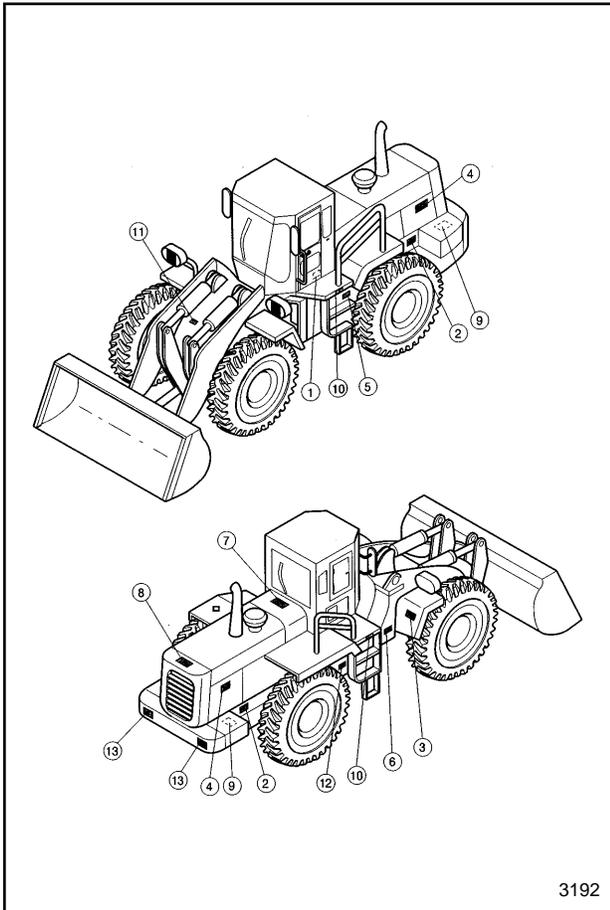
NOTE

Before using the wheel loader to make lifts, check the statutes at all levels of government that might have jurisdiction. Some governing bodies may require that all heavy lifting be done with a crane that is specifically designed for making lifts. When making lifts, always follow all instructions, guidelines, and restrictions for Safe Lifting in the Operation and Maintenance and Shop Manuals.

Locations of Safety Labels

Always keep these labels clean. If they are lost or damaged, attach them again or replace them with a new label. Make sure replacement parts have current labels.

There are other labels in addition to the safety labels that follow so handle them in the same way. Safety labels may be available in languages other than English. To find out what labels are available, contact your Daewoo distributor.



1. Warning for operation, inspection and maintenance (2190 – 2530).

CAUTION

- Read manual and labels before operation and maintenance. Follow instructions and warnings in manual and on labels on the machine.
- Never get in under the machine while it is being jacked up with boom and arm.
- For transporting the machine, the swing lock must be hung on.
- Turn Auto-Idle switch OFF, when loading the machine.
- Sound the horn to alert the people nearby before operating, and make sure all persons are clear of area.
- Always make sure when leaving operator's seat to:
 - Lower bucket or other working tools to the ground.
 - Move SAFETY LOCK DEVICE (located near seat) to LOCK position.
 - Turn key switch OFF. Remove key from switch.
- If hydraulic components and units are ABNORMAL, consult nearest DAEWOO dealer or authorized service shop. Do not attempt to make an overhaul.

2. Warnings for high voltage.

DANGER

Serious injury or death can occur if machine or attachments contact with electric lines. Never move any part of unit or load closer to electric lines than 3 m (10') plus twice the line insulator length.

3. Warning when opening front window (2190 – 2526).

 WARNING
When raising window, lock it in place with lock pins on both sides.
Falling window can cause injury.

4. Warnings when opening engine hood (2190 – 2525).

 WARNING
Before opening bonnet, stop engine.

5. Warning for handling accumulator (2190 – 2528).

 WARNING	<ul style="list-style-type: none">• Keep away from flame.• Do not weld or drill.
Explosion hazard	

Accumulator

The wheel loader pilot control system is equipped with an accumulator. The accumulator will store a pressure charge that may enable the hydraulic controls to be activated for a brief period of time after the engine has been shut down. Activation of any of the controls may enable the selected function to operate under the force of gravity.

 CAUTION!!!
Any raised attachment will lower to the ground if the accumulator holds a charge.

When shutting the machine down, lower the front attachment to the ground. After the engine has been shut down, move the joystick controls to release the pressure in the accumulator.

IMPORTANT
Refer to the Shop Manual for service procedures. Do not release any of the pilot lines until the pressure within the accumulator has been released.

6. Keep off the steering turn area (4190 – 1992).

 DANGER
Keep out of the steering turn area.

7. Warning for high temperature hydraulic oil (2190 – 2529).

 WARNING
HYDRAULIC OIL
To prevent hot oil from spurting out: <ul style="list-style-type: none">• Turn engine off.• Allow oil to cool.• Slowly loosen cap to relieve pressure before removing.

8. Warning for high temperature coolant (2190 – 2531).

 WARNING
To prevent hot water from spurting out: <ul style="list-style-type: none">• Turn engine off.• Allow water to cool.• Slowly loosen cap to relieve pressure before removing.

**9. Warning for battery maintenance
(2190 – 2533).**

 **DANGER**

- Battery fumes can explode. Keep sparks and flames away from batteries.
- Always avoid storing metals like tools or inflammable materials around or on the batteries. Explosion or fire can be caused by short circuiting batteries.
- Sulfuric acid in battery is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed in eyes.

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 10-15 minutes. Get medical attention immediately.

**12. Warning to use safety lock
(4190 – 1993).**

 **WARNING**

Safety lock must be in lock position when servicing pivot area or transporting machine.

**13. Stay clear of working area caution
(4190 – 1991).**

 **CAUTION**

Do not stay in the working area of the machine.

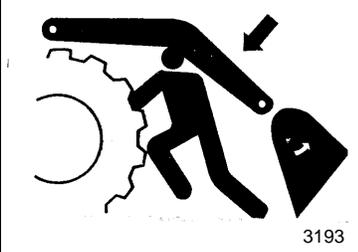
**10. Warning for riding on machine
(4190 – 1989).**

 **WARNING**

For your safety, do not stand on ladder when machine is in motion.

**11. Warning for performing maintenance on
front attachment (4190 – 2546).**

 **DANGER**



To avoid injury, securely brace lift arm before disassembly of valve or piping.

Summary of Safety Precautions for Lifting

DANGER!!!

Unsafe use of the wheel loader while making rated lifts could cause serious, potentially fatal injuries or extensive damage to the machine or nearby property. Do not let anyone operate the machine unless they've been properly trained and understand the information in the Operation and Maintenance Manual.

To make safe lifts, the following items must be evaluated by the operator and the work-site crew.

- Condition of ground support
- Wheel loader configuration and attachments
- Load weight
- Safe rigging of the load
- Proper handling of the suspended load

Taglines on opposite sides of the load can be very helpful in keeping a suspended load secure, if they are anchored safely to control points on the ground.

WARNING!!!

1. **NEVER** wrap a tagline around your hands or body.
2. **NEVER** rely on taglines or use the wheel loader in lifting mode when wind gusts are in excess of 48.3 km/h (30 mi/h). Be prepared for any type of wind gust when working with loads that have a large surface area.

Unauthorized Modifications

IMPORTANT

If you need more information or have any questions or concerns about safe operating procedures or working the wheel loader correctly in a particular application or in the specific conditions of your individual operating environment, please consult your local Daewoo representative.

Any modification made without authorization or written approval from Daewoo can create a safety hazard, for which the machine owner must be held responsible.

For safety's sake, replace all OEM parts with the correct authorized or genuine Daewoo part. For example, not taking the time to replace fasteners, bolts or nuts with the correct replacement parts could lead to a condition in which the safety of critical assemblies is dangerously compromised.

Attachment Precautions

Options kits are available through your dealer. Contact Daewoo for information on available one-way (single-acting) and two-way (double-acting) piping/valving/ auxiliary control kits. Because Daewoo cannot anticipate, identify or test all of the attachments that owners may wish to install on their machines, please contact Daewoo for authorization and approval of attachments, and their compatibility with options kits.

Avoid High-voltage Cables

Serious injury or death can result from contact or proximity to high-voltage electric lines. *The bucket does not have to make physical contact with power lines for current to be transmitted.*

Use a spotter and hand signals to stay away from power lines not clearly visible to the operator.

Depending upon the voltage in the line and atmospheric conditions, strong current shocks can occur with the boom or bucket as far away as 4 m – 6 m (13' 0" – 20' 0") from the power line. Very high voltage and rainy weather could further decrease that safety margin.



Before starting any type of operation near power lines (either above ground or buried cable-type), you should always contact the power utility directly and work out a safety plan with them.

Before Starting to Dig, Contact Authorities

Below ground hazards also include natural gas lines, water mains, tunnels and buried foundations. Know what's underneath the work-site before starting to dig.

Be Aware of Height Obstacles

Any type of object in the vicinity of the boom could represent a potential hazard, or cause the operator to react suddenly and cause an accident. Use a spotter or signal person working near bridges, phone lines, work-site scaffolds, or other obstructions.

Use Care on Loose Support

Working heavy loads over loose, soft ground or uneven, broken terrain can cause dangerous side load conditions and possible tipover and injury. Travel without a load or balanced load may also be hazardous.

If temperatures are changing, be cautious of dark and wet patches when working or traveling over frozen ground. Stay away from ditches, overhangs and all other weak support surfaces. Halt work and install support mats or blocking if work is required in an area of poor support.

Use Solid Support Blocking

Never rely on lift jacks or other inadequate supports when work is being done. Block wheels fore and aft to prevent any movement.

Digging Beneath Overhangs

Digging beneath an overhang is dangerous. The overhang could collapse on top of the operator and cause serious injury or death. Go on to another digging area before steep overhangs are formed. Know the height and reach limits of the wheel loader and plan ahead while working. Park wheel loader away from overhangs before work shutdown.

Digging Beneath the Wheel Loader

Digging beneath the wheel loader is dangerous. The earth beneath could collapse. This could cause the wheel loader to tip, which could cause serious injury or death to the operator. Working around deep pits, trenching or along high walls may require support blocks, especially after heavy rainfalls or during spring thaws.

Sloping Terrain Requires Caution

Dig evenly around the work-site whenever possible, trying to gradually level any existing slope. If it is not possible to level the area or avoid working on a slope, reducing the size and cycling rate of the workload is recommended.

On sloping surfaces, use caution when positioning the wheel loader prior to starting a work cycle. Stay alert for instability situations in order to avoid getting into them. For example, you should always avoid working the bucket over downhill side of the machine when parked perpendicular to the slope. Avoid full extensions of the bucket in a downhill direction. Lifting the bucket too high, too close to the machine, while the wheel loader is turned uphill can also be hazardous.

Stay Alert for People Moving through the Work Area

- When loading a truck you should always know where the driver is.
- Avoid loading over the cab of a truck even if the driver is in a safe spot. Someone else could have gone inside, for any number of reasons. Avoid working where unseen passersby might be.
- Slow down the work cycle and use slower travel speeds in congested or populated areas. Use a commonly understood signal so that other members of the work crew can warn the operator to slow or halt work in an impending hazardous situation.

Operation



Be Prepared – Get to Know All Operating and Safety Instructions

This is the Safety Alert Symbol. Wherever it appears – in this manual or on safety signs on the machine – you should be alert to the potential for personal injury or accidents. Always observe safety precautions and follow recommended procedures.

Operate While Seated at the Operator’s Station ONLY

Never reach in through a window to work a control. Do not try to operate the wheel loader unless you are in the command position – seated at the controls. You should stay alert and focused on your work at all times but DO NOT twist out of the seat if job activity behind you (or to the side) requires your attention.

Use a spotter or signal person if you cannot see clearly and something is happening behind you.

Replace damaged safety labels and lost or damaged operator’s manuals.

Do not let anyone operate the machine unless they have been fully and completely trained, in safety and in operation of the machine.

Learn the Signal Words Used with the Safety Alert Symbol

The words “CAUTION,” “WARNING,” and “DANGER” used throughout this manual and on labels on the machine indicate hazards or unsafe practices. All three statements indicate that safety is involved. Observe the precautions indicated whenever you see the Safety Alert “Triangle,” no matter which signal word appears next to the “Exclamation Point” symbol.



Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. It may also be used to alert against a generally unsafe practice.



Indicates a hazardous situation that, if not avoided, could result in serious injury or death. It may also be used to alert against a highly unsafe practice.



Indicates a hazardous situation that, if not avoided, is very likely to cause death or extremely serious injury. It may also be used to alert against equipment that may explode or detonate if handled or treated carelessly.

Before Starting the Engine

Do a “pre-start” safety check:

- Walk around your machine before getting in the operator’s cab. Look for evidence of leaking fluid, loose fasteners, misaligned assemblies or any other indications of possible equipment hazard.
- All equipment covers and machinery safety guards must be in place, to protect against injury while the machine is being operated.
- Look around the work-site area for potential hazards, or people or property that could be at risk while operation is in progress.
- NEVER start the engine if there is any indication that maintenance or service work is in progress, or if a warning tag is attached to controls in the cab.
- A machine that has not been used recently, or is being operated in extremely cold temperatures, could require a warmup or maintenance service prior to start up.
- Check gauges and monitor displays for normal operation prior to starting the engine. Listen for unusual noises and remain alert for other potentially hazardous conditions at the start of the work cycle.
- Check tire inflation and check tires for damage or uneven wear. Perform maintenance before operation.

Never Use Ether Starting Aids

An electric-grid type manifold heater is used for cold starting. The glowing heater element can cause ether or other starting fluid to detonate, causing injury.

Mounting and Dismounting

- NEVER get on or off a moving machine. Do not jump on/off. The entry/egress path should be clear of mud, oil and spills and mounting hardware must be kept tight and secure.
- Always use handholds or steps and maintain at least 3-point contact of hands and feet. Never use controls as handholds.
- NEVER get up from the operator's seat or leave the operator's station and dismount the machine if the engine is running.

Observe General Safety Rules

Only trained and authorized personnel, with a good knowledge and awareness of safe procedures, may be allowed to operate or perform maintenance or service on the wheel loader.

All personnel at the work-site should be aware of assigned individual responsibilities and tasks. Communication and hand signals used should be understood by everyone.

Terrain and soil conditions at the job site, approaching traffic, weather-related hazards and any above or below ground obstacles or hazards should be observed and monitored by all work crew members.

Engine Ventilation

Engine exhaust gases can cause loss of judgment, loss of alertness, and loss of motor control. These gases can also cause unconsciousness, serious injury and fatal accidents.

Make sure of adequate ventilation before starting the engine in any enclosed area.

You should also be aware of open windows, doors or ductwork into which exhaust may be carried, or blown by the wind, exposing others to danger.

Take Time to Provide Good Visibility

Halt work if visibility is poor. Strong rains, snow, fog and extremely dusty conditions can all obscure visibility so badly that it is best to wait for weather to change or dust to settle before continuing operation.

Night work in areas of limited visibility should be halted if installation of extra work lights on the machine (or work area) is necessary.

Keep dirt and dust off of windows and off the lens surfaces of work lights. Stop working if lights, windows or mirrors need cleaning or adjustment.

Fuel, Oil and Hydraulic Fluid Fire Hazards

Add fuel, oil, antifreeze and hydraulic fluid to the machine only in a well ventilated area. The machine must be parked with controls, lights and switches turned off. The engine must be off and any flames, glowing embers, auxiliary heating units or spark-causing equipment must be doused, turned off and/or kept well clear of the machine.

Static electricity can produce dangerous sparks at the fuel filling nozzle. In very cold, dry weather or other conditions that could produce static discharge, keep the tip of the fuel nozzle in constant contact with the neck of the fuel filling nozzle, to provide a ground.

Keep fuel and other fluid reservoir caps tight and do not start the engine until caps have been secured.

Boost Starting or Charging Engine Batteries

Turn off all electrical equipment before connecting leads to the battery. This includes electrical switches on the battery charger or boost starting equipment.

When boost-starting from another machine or vehicle do not allow the two machines to touch. Wear safety glasses or goggles while required parallel battery connections – positive to positive and negative to negative – are made. (24 volt battery units consisting of two series-connected twelve volt batteries have a cable connecting one positive terminal on one of the 12 volt batteries to a negative terminal on the other battery. Booster or charger cable connections must be made between the non-series-connected positive terminals and between the negative terminal of the booster battery and the metal frame of the machine being boosted or charged.) Refer to the procedure and illustration in the Engine section of this book.

Connect positive cable first when installing cables and disconnect the negative cable first when removing them. The final cable connection, at the metal frame of the machine being charged or boost-started, should be as far away from the batteries as possible.

Keep “Pinch Point” Areas Clear – Use Caution in Reverse

Use a signal person in high traffic areas and whenever the operator’s view is not clear, such as when traveling in reverse.

Anyone standing near the wheels, or working assemblies of the attachment, is at risk of being caught between moving parts of the machine.

Never allow anyone to ride on any part of the machine or attachment, including any part of the operator’s cab.

Travel Precautions

Engage frame lock for long-distance travel. When traveling the wheel loader always keep lights on; make sure that you are in compliance with all state and local regulations concerning warning flags and signs.

Attachment control levers should not be operated while traveling.

Fold in work equipment so that the outer end of the boom is as close to the machine as possible, and is low – 203 mm – 304 mm (8" – 12") above ground.

Never travel over obstacles or slopes that will cause the machine to tilt severely. Travel around any slope or obstacle that causes 10 degrees tilt, or more.

Operate Carefully on Snow and Ice and in Very Cold Temperatures

In icy cold weather avoid sudden travel movements and stay away from even very slight slopes. The machine could skid off to one side very easily.

Snow accumulation could hide or obscure potential hazards. Use care while operating or while using the machine to clear snow.

Warming up the engine for a short period may be necessary, to avoid operating with sluggish or reduced working capacity. The jolting shocks and impact loads caused by bumping or bottoming the boom or attachment are more likely to cause severe stress in very cold temperatures. Reducing work cycle rate and work load may be necessary.

Parking the Machine

Avoid making sudden stops, or parking the machine wherever it happens to be at the end of the work day. Plan ahead so that the wheel loader will be on a firm, level surface away from traffic and away from high walls, cliff edges and any area of potential water accumulation or runoff. If parking on inclines is unavoidable, block the wheels to prevent movement. Lower the bucket or other working attachment completely to the ground, or to an overnight support saddle. There should be no possibility of unintended or accidental movement.

Shutdown Control Functions

After the bucket has been lowered to the overnight storage position, move all the switches and controls to the OFF position. Move the parking brake switch to the locked position. This will apply the parking brake. Move the pilot cut-off switch to the locked position. This will disable the bucket control lever. Move the key in the ignition switch to the OFF position, and remove the key from the switch.

Engage all lock-down security equipment that may have been installed on the machine.

IMPORTANT

When hydraulic system maintenance or service work must be performed, be aware that accumulators in the system store fluid under pressure after the system has been shut down. To release the hydraulic pressure in the accumulators, operate the control with the engine off until accumulator pressure is completely dissipated.

Equipment

Rough Operation May Require Use of Certified Safety Equipment

Work in mines, tunnels, deep pits or on loose or wet surfaces could produce danger of falling rock, roll over or hazardous flying objects. Additional protection for the operator's cab could be required in the form of a FOPS/ Falling Object Protective Structure, ROPS/Roll Over Protective Structure and/or OPS/Operator Protective Structure reinforcement system.

Any reinforcement system that is installed on the machine must pass safety and certification standards and carry appropriate labeling and rating information. For example, the most often added type of reinforcement system, FOPS, must meet or exceed Society of Automotive Engineers standard SAE J1356, "Performance Criteria for Falling Object Guards for Wheel loaders."

Never attempt to alter or modify any type of protective structure reinforcement system, by drilling holes, welding or remounting or relocating fasteners. Any serious impact or damage to the system requires a complete integrity reevaluation. Reinstallation, recertification and/or replacement of the system may be necessary.

Install Additional Safety Equipment if Conditions Require

When working with a breaker or in some shear work applications, a front guard over the windshield may be required. The windshield guard may or may not be OPS/certified, depending upon the specific application and working situation.

Laminate glass protection for the front, side or rear windows may also be recommended depending upon particular site conditions.

Contact your Daewoo distributor for available safety guards and/or recommendations if there is any danger of getting hit by objects that could strike the operator's cab. Make sure that all other work-site crew members are kept well away from the wheel loader and safe from potential hazards.

Movement Alarms

If the wheel loader is equipped with an audible travel movement alarm, test the alarm on a daily basis. The audible alarm should sound as soon as the travel system is engaged.

Seat Belts Should Be Used at All Times

Whenever the engine is running, the operator should be seated at the control station with the seat belt properly engaged.

Keep a Fire Extinguisher at Hand

It is recommended that an appropriately sized (2.27 kg [5 lb] or larger) multi-purpose "A/B/C" fire extinguisher be mounted in the cab. Check and service the fire extinguisher at regular intervals and make sure that all work-site crew members are adequately trained in its use.

Maintain Standard Safety Equipment in Good Condition

Machinery guards and body panel covers must be in place at all times. Keep well clear of rotating parts. Pinch point hazards such as cooling fan and alternator drive belts could catch hair, jewelry or oversize or very loose clothing.

Safety labels must be replaced if they are damaged or become unreadable. The information on labels gives work crew members an important safety reminder. Part numbers for each label and required mounting locations are shown on Pages 1-2 through 1-4 of this section.

Safety-critical Parts Must Be Replaced Periodically

Replace the following fire-related components as soon as they begin to show any sign of wear, or at regular periodic intervals, whether or not deterioration is visible:

- Fuel system flexible hoses, the tank overflow drain hose and the fuel filler cap.
- Hydraulic system hoses, especially the pump outlet lines and front and rear pump branch hoses.
- Keep mounting brackets and hose and cable routing straps tight. Hose routing should have gradual bends.

Hydraulic Cylinder Seals Require Periodic Replacement

Check cylinder drift rate at regular intervals. Maximum allowable rates are included at the end of the Hydraulic section in the Shop Manual. Overhaul seal kits are available through Daewoo.

High Pressure Hydraulic Lines Can Store a Great Deal of Energy

Exposed hydraulic hoses on the arm or boom could react with explosive force if struck by a falling rock, overhead obstacle or other job site hazard. Extra safety guards may be required. NEVER allow hoses to be hit, bent or interfered with during operation.

The Operator's Cab Should Be Kept Clean

Clean grease and dirt from pedals and controls. This contributes to safe operation.

Cleaning also provides an opportunity to inspect equipment. Minor damage can be repaired or corrected before major problems result.

Keep the cab floor and consoles free of tools and personal items.

Wear Eye Protection and Safety Clothing – Use Proper Tools

Contain long hair, and avoid wearing loose clothes or jewelry that could get caught in controls.

Full eye protection, a hard hat, safety shoes and gloves may be required at the job site.

While working on the machine, never use inadequate tools. They could break or slip, causing injury, or they may not adequately perform intended functions.

Breathing Masks, Ear Protection May Be Required

Do not forget that some risks to your health may not be immediately apparent. Exhaust gases and noise pollution may not be visible, but these hazards can cause disabling or permanent injuries.

NOTE

The sound level in the closed operator's cab is 75 dB(A). Additional information on the machine sound and vibration levels can be found in the Shop Manual.

Asbestos Fiber Hazard

Materials containing asbestos fiber can be present on the job site. Breathing air that contains asbestos fiber can ultimately cause serious or fatal lung damage. To prevent lung damage from asbestos fiber, observe the following precautions.

1. Use a respirator that is approved for use in an asbestos-laden atmosphere.
2. Use water for cleaning and for keeping dust down.
3. NEVER use compressed air for cleaning.

Battery Electrolyte and Explosive Gases Can Be Lethal

Flush eyes with water for 10 – 15 minutes if acid is splashed in the face. Anyone who swallows acid must have **immediate** medical aid. *Call the Poison Control listing in the front cover of the telephone directory.*

Explosive battery gas can be set off by sparks from incidental contact or static discharge. Turn off all switches and the engine when working on batteries. Keep battery terminals tight. Contact between a loose terminal and post can create an explosive spark.

Disconnect Batteries Before Electrical Service or Electrical Welding

Remove cable to negative terminal first when disconnecting cable. Connect positive terminal cables first when installing a battery.

Use Low Heat Portable Lighting

Hot surfaces on trouble lights or portable work lights can set off fuel or battery explosive gases.

Maintenance

Use Warning Tag During Service

Alert others that service or maintenance is being performed and tag operator's cab controls – and other machine areas if required – with a warning notice.

Warning tags for controls are available from Daewoo distributors; see Page 1-1 for more information.

Do Not Run the Engine if Repairs or Work Are Being Performed Alone

You should always have at least two people working together if the engine must be run during service. One person needs to remain in the operator's seat, ready to work the controls or stop the machine and shut off the engine.

Always Use Adequate Equipment Supports and Blocking

Do not allow weight or equipment loads to remain suspended. Lower everything to the ground before leaving the operator's seat. Do not use hollow, cracked or unsteady, wobbling weight supports. Do not work under any equipment supported solely by a lift jack.

Do Not Work on Hot Engines or Hot Cooling or Hydraulic Systems

Wait for the engine to cool off after normal operation. Park the wheel loader on a firm, level surface and lower all equipment before shutting down and switching off controls. When engine lube oil, gearbox lubricant or other fluids require change, wait for fluid temperatures to decrease to a moderate level before removing drain plugs.

NOTE

Oil will drain more quickly and completely if it is warm. Do not drain fluids at temperatures exceeding 95°C (203°F), however do not allow full cool-down.

Cool-down is Required Prior to Radiator or Reservoir Checks

Stop the engine and allow heat to dissipate before performing service on the engine radiator or hydraulic fluid reservoir. Both assemblies have air vent levers at or near the filler cap for venting built-up air pressure. Release the levers before trying to take off filler caps and **LOOSEN CAPS SLOWLY**, prior to removal.

Pressurized Hydraulic Oil Fluid Leaks Can Be Dangerous

Fluid leaks from hydraulic hoses or pressurized components can be difficult to see but pressurized oil has enough force to pierce the skin and cause serious injury.

Always use a piece of wood or cardboard to check for suspected hydraulic leaks. Never use your hands or expose your fingers.

Obtain immediate medical attention if pressurized oil pierces the skin.



Failure to obtain prompt medical assistance could result in gangrene or other serious damage to tissue.

Use Correct Replacement Fasteners Tightened to Proper Torque

Refer to the General Maintenance section of the Shop Manual for information on tightening torques and recommended assembly compounds and always use the correct part.

Poor or incorrect fastener connections can dangerously weaken assemblies.

Dispose of All Petroleum-based Oils and Fluids Properly

Physical contact with used motor oil may pose a health risk. Wipe oil from your hands promptly and wash off any remaining residue.

Used motor oil is an environmental contaminant and may only be disposed of at approved collection facilities. Never drain any petroleum-based product on the ground or dispose of old oil in municipal waste collection containers, or in metropolitan sewer systems or rural landfills.

Check state and local regulations for other requirements.

Check Tire Pressure and Condition

Maintain tire pressure but do not over inflate. Inspect tires and wheels daily. When inflating tires, follow procedures in the Maintenance section, which include using an extension to allow you to avoid standing in front of or over a tire. Do not change a tire unless you have both experience and proper equipment.

Shipping and Transportation

Obey State and Local Over-the-Road Regulations

Check state and local restrictions regarding weight, width and length of a load prior to making any other preparation for transport.

The hauling vehicle, trailer and load must all be in compliance with local regulations governing the intended shipping route.

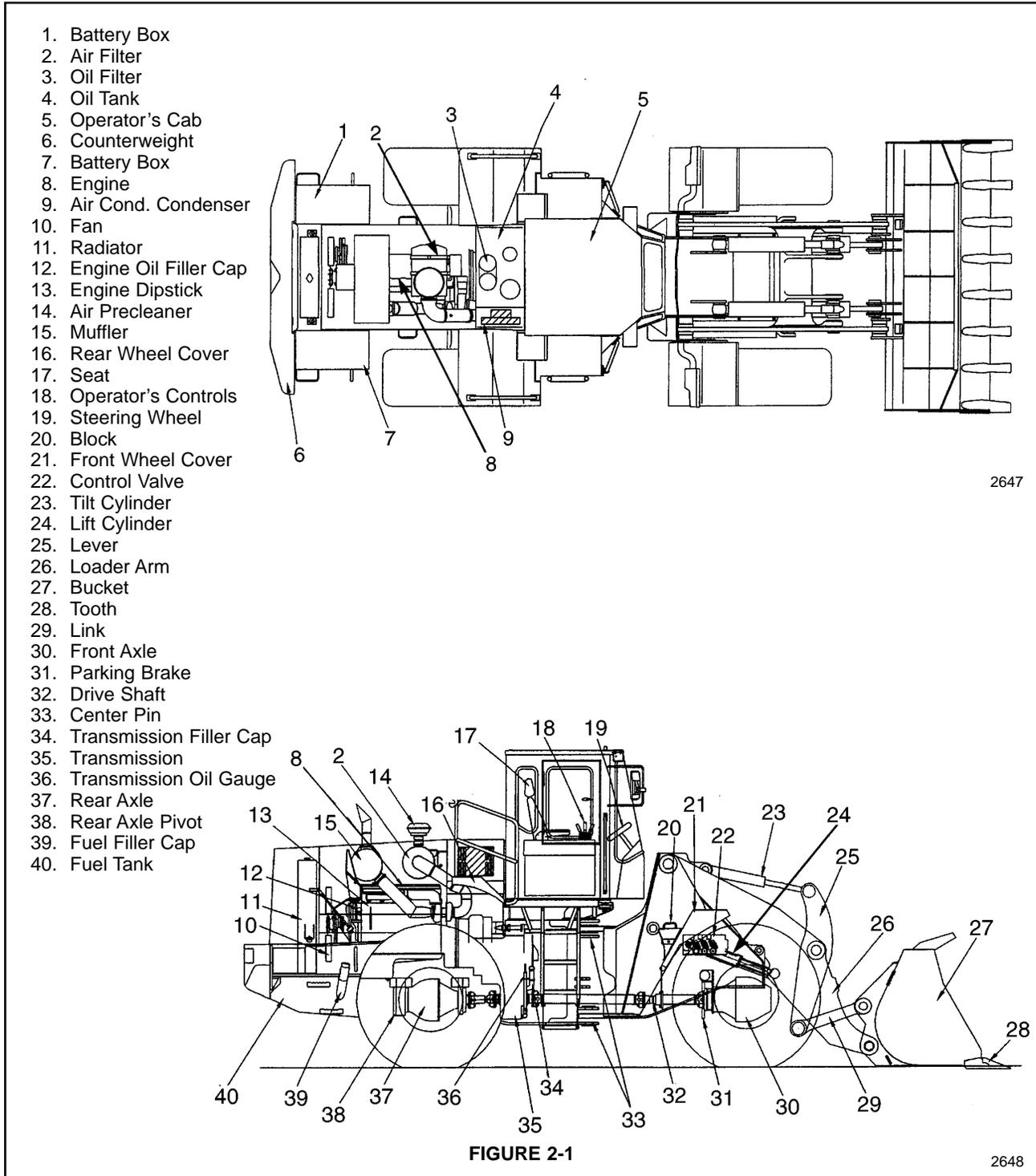
Partial disassembly or tear-down of the wheel loader may be necessary to meet travel restrictions or particular conditions at the job site.

Refer to the Transportation and Shipping section of the Operation and Maintenance Manual. Information on partial machine disassembly, loading and unloading, lifting and towing is included in the Operation and Maintenance Manual.

SPECIFICATIONS

Component Locations

Figure 2-1 identifies the location of the major machine components.



General Specifications

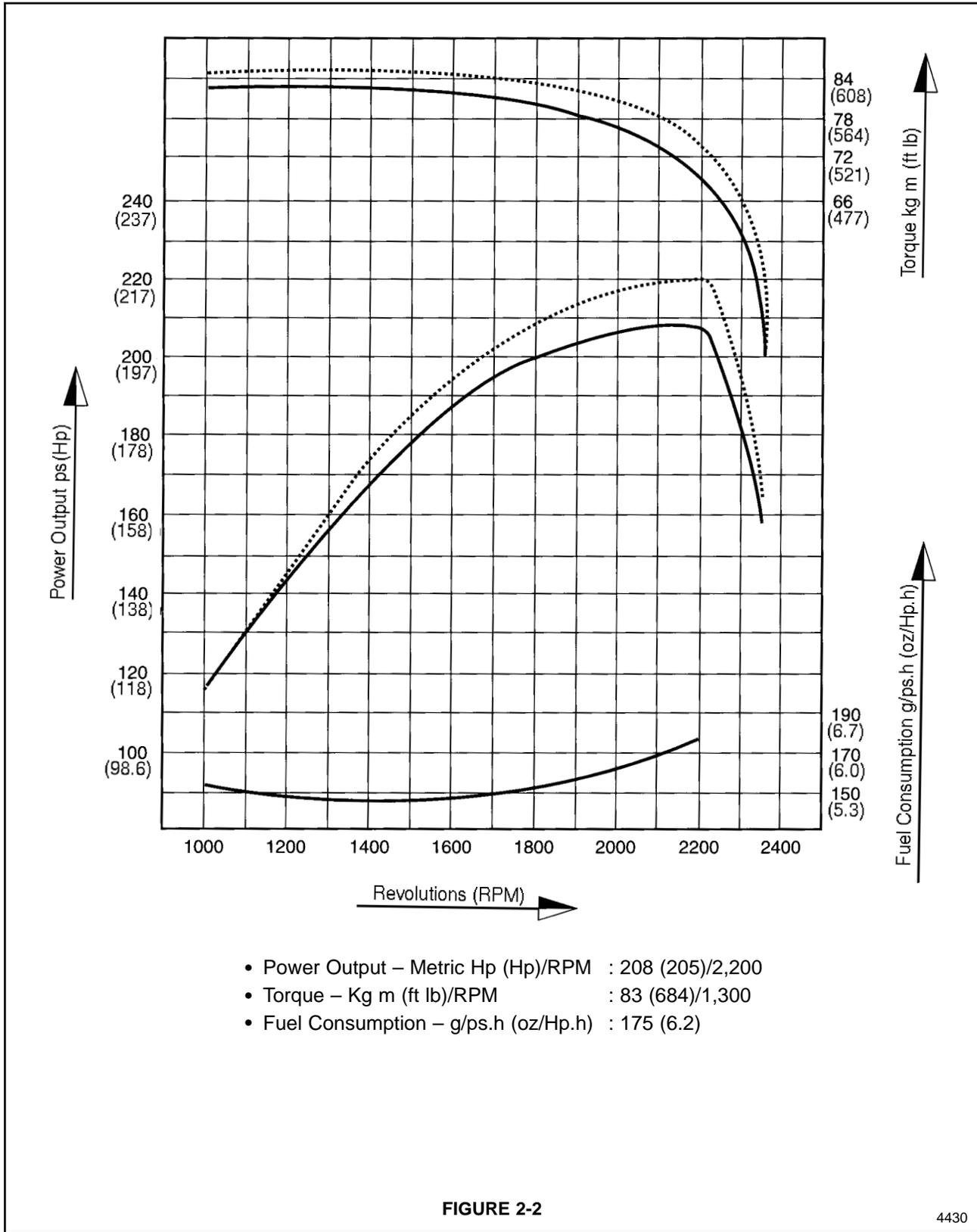
MEGA 300-III		
Item		Specification
Standard Bucket Capacity		2.4 m ³ (3.14 yd ³) Level 2.9 m ³ (3.79 yd ³) Heaped
Vehicle Weight		16,900 kg (37,258 lb)
Engine		
	Type	Daewoo D2366T
	Horsepower	208 ps (205 Hp) @ 2,200 RPM
	Max. Torque	83 kg m (600 ft lb) @ 1,300 RPM
Transmission		
	Type	Full Power Shift
	Speeds	4 Forward, 3 Reverse
Brake Systems		
	Travel Brakes	4 Wheel, Wet Disk
	Parking Brake	Drive Shaft Brake
Performance		
	Travel Speed	6 – 38 km/h (3.7 – 23.6 mph)
	Braking Distance	13.7 m @ 38 km/h (No Load) 45 ft @ 23.6 mph
	Steering Angle	± 40°
	Min. Tire Turning Radius	5,472 mm (17' 11")
	Service Load	5,220 kg (11,508 lb)
	Max. Excavation Performance	11,852 kg (26,129 lb)
	Bucket Rise Time	5.6 Seconds
	Bucket Dump Time	1.3 Seconds
	Bucket Descent Time	3.5 Seconds
	Max. Gradeability	58% (30°)
Static Tipping Load		
	Bucket Straight Ahead	12,415 kg (27,370 lb)
	Bucket Fully Turned	10,713 kg (23,618 lb)

Engine Specifications

Model	Daewoo D2366T
Type	4 Cycle In-line 6 Cylinder Diesel, Turbocharged, Water-cooled
Combustion Chamber	AVL Toroidal
Combustion System	Direct Injection
Cylinder Bore and Stroke	123 mm x 155 mm (4.84" x 6.10")
Engine Displacement	11,051 cm ³ (674 in ³)
Direction of Rotation	Counterclockwise (viewed facing flywheel)
Compression Ratio	16.5 : 1
Rated Flywheel Horsepower	208 Metric Hp (205 Hp) @ 2,200 RPM with Fan
Torque Output	83 kg m (684 ft lb) @ 1,300 RPM with Fan
Fuel Filter (Two-stage)	Felt Primary Element Paper Secondary Element
Cylinder Firing Order	1-5-3-6-2-4
Mass (Dry)	920 kg (2,028 lb)
Engine Oil	American Petroleum Institute/SAE Class CC/CD or better (Class CD-II, CE, CF-4, CG-4)
Injector Nozzle Type	NP-DLLA 150 SV 3117308
Fuel Injection Timing	5.6° BTDC
Valve Timing	Intake Open @ 18° BTDC Intake Close @ 34° ABDC Exhaust Open @ 46° BBDC Exhaust Close @ 14° ATDC
Fuel Injection Pump	NP-PE6P120/720 RS300
Governor	NP-EP/RSV 200-1300PO39C 311
Timer Type	NP-EP/SP 600-110025.5R
Supply Pump Type	NP-FP/KP
Batteries	2 x 12 V, 200 Ah
Charging System Regulator	IC Type (Integrated Circuit)
Alternator	60 amp, 24 V (IC Type)
Starter	6.6 Kw, 24 V (Magnet Type)
Engine Oil Capacity	21 l (22 qt) 25 l max./17 l min (26 qt max./18 qt min)
Engine Oil Pressure Ranges At Idle At Normal Speed	0.8 – 1.4 kg/cm ² (11.4 – 20 psi) 4.8 kg/cm ² (68.3 psi)
Thermostat Temperatures	Opening begins @ 82°C (180°F), Fully open @ 95°C (203°F)
Coolant Capacity (Engine only)	19 l (20 qt)
Engine Coolant Thermostat	Wax-Pellet Type
Maximum Engine Tilt	35 degrees (Fore/Aft and Rt/Left)
Turbocharger Type	Exhaust Gas Driven
Lubrication Pressures At Idle At Max. Engine RPM	Min. 0.8 bar (11.6 psi) Min. 2.0 bar (29 psi)
Rotor Shaft Axial Clearance	Max. 0.25 mm (0.0098")
Rotor Shaft Radial Clearance	Max. 0.5 mm (0.0197")

Engine Performance Curves

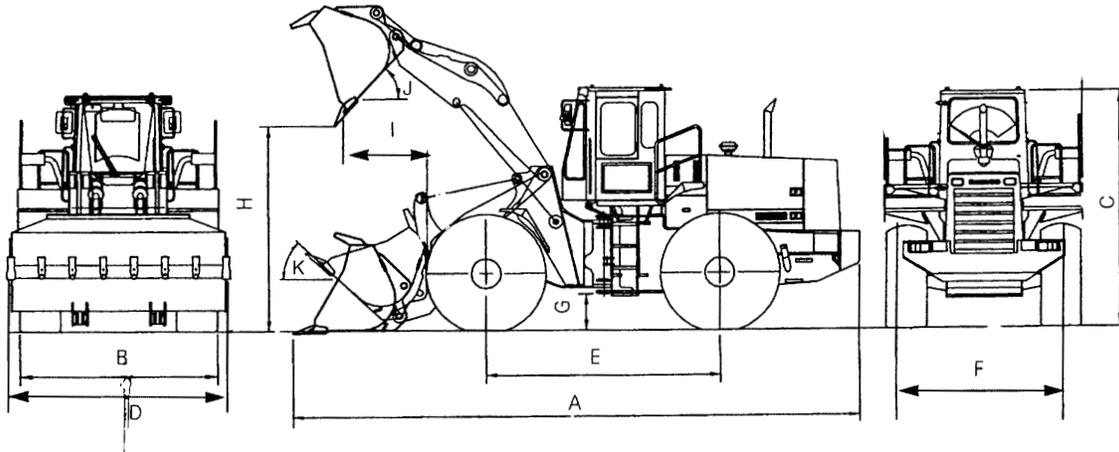
Figure 2-2 contains graphs that illustrate engine power, torque, and fuel consumption in relation to engine RPM.



Working Range and Dimensions

Figure 2-3 illustrates the exterior machine dimensions and the working range of the machine when it is equipped with a standard Bucket.

Figure 2-4 illustrates the working range when the machine is equipped with the optional Pallet Fork.
 Figure 2-5 illustrates the working range when the machine is equipped with the optional Log Fork.

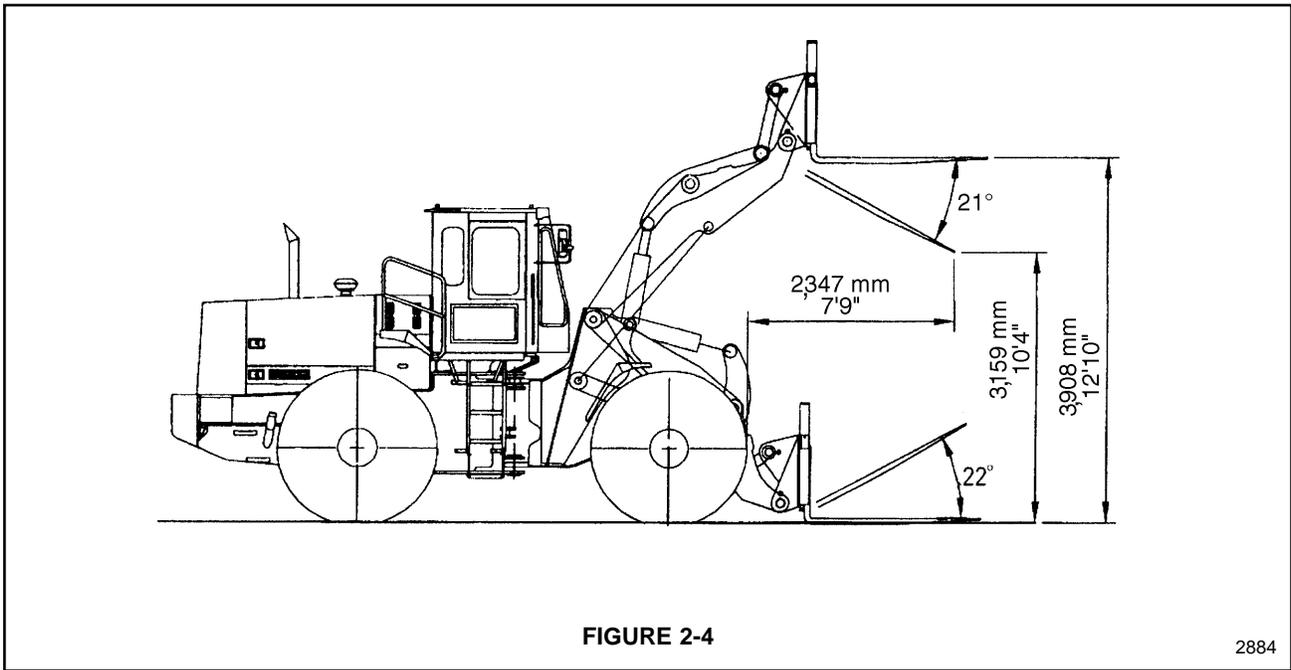


Category	Dimension
Overall Length (A)	7,940 mm (26' 1")
Overall Width, without bucket (B)	2,760 mm (9' 1")
Overall Height (C)	3,470 mm (11' 5")
Bucket Width (D)	2,920 mm (9' 7")
Wheel Base (E)	3,200 mm (10' 6")
Tread (F)	2,150 mm (7' 1")
Ground Clearance (G)	470 mm (1' 7")
Dump Height, to tooth (H)	2,837 mm (9' 4")
Dump Distance, to bucket edge (I)	1,135 mm (3' 9")
Bucket Angle, Raised (J)	45°
Bucket Angle (K), Lowered	42°
Tire Size	23.5-25-16 PR

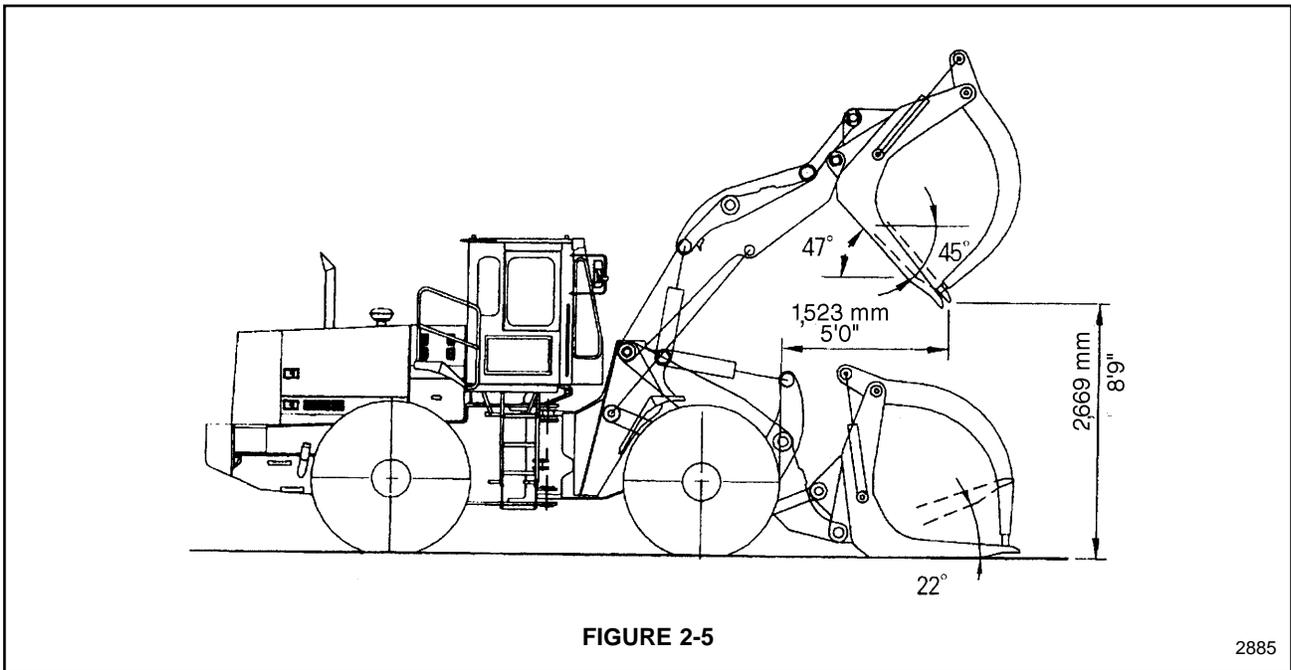
FIGURE 2-3

2883

Working Range with Pallet Fork (Option)



Working Range with Log Fork (Option)



Working Capacities

Bucket Capacity

The standard toothed bucket has a capacity of 2.9 m³ (3.8 yd³). An optional toothed bucket for heavy material has a capacity of 2.7 m³ (3.5 yd³). An optional bucket equipped with a cutting edge and no teeth has a capacity of 3.9 m³ (5.1 yd³).

Tipping Load

The Static Tipping Load with the bucket in the Over Front position is 12,415 kg (27,370 lb). With the bucket in the Fully Turned position, the Static Tipping Load is 10,713 kg (23,618 lb).

Material Weight

The data in Table 3-1 describes the weight of a cubic meter (cubic yard) of many types of workload materials.

Approximate Weight of Workload Materials

Material	Low Weight or Density, 1,100 kg/m ³ (1,850 lb/yd ³), or less	Medium Weight or Density, 1,600 kg/m ³ (2,700 lb/yd ³), or less	High Weight or Density, 2,000 kg/m ³ (3,370 lb/yd ³), or less
Charcoal	401 kg/m ³ (695 lb/yd ³)		
Coke, blast furnace size	433 kg/m ³ (729 lb/yd ³)		
Coke, foundry size	449 kg/m ³ (756 lb/yd ³)		
Coal, bituminous slack, piled	801 kg/m ³ (1,350 lb/yd ³)		
Coal, bituminous r. of m., piled	881 kg/m ³ (1,485 lb/yd ³)		
Coal, anthracite	897 kg/m ³ (1,512 lb/yd ³)		
Clay, DRY, in broken lumps	1,009 kg/m ³ (1,701 lb/yd ³)		
Clay, DAMP, natural bed		1,746 kg/m ³ (2,943 lb/yd ³)	
Cement, Portland, DRY granular		1,506 kg/m ³ (2,583 lb/yd ³)	
Cement, Portland, DRY clinkers		1,362 kg/m ³ (2,295 lb/yd ³)	
Dolomite, crushed		1,522 kg/m ³ (2,565 lb/yd ³)	
Earth, loamy, DRY, loose		1,202 kg/m ³ (2,025 lb/yd ³)	
Earth, DRY, packed		1,522 kg/m ³ (2,565 lb/yd ³)	
Earth, WET, muddy			1,762 kg/m ³ (2,970 lb/yd ³)
Gypsum, calcined, (heated, powder)	961 kg/m ³ (1,620 lb/yd ³)		
Gypsum, crushed to 3 inch size		1,522 kg/m ³ (2,565 lb/yd ³)	
Gravel, DRY, packed fragments			1,810 kg/m ³ (3,051 lb/yd ³)
Gravel, WET, packed fragments			1,922 kg/m ³ (3,240 lb/yd ³)
Limestone, graded above 2		1,282 kg/m ³ (2,160 lb/yd ³)	

Approximate Weight of Workload Materials (Continued)

Material	Low Weight or Density, 1,100 kg/m ³ (1,850 lb/yd ³), or less	Medium Weight or Density, 1,600 kg/m ³ (2,700 lb/yd ³), or less	High Weight or Density, 2,000 kg/m ³ (3,370 lb/yd ³), or less
Limestone, graded 1-1/2 or 2		1,362 kg/m ³ (2,295 lb/yd ³)	
Limestone, crushed		1,522 kg/m ³ (2,565 lb/yd ³)	
Limestone, fine			1,602 kg/m ³ (2,705 lb/yd ³)
Phosphate, rock		1,282 kg/m ³ (2,160 lb/yd ³)	
Salt	929 kg/m ³ (1,566 lb/yd ³)		
Snow, light density	529 kg/m ³ (891 lb/yd ³)		
Sand, DRY, loose		1,522 kg/m ³ (2,565 lb/yd ³)	
Sand, WET, packed			1,922 kg/m ³ (3,240 lb/yd ³)
Shale, broken		1,362 kg/m ³ (2,295 lb/yd ³)	
Sulphur, broken	529 kg/m ³ (1,620 lb/yd ³)		

IMPORTANT

Weights are approximations of estimated average volume and mass. Exposure to rain, snow or ground water; settling or compaction due to overhead weight and chemical or industrial processing or changes due to thermal or chemical transformations could all increase the value of weights listed in the table.

INSPECTION, MAINTENANCE AND ADJUSTMENT

Preventive Maintenance

Periodic checks and replacement of oil, grease, filters, etc. must be made at specific intervals, to keep the machine in good working condition. The following pages describe the items to be checked, the lubricants to be used, and the time interval between each check.

NOTE

The time interval between each service check may need to be shortened if the machine is operating in severe atmospheric conditions. Machines working in extremely hot or dusty conditions will require more frequent service checks. The total hours of machine operation are determined by the hour meter that is located on the front instrument panel.

Safety Precautions

1. Before performing any maintenance checks, move the pilot cutoff switch to the locked position. Place a warning tag on the controls so that no one begins to operate the machine while the maintenance checks are being performed.
2. Clean up all fuel spills. Fuel spills are hazardous, especially around the engine.
3. Inspect all fuel lines for leakage. Replace any lines, fittings, O-rings, or filters that show signs of wear or damage.
4. If a test procedure requires the engine to be running, keep all unnecessary personnel away from the machine.

Maintenance Intervals

Daily or Every 10 Operating Hours

- Grease Bucket Hinge Pins
- Grease Rod and Head Ends of Bucket Cylinders
- Grease Head Ends of Lift Cylinders
- Grease Loader Arm Feet
- Grease Arm-Lever Connecting Pins
- Grease Lift Cylinder Rods
- Check Engine Oil Level
- Check Transmission Oil Level
- Check Hydraulic System Oil Level
- Refill Fuel
- Drain Fuel Condensation
- Check Coolant Level
- Check Air Filter Indicator

Weekly or Every 50 Operating Hours

- Perform All Daily Service Checks
- Grease Rear Axle Pivot
- Grease Steering Cylinder Rods
- Steering Cylinder Head Ends
- Change Engine Oil and Filter*
- Replace Transmission Oil Filter*
- Hydraulic Full Flow Filter Replacement*
- Check Fan Belt Tension
- Clean Exterior of Radiator and Oil Cooler

*New Machine Break-in

Every 250 Operating Hours

- Perform All Daily and 50 Hour Service Checks
- Grease Upper and Lower Center Pins
- Grease Cooling Fan and Water Pump Pulley
- Replace Hydraulic System Pilot Filter
- Clean Air Cleaner
- Change Engine Oil and Filter
- Replace Transmission Oil Filter
- Hydraulic Full Flow Filter Replacement

Every 500 Operating Hours

- Perform All 10, 50 and 250 Hour Service Checks
- Grease Center Bearing of Front Drive Shaft
- Grease Both Universal Joints for Front Drive Shaft
- Grease Spline for Front Drive Shaft
- Grease Both Universal Joints for Rear Drive Shaft
- Grease Spline for Rear Drive Shaft
- Replace Fuel Filter Element

Every 1,000 Operating Hours

- Perform All 10, 50, 250, and 500 Hour Service Checks
- Center Axle and Axle End Oil Check
- Drain and Replace Hydraulic Oil
- Drain and Replace Transmission Fluid
- Clean Fuel Tank and Strainer
- Replace Air Cleaner Element
- Change Radiator Coolant

Every 1,500 Operating Hours

- Perform All 10, 50, 250, and 500 Hour Service Checks
- Center Axle and Axle End Oil Replacement

Annually or Every 2,000 Operating Hours

- Replace Wheel Brake Hoses, Steering Cylinder Hoses

Table of Recommended Lubricants

IMPORTANT

Do not use lubricants other than those recommended, without prior written approval from Daewoo.

Lubricant Manufacturer	Hydraulic Oil	Engine Oil	Grease	Axle Gear Oil	Transmission Gear Oil
Mobil	Mobil DTE 15M	Delvac 1330, 1340, Super 15W40, or Delvac 1	Mobilith AW1, or AW0 for cold weather	Mobilube HD 80W90	Multipurpose ATF
Shell	Tellus T46	Rotella T 15W40 or T30 (winter) or T40 (summer)	Alvania EP #2	Spirax HD 85W140	Donax TG
Chevron	EP ISO 46	Delo 300, 30 or 40 or 15W40	RPM EP 2	Delo 80W90	Chevron ATF

 **CAUTION!!!**

Do not mix oils from different manufacturers. Daewoo does not endorse specific brands but does suggest that owners select quality oils whose suppliers provide assurance that required standards will always be met or exceeded.

IMPORTANT

Fluctuating daily or weekly extremes of temperature, or operation in sub-zero freezing weather may make it impractical to use straight weight lubricants. Use good judgement in selecting lubricant types that are appropriate for climate conditions.

Inspection and Maintenance

Replacement of Lubricants and Filters

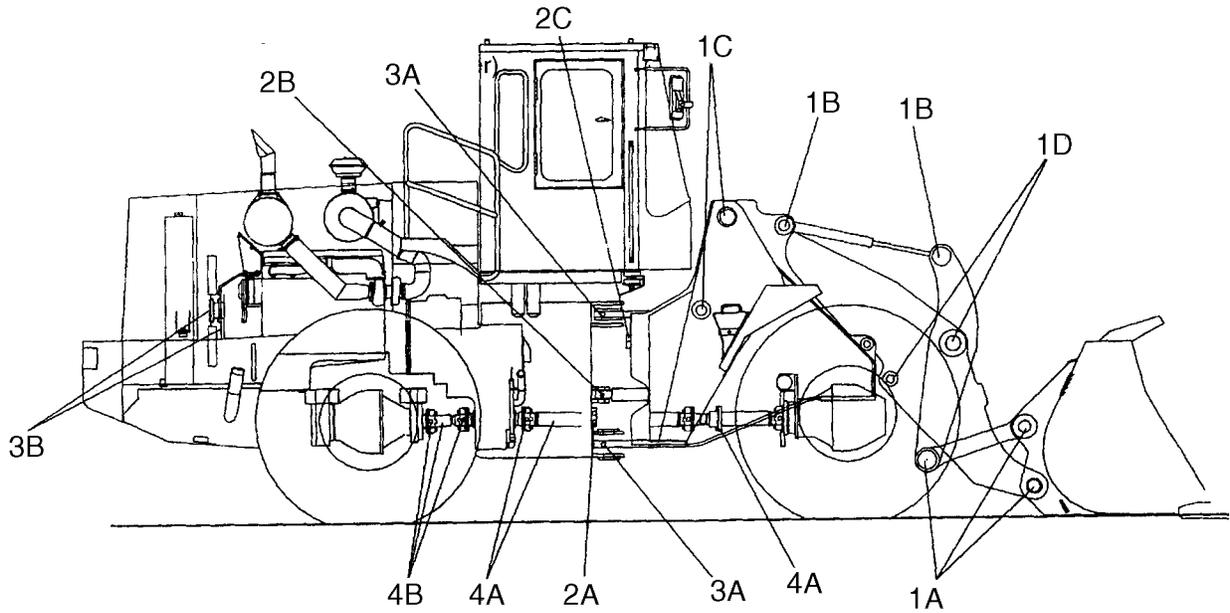


FIGURE 3-1

2822

Lubricating Grease Fittings

1. The following fittings are greased daily, or every 10 hours. If the bucket is being used in water, grease fittings 1A through 1D immediately after the machine is removed from the water. See Figure 3-1.

A. Bucket hinge pins, 1 place on each side of bucket. See Figure 3-2. Bucket link pins,

2 places on each side of bucket.

B. Bucket cylinder head ends. See Figure 3-3. Greased from two remote grease points (1, Figure 3-4).



FIGURE 3-2

2035

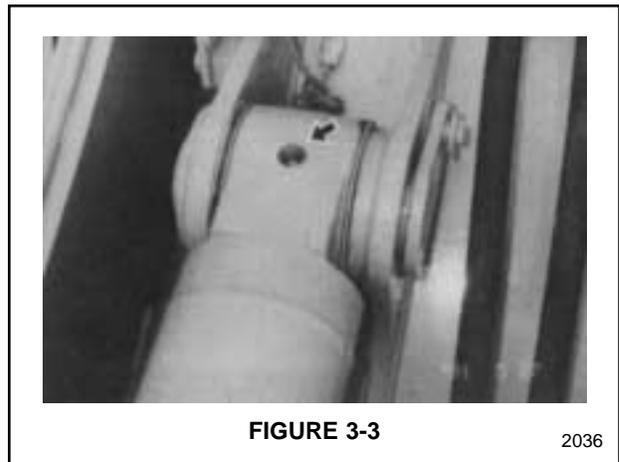


FIGURE 3-3

2036

Bucket cylinder rod ends, one place each side of bucket. See Figure 3-5.

Sample of manual. Download All 277 pages at:

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