

Safety Instructions



WARNING

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

This safety section also contains precautions for standard extra equipment and optional accessories.

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Safety decals

Safety decals are attached to the machine to alert the operator or maintenance person about potential hazards, the consequences of potential injury, and instructions and/or actions required to avoid the hazard. The location of the safety decals and the description of the decals are reviewed in the following section. Please become familiarized with all safety decals and their messages.

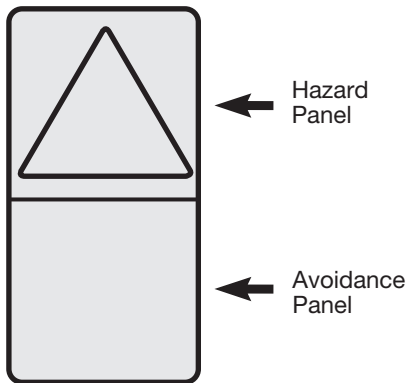
Make sure that all the safety decals are in their correct location and legible. Clean or replace the safety decals if they are damaged, missing, or the texts and pictorials are not legible. When you clean the safety decals, use a soft cloth, water, and soap. Do not use solvent, gasoline, or other harsh chemicals to clean the safety decals because this could loosen the adhesive that secures the decals to the machine. Remember, if a safety decal is attached to a part that is replaced, install a new safety decal on the replacement part.

This machine uses safety decals with and without text. The type and number of safety decals can vary depending upon geographical regions and machine models.

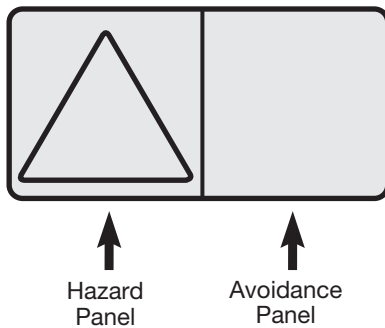
Safety Decals With Text

Safety decals with text consist of a signal word, pictorial and a text message panel. In some cases, a pictorial panel may not be part of the safety decal.

Vertical Configuration

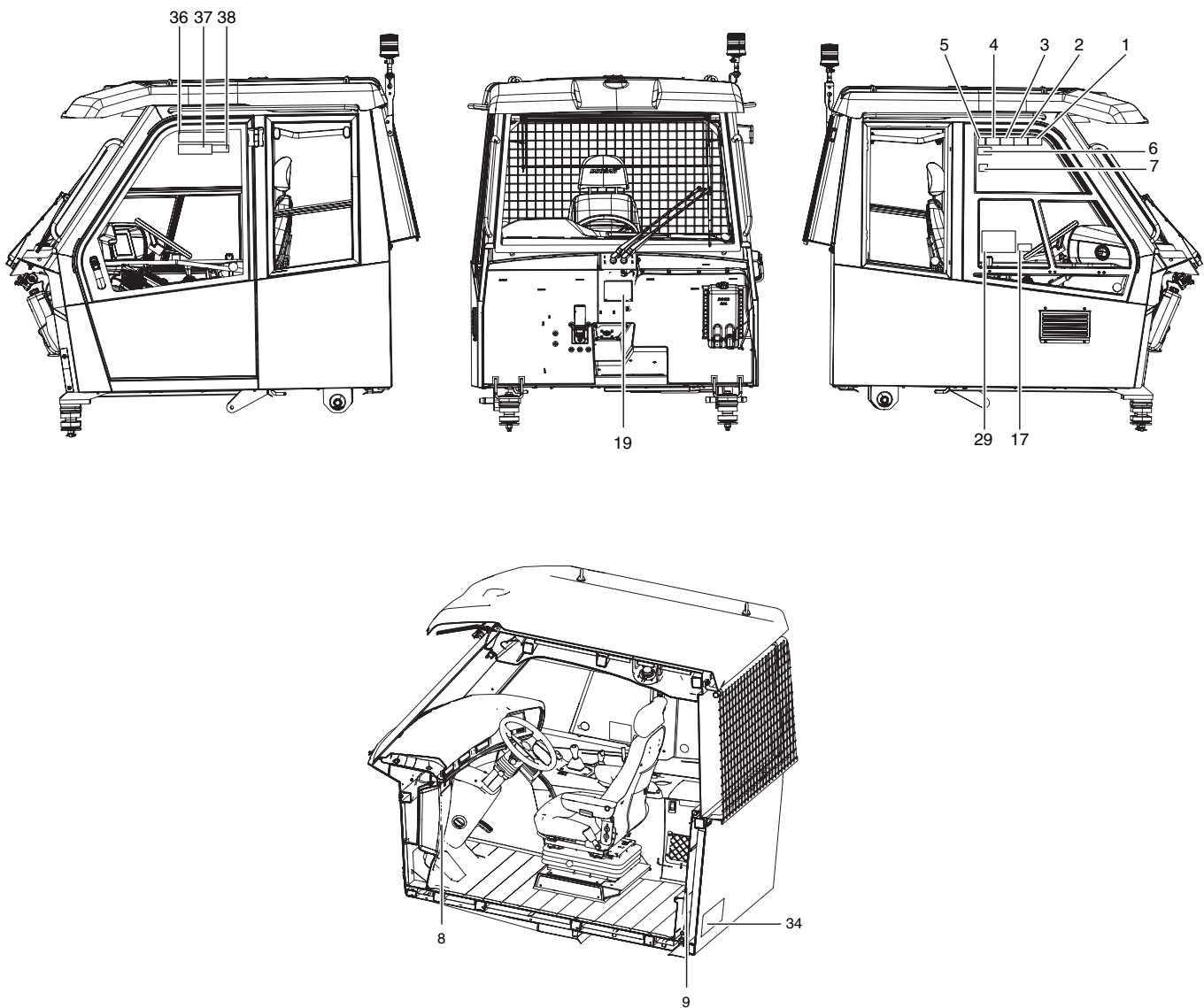


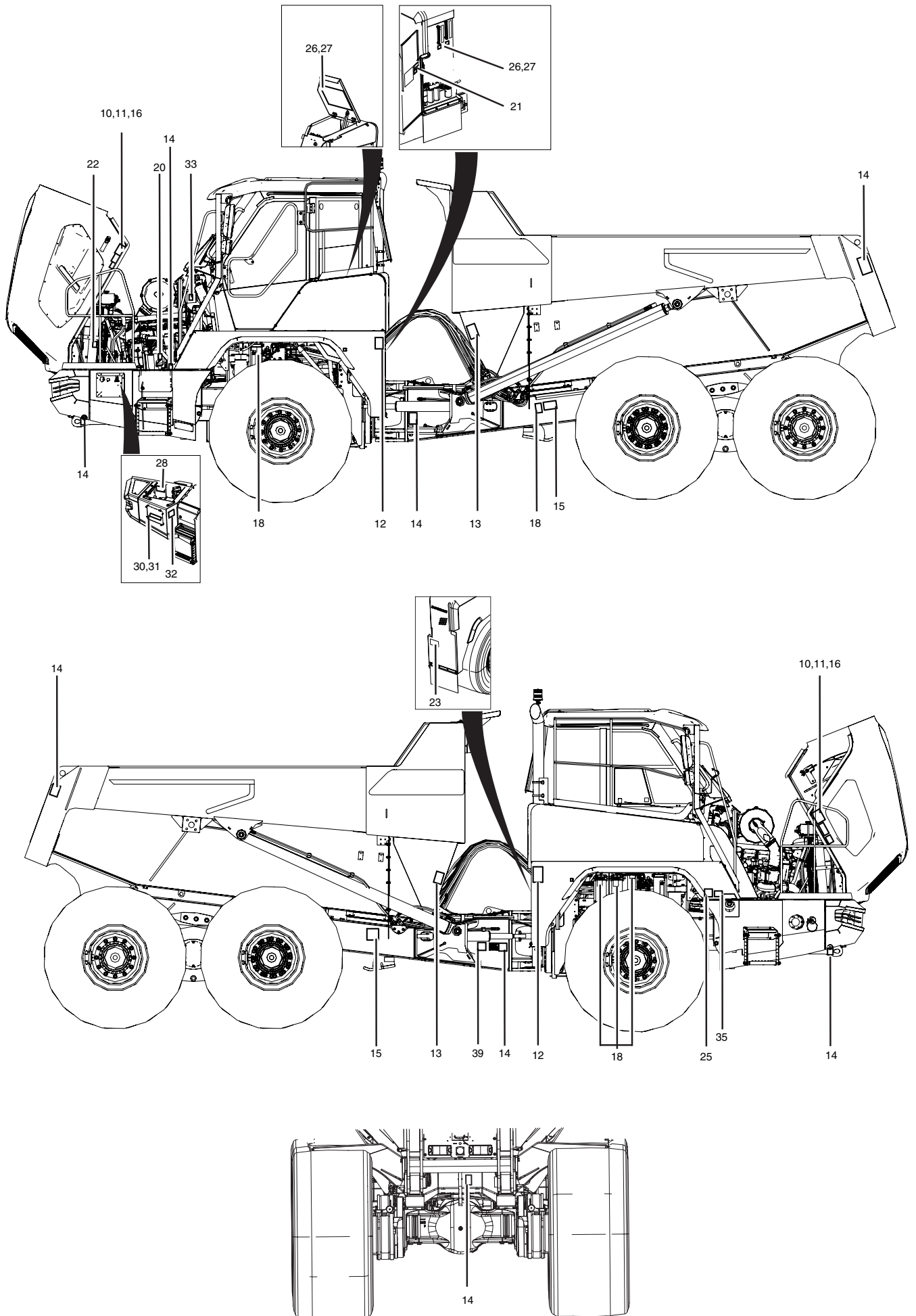
Horizontal Configuration

**Safety Decals Without Text (No-Text)**

Safety decals without text consist of a safety sign and safety information panel. The safety sign panel is located at the top or left side and the safety information panel is located at the bottom or right side of the decal depending on its configuration. The safety sign panel uses a black triangular band and a pictorial to identify the hazard and the potential consequences of the failure to follow instructions. The safety information panel uses pictorials and/or prohibition signs to identify the actions necessary to avoid the hazard.

Decal positions





1



2



3



4

**WARNING**

Never coast in neutral

- Never coast with the gear selector in the neutral position.
- The braking effect and the operator's safety will be reduced.

**WARNING**

Use of top tailgate

- Top tailgate is installed on this dump truck.
- Pay particular attention to the material handled by dump truck with top tailgate.
- Wrong material and improper use of top tailgate can cause a DANGEROUS situation and reduce the operator's safety.
- Read the operating manual (safety instructions, Page 2-39) before operation.

**WARNING**

Dangerous loads

- Explosive or inflammable loads must not be transport if the body is exhaust heated.
- Read the operating manual (safety instructions, page 2-38) before operation.

**WARNING**

Operation, inspection and maintenance

- Improper operation and maintenance can cause serious injury or death.
- Read the manual and labels before operation and maintenance. Follow instructions and warnings in the manual and on labels on the dump truck.
- Always keep the manual in the cab. If this manual is lost, please contact your Hyundai Dealer for a replacement.

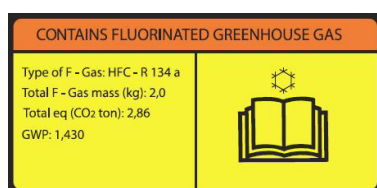
5

**WARNING**

Engine speed

- ALWAYS keep the engine speed below max. 2400 rpm. The retarder will be automatically engaged.

6

**WARNING**

HFC (hydrofluorocarbon) gas

7

**WARNING**

Emergency exit

- The emergency exit can be used by removing the hammer from the storage location and break front side window.
- Read the operating manual (safety instructions, page 2-28) before operation.

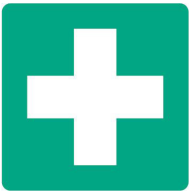
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**WARNING**

Fire extinguisher

- The fire extinguisher is located on the left hand side in the cab.
- Read the operating manual (safety instructions, page 2-26).

9



First aid kit

- The first aid kit (if installed) is located on the left hand side in the cab, below the rear side window under instructor seat.
- Read the operating manual (safety instructions, page 2-26).

10



Engine is running

- Never open the bonnet with the engine running.
- To prevent serious injury, stop the engine before opening the engine bonnet.
- Wait until all engine parts have completely stopped before touching them.
- Do not touch hot surfaces! Fingers or hands can be burnt.

11



Welding precaution

- Disconnect the batteries and unplug the connectors on the electronic control units before welding.
- Read the operation manual (safety instructions, page 2-25 before welding).

12



Limited visibility

- Keep out of this area when the engine is running, the operator has limited visibility.
- To prevent serious injury or death, carry out the following before moving the dump truck:
 - Be sure no one is on or near the dump truck.
 - Sound horn to alert people nearby.

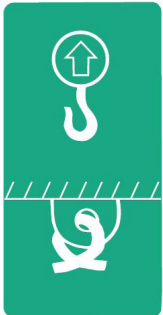
13

**WARNING**

Warning - pinch danger

- Keep clear, pinch danger in the articulation area.
- To prevent serious injury or death, carry out the following before moving/turning the dump truck:
 - Be sure no one is on or near the dump truck.
 - Sound horn to alert people nearby.
 - Always use the articulation lock when servicing!
- Read the operating manual (safety instructions, page 2-44).

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NOTE: Sling and/or tie down point

- Read the operating manual (safety instructions, page 2-44 and 2-60) for correct use of the sling and/or tie down point.

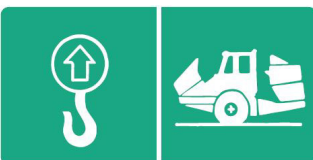
15

**WARNING**

Body support

- Do not stand underneath the body without applying the body support device.
- Always use the body support when working underneath the body.
- Empty body before body support is used.
- Read also the operating manual (safety instructions, page 2-47) before operation.

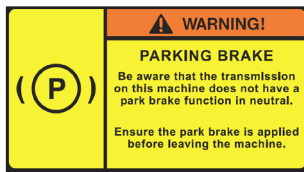
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NOTE: Sling and/or tie down point

- Read the operating manual (safety instructions, page 2-44) for correct use of the sling and/or tie down point.

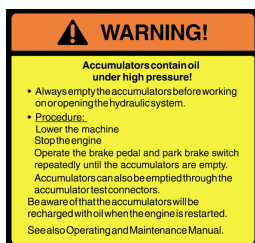
17

**WARNING**

Parking brake

- Ensure the park brake is applied before leaving the machine.

18

**WARNING**

Accumulators contain oil under high pressure

- Always empty the accumulators before working on or opening the hydraulic system.
- Read the operating manual (safety instructions, page 2-54 and chapter 7, maintenance) before servicing.

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ROPS/FOPS approval cab

- Read the operating manual (safety instructions, page 2-28).

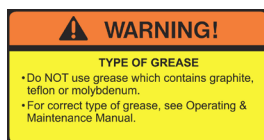
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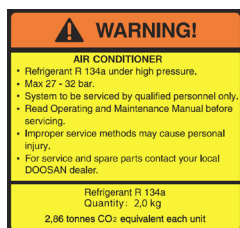
NOTE: Check oil specification

- Always check oil specifications before refilling.
- Read the operating manual (chapter 6, lubricants) before refilling.

21



22



23



24



25

**WARNING**

Type of grease

- Always check grease specifications before refilling.
- Read the operating manual (chapter 6, lubricants) before refilling.

**WARNING**

Air conditioner

- Refrigerant R 134a under high pressure.
- Read the operating manual (safety instructions, page 2-43 and chapter 7, maintenance) before servicing.

**WARNING**

Hot area!

- The exhaust pipes and nearby area may be hot. Fingers and hands can be burnt!

**WARNING**

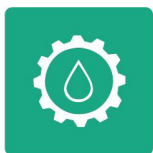
Hot coolant can spurt out

- If it is necessary to refill coolant to the expansion tank, stop the engine and allow the engine and the expansion tank to cool down.
- Slowly loosen the cap to relieve pressure before removing the cap.

NOTE: Fuel tank

- Read the operating manual (safety instructions, page 2-25, 2-41 and 2-44) before refilling fuel.
- Always check fuel specification (chapter 6, lubricants) before refilling.

26



NOTE: Transmission

- Read the operating manual (safety instructions, page 2-25, 2-41 and 2-44) before refilling oil.
- Always check oil specification (chapter 6, lubricants) before refilling.

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NOTE: Hydraulic tank

- Read the operating manual (safety instructions, page 2-25, 2-41 and 2-44) before refilling oil.
- Always check oil specification (chapter 6, lubricants) before refilling.

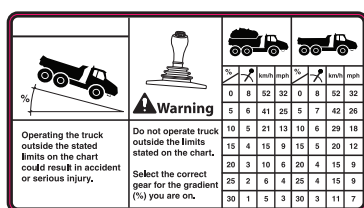
28

**WARNING**

Battery acid and gases (Inside battery compartment)

- Battery electrolyte contains sulfuric acid and can quickly burn the skin and eat holes in clothing. Flush the area with water if you have spill acid on yourself.
- Batteries generate hydrogen gas. Hydrogen gas is very explosive, and is easily ignited with a small spark or flame.
- Read the operating manual (safety instructions, page 2-55) before working with batteries.

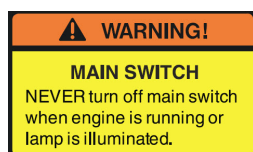
29

**WARNING**

Downhill Welding precaution (Inside battery compartment)

- Do not operate Dumper outside the limits stated on the chart

30

**WARNING**

Main switch

- Never turn off battery main switch when engine is running.
- Never turn off battery main switch when ignition is on.
- Read the Operating Manual (Chapter 3)

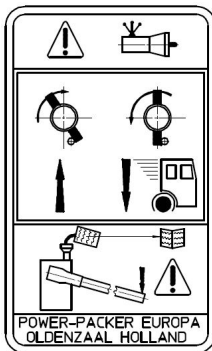
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33



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650 Nm			
	max. 50 km/h	max. 50 km/h	max. 50 km/h
Hyundai (T4/Stage V)	4.75 (10.5)	4.75 (10.5)	4.75 (10.5)
Hyundai (T4/Stage V)	4.75 (10.5)	4.75 (10.5)	4.75 (10.5)
Hyundai (T4/Stage V)	4.75 (10.5)	4.75 (10.5)	4.75 (10.5)
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Hyundai (T4/Stage V)	4.75 (10.5)	4.75 (10.5)	4.75 (10.5)

650 Nm			
	max. 50 km/h	max. 50 km/h	max. 50 km/h
Hyundai (T4/Stage V)	4.75 (10.5)	4.75 (10.5)	4.75 (10.5)
Hyundai (T4/Stage V)	4.75 (10.5)	4.75 (10.5)	4.75 (10.5)
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Hyundai (T4/Stage V)	4.75 (10.5)	4.75 (10.5)	4.75 (10.5)
Hyundai (T4/Stage V)	4.75 (10.5)	4.75 (10.5)	4.75 (10.5)

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To be placed at the fuel filler
for Tier4i / Tier4 engines

ULTRA LOW SULFUR
FUEL ONLY
15ppm Sulfur Maximum



WARNING

Emergency stop of engine.

In case of danger situation push the button to emergency stop the engine.

NOTE: Urea tank (Only T4/Stage V)

- Read the operating manual (safety instructions, page 2-25) before refilling urea.

NOTE: Hydraulic cab pump

- Always position valve correctly before operating the truck
- Make sure valve is positioned correctly to prevent trapped pressure.

NOTE: Tire pressure

- Check tire pressure.
- Do not exceed tire pressure limits.

(For tire pressure, refer to the Hyundai Operating & Maintenance Manual Chapter 8)

(For regional sticker sets, refer to the Hyundai Parts Catalog)

NOTE: Low sulfur fuel

By law, this label must be affixed at the filler cap on all engines certified in accordance with Tier4/Stage V

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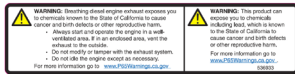


WARNING

Main switch

- Never turn off battery main switch when engine is running.
- Leave battery main switch on until battery shutdown indicator has turn off.
- Read the Operating Manual (Chapter 3)

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WARNING

Breathing diesel engine exhaust warning

- Read the operating manual (safety instructions, page 2-66) before start the engine.

38



WARNING

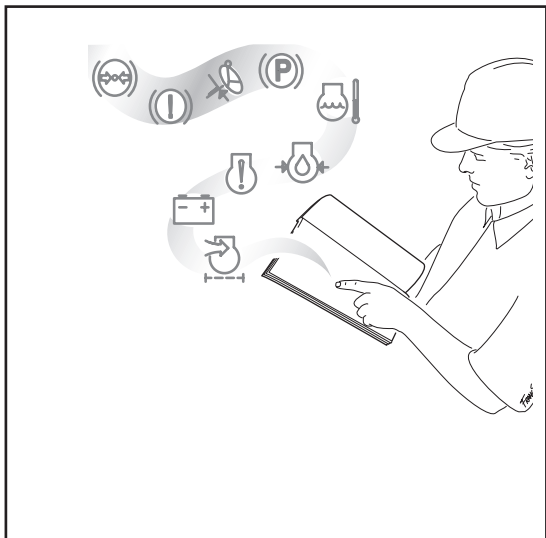
Cancer and Reproductive Harm

39



NOTE: Stage V

Certified european nonroad Stage V standards with exhaust after-treatment systems.

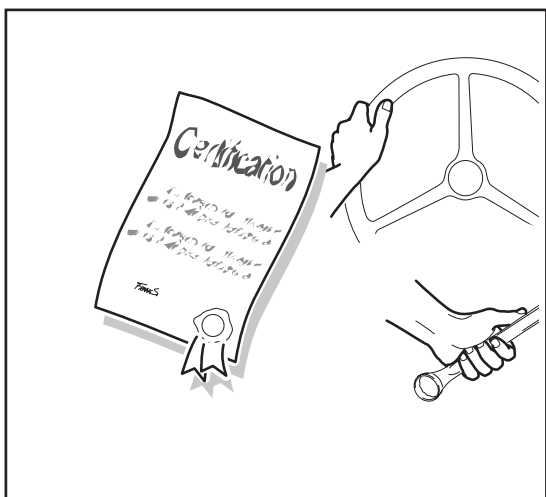


Safe operation is operator's responsibility

Only trained and authorised personnel should operate and maintain the machine.

Follow all safety rules, regulations and instructions when operating or performing maintenance on machine.

- Do not operate machine if you are under the influence of drugs or alcohol. An operator who is taking prescription drugs must get medical advice to determine if he or she can safely operate the machine.
- When working with other personnel on a work site, be sure that all personnel know the nature of work and understand all hand signals that are to be used.
- Be sure that all guards and shields are installed in their proper location. Have guards and shields repaired or replaced immediately if damaged.
- Be sure that you understand the use and maintenance of all safety features such as the articulation lock and seat belt. Use them always.
- Never remove, modify or disable any safety features. Always keep them in good operating condition.
- Always check for and know the location of underground and overhead utility lines before working.
- Failure to use and maintain safety features according to instructions in this manual, Safety Manual and Shop Manual can result in death or serious injury.



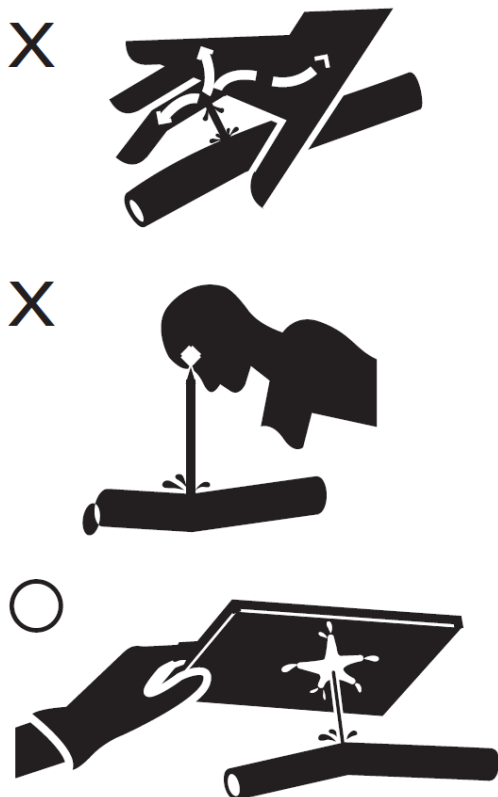
Know your machine

Know how to operate your machine. Know the purpose of all controls, gauges, signals, indicators and monitor displays. Know the rated load capacity, speed range, braking and steering characteristics, turning radius and operating clearances. Keep in mind that rain, snow, ice, loose gravel, soft ground, slopes, etc., can change operating capabilities of your machine.

Remember the check points and checking method of fluid levels.

Pressurised fluids

Pressurised air or fluids can cause debris and/or fluids to be blown out. This could result in death or serious injury.



WARNING

AVOID DEATH OR SERIOUS INJURY

Pressurised oil has enough force to pierce skin and cause death or serious injury. If fluid enters skin or eyes, get immediate medical attention from a physician familiar with this injury.

Immediately after operation is stopped, coolant, engine oil, and hydraulic oil are at their highest temperatures and the radiator and hydraulic tank are still under pressure. Always wait for temperature to cool down. Follow specified procedures when attempting to remove caps, drain oil or coolant, or replacing filters. Always wait for temperature to cool down, and follow specified procedures when performing these operations. Failure to do so can result in death or serious injury.

When pressurised air and/or pressurised water is used for cleaning, wear protective clothing, protective shoes, and eye protection. Eye protection includes goggles or a protective face shield.

Pressure can be trapped in a hydraulic system and must be relieved before maintenance is started.

Releasing trapped pressure can cause sudden machine movement or attachment movement. Use caution if you disconnect hydraulic lines or fittings.

High-pressure oil that is released can cause a hose to whip or oil to spray. Fluid penetration can result in death or serious injury. If fluid enters skin or eyes, get immediate medical attention from a physician familiar with this injury.

Obey all local laws and regulations for disposal of liquids.

To prevent hot coolant from spraying out, stop engine and wait for coolant to cool. Using gloves, slowly loosen cap to relieve pressure.

Flying or falling objects

On work sites where there is a potential hazard that flying or falling objects can come in contact with operator's cabin, select and use a guard to match operating conditions for additional operator protection.

Working in mines, tunnels, deep pits, and loose or wet surfaces, can produce hazards of falling rocks or flying objects. Additional protection for operator's cabin may be required such as a Falling Object Protective Structure (FOPS) or window guards. Contact your Hyundai distributor for information on available protective guards.

To prevent personnel from being struck by flying objects, keep personnel out of work area.



Personal protective equipment

Do not wear loose clothing and accessories. Secure long hair. These items can snag on controls or on other parts of equipment.

Do not wear oily clothes. They are highly flammable.

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. Breathing masks and/or ear protection may be required.

Wear a hard hat, safety shoes, safety goggles, mask, leather gloves, earplugs and other protective equipment, as required.

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

Correction of machine problems

If any machine problems are found during operation and maintenance (noise, vibration, smell, incorrect gauges, smoke, oil leakage, etc.), or if any abnormal warning alerts are displayed on display monitor, stop the machine immediately and take the necessary corrective actions. Do not operate the machine until problem has been corrected.

Crushing and cutting



Keep objects away from moving fan blades. Fan blades can throw and cut objects.

Do not use a wire rope that is kinked or frayed, or a wire rope with any loss of diameter. Wear leather gloves when handling a wire rope.

When striking a loose retainer pin, it can fly out and can cause a serious injury. Make sure that area is clear of personnel when striking a retainer pin. To avoid injury to your eyes, wear safety goggles when striking a retainer pin.

Do not put your hand, arm or any other part of your body between movable parts. If going between movable parts is necessary, always position and secure work equipment so it cannot move. Properly support equipment before performing any work or maintenance under raised equipment.

If control levers are operated, clearance between machine and work equipment will change and this may lead to serious damage or can result in death or serious injury. Stay clear of areas that may have a sudden change in clearance with machine movement or equipment movement. Stay clear of all rotating and moving parts. Unless instructed, never attempt adjustments while machine is moving or while engine is running.

Do not depend on hydraulic cylinders to support raised equipment. Equipment can fall if a control is moved, or if a hydraulic line breaks, is loosened or disconnected. If it is necessary to remove guards to perform maintenance, always install guards after maintenance is completed.

Always have at least two people working together if the engine must be running during service. One person needs to remain in the operator's seat, ready to work the controls to stop the machine or stop engine, if necessary.

Hot coolant and oils - burn prevention



Do not touch any part of an operating engine. Immediately after operations are stopped, coolant, engine oil, and hydraulic oil are at their highest temperatures. The radiator and hydraulic tank are still under pressure. Always wait for temperature to cool down. Attempting to remove caps, drain oil or coolant, or replacing filters may lead to serious burns, if done when hot. Relieve all pressure in air system, hydraulic oil system, lubrication system, fuel system, and cooling system, before any lines, fittings or related items are disconnected.

To prevent hot oil or coolant from spraying out, stop engine and wait for oil and coolant to cool. Using gloves, slowly loosen cap to relieve pressure.



Fire and explosion prevention

All fuels, most lubricants and some coolant mixtures are flammable and can cause a fire resulting in death or serious injury, and property damage. Flammable fluids that are leaking or spilled onto hot surfaces or onto electrical components can cause fire.

Inspect for and remove all flammable materials such as spilled fuel and oil, and debris from machine. Do not allow any flammable materials to accumulate on machine.

Always observe the following:

- Add fuel, oil, anti-freeze and hydraulic fluid to machine only in a well ventilated area. Machine must be parked with controls, lights and switches turned "OFF". Engine must be "OFF" and any flames, glowing embers, auxiliary heating units or spark causing equipment must be extinguished, or turned "OFF" and kept well clear of machine.
- Dust that is generated from repairing or grinding non-metallic hoods or non-metallic fenders can be toxic, flammable and explosive. Repair these components in a well ventilated area away from flames or sparks and wear a dust mask when grinding painted parts.



Maintenance

The machine and some attachments have components that reach high temperatures under normal operating conditions. The primary source of high temperatures are the engine and exhaust system. If damaged or incorrectly maintained, the electrical system can be a source of arcs or sparks.

Flammable debris (leaves, straw, etc.) must be removed regularly. If flammable debris is allowed to accumulate, it can cause a fire hazard. Clean machine often to avoid this accumulation. Flammable debris in an engine compartment is a potential fire hazard.

The operator's area, engine compartment and engine cooling system must be inspected every day and cleaned. This is necessary to prevent fire hazards and overheating.

Operation

Do not use machine where exhaust, arcs, sparks or hot components can contact flammable material, explosive dust or gases.

Do not operate machine near any flame.

Exhaust shields (if equipped) protect hot exhaust components from oil spray or fuel spray in case of a break in a line, hose, or seal. Exhaust shields must be correctly installed and maintained properly.

Electrical

Check all electrical wiring and connections for damage daily.

Keep battery terminals clean and tight. Repair or replace any damaged parts or wires that are loose or frayed. Clean all electrical connections and tighten all electrical connections.

Never check battery charge by placing a metal object across terminal posts. Use a voltmeter or a hydrometer.

Battery gas can explode and can result in death or serious injury. Follow procedures in this manual for connecting battery and for jump-starting. Do not jump-start or charge a frozen or damaged battery. Keep all flames and sparks away from batteries. Do not smoke in battery charging area.

Improper jumper cable connections can cause an explosion that can result in death or serious injury.

Do not charge a frozen battery. This can cause an explosion.

After market radios or other electric operated equipment in cabin must have a fuse in the electrical circuit.

Hydraulic system

Check hydraulic tubes, hoses and fittings for damage, wear or for leaks. Hydraulic lines and hoses must be properly routed and have adequate support and secure clamps. Leaks can cause fires. Never use a flame or bare skin to check for leaks.

Tighten or replace any parts that show leakage.

Check that all hose and tube clamps, guards, and cushions are securely attached. If they are loose, they can vibrate during operation and rub against other parts. This can cause damage to hoses and cause high-pressure oil to spray on hot surfaces, causing a fire and death or serious injury.

Always clean fluid spills. Do not use petrol or diesel fuel for cleaning parts. Use commercial non-flammable solvents.



Fuelling

Use caution when you are refuelling a machine.

Fuel is flammable and can catch fire if it is brought close to a flame.

Stop engine and let it cool before adding fuel. Do not smoke while you are refuelling a machine. Do not refuel a machine near flames or sparks. Fill fuel tank outdoors.

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

Store fuels and lubricants in properly marked containers away from unauthorized personnel. Store oily rags and any flammable materials in protective containers.

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

Always place plastic fuel containers on the ground before filling.



Never use starting gas

Do not use ether or starting fluids on any engine that has glow plugs, or an electric grid type manifold heater. These starting aids can cause an explosion and result in death or serious injury.

Use procedures in this manual for connecting battery and for jump-starting.

Welding and grinding

Always clean machine and attachment, disconnect battery switch, and disconnect wiring from electronic controllers before welding. Cover rubber hoses, battery and all other flammable parts. Keep a fire extinguisher near machine when welding.

Toxic dust or gas can be produced when grinding or welding painted parts. Grinding or welding painted parts must be done in a well ventilated area. Wear a dust mask when grinding painted parts.

Dust generated from repairing non-metallic parts such as hoods, fenders or covers can be flammable or explosive.

Repair such components in a well ventilated area away from flames or sparks.

Do not weld on lines or on tanks that contain flammable fluids.

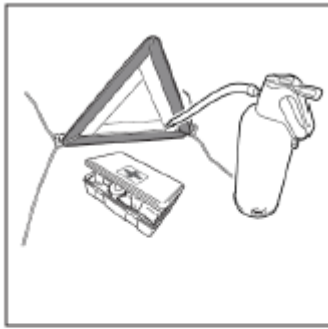
Do not flame cut lines or tanks that contain flammable fluid. Clean any such lines or tanks thoroughly with a non-flammable solvent before welding or flame cutting.

If a fire occurs

If a fire occurs:

- Do not attempt to move or continue operations.
- Turn starter switch "O" (OFF) position to stop engine.
- Use handrails and steps to get off machine.
- Immediately call for help or fire station.
- When using a fire extinguisher, always aim at base of fire.
- If an optional fire extinguishing system is in place, be familiar with its operating procedures.

NOTE: Depending on job conditions, other procedures could be necessary if a fire occurs.



Fire Extinguisher, First-Aid Kit (Emergency Medical Kit) and Warning triangle

To be prepared in the event of a fire:

- Be sure that fire extinguishers have been provided and read labels to ensure that you know how to use them. It is recommended that an appropriately sized (2.27 kg [5 lb] or larger) multipurpose A/B/C fire extinguisher be mounted in cabin. Check and service fire extinguisher at regular intervals and make sure that all work site crew members are adequately trained in its use.
- Inspect fire extinguisher and service fire extinguisher regularly.
- Follow instructions on extinguisher instruction plate.
- Keep a first aid kit in storage compartment and keep another kit at work site. Check kit periodically and keep it properly supplied.
- Keep emergency numbers for doctor, ambulance service, hospital and fire department readily available.
- If the warning triangle is present, keep it in its storage location in the toolbox of the right hand side fender.

Electrical System and Electrical Shock

Never short across starter terminals or across batteries. Shorting could damage electrical system and engine neutral start system.

When engine is running or immediately after it has stopped, high voltage is generated at injector terminal and inside engine controller, so there is a potential for an electrical shock. Never touch injector terminal or inside of engine controller.

NOTE: If it is necessary to touch injector terminal or inside engine controller, contact your Hyundai distributor.



Roll-over Protective Structure (ROPS)/Falling Object Protective Structure (FOPS)

The operator's cabin is a ROPS/FOPS certified structure for protecting the seat-belted operator. It absorbs the impact energy of a roll-over impact or falling object. Do not allow machine weight (mass) to exceed certified value on certification plate (Figure 19 page 2-12). If weight is exceeded, the operator's protective structure will not be able to fulfil its safety function.

Do not increase machine weight beyond certified value by modifying machine or by installing attachments on machine. If weight limit of protective equipment is exceeded, protective equipment will not be able to protect operator, and this can result in death or serious injury. Always observe the following:

- This machine is equipped with a protective structure. Do not remove protective structure and perform operations without it.
- Never modify the operator's cabin by welding, grinding, drilling holes or adding attachments unless instructed by Hyundai in writing. Changes to the cabin can cause loss of operator protection from roll-over and falling objects, and result in death or serious injury.
- When protective structure is damaged or deformed by falling objects or by rolling over, its strength will be reduced and it will not be able to adequately protect the operator. Contact your Hyundai distributor if you have any questions about the ROPS. Never repair a damaged protective (ROPS/FOPS) cabin.
- Always wear your seat belt when operating machine.

ROPS Certification

This machine has an operator's cabin that meets ROPS/FOPS requirements. The seat belt must be worn for rollover protection.

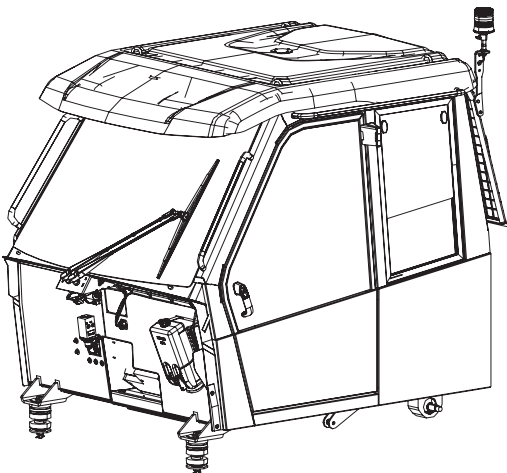
The ROPS/FOPS certification plate (Figure 19 page 2-12) is found on fire wall underneath the bonnet.

Check the operator's cabin, mounting, and hardware for damage.

Never modify the operator's cabin. Replace the cabin and hardware if damaged. See your Hyundai distributor for parts.

ROPS - Roll-over Protective Structure complies with ISO 3471.

FOPS - Falling Object Protective Structure complies with ISO 3449.





WARNING

Never modify the operator cabin by welding, grinding, drilling holes or adding attachments unless instructed in writing by Hyundai. Changes to the cabin can cause loss of operator protection from rollover and falling objects, and can result in death or serious injury.

Emergency Exit from Operator's Station

If the primary exit is blocked, the window on the right side may be used as an alternate exit. Remove hammer (A) from storage location and break front side window.



Before engine starting

Machine condition

Every day before starting engine for first time, perform the following checks and repair machine before operating, as necessary. If these checks are not properly done, death or serious injury could result.

- Check coolant, fuel, and hydraulic tank oil levels, and check for clogged air cleaner and damage to electrical wiring.
- Check operation of gauges, cameras (if equipped) and angle of mirrors, and check that pilot-cut-off switch is set to “ON” position.
- Check that pedals move freely, and pilot control lever(s) returns to “NEUTRAL” when released.
- Check that attachment is properly attached and locked.

IMPORTANT

Only use Ultra Low Sulphur Diesel (ULSD) fuel and API-CI-4/ACEA-E9 grade engine oil.

Make sure that the machine is equipped with a lighting system that is adequate for job conditions and check that lights are working properly.

Before performing checks, move machine to an area where there are no obstructions, and operate slowly. Do not allow personnel near machine.

Know maximum operating dimensions of your machine.

Work site

Before starting operations, thoroughly check work area for any hazards, such as underground utility lines, overhead electrical lines, unstable ground, excessive slopes, etc.

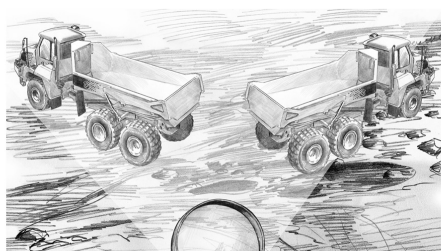
Before starting engine and moving machine, make sure that no one is underneath machine, around machine, or on machine.

Know width and length of your machine and work equipment to maintain proper clearance when you operate machine or work equipment near fences or near boundary obstacles.

Know appropriate work site hand signals and personnel that are authorised to give hand signals. Follow hand signals from only one person.

If you need to operate on a street, protect pedestrians and cars by designating a person for work site traffic duty or by erecting fences and posting “No Entry” signs around work site.

Erect barricades or fences, post “No Entry” signs, and take other steps to prevent people from coming close to or entering work site. If people come too close to a moving machine, they may be struck or caught by machine, and this can result in death or serious injury.



Check tire pressure and condition

Maintain tire pressure but do not overinflate. Inspect tires and wheels daily. When inflating tires, follow procedures in Maintenance Section, which include using an extension to avoid standing in front of or over a tire. Do not change a tire unless you understand proper tire maintenance procedures and are using proper equipment.

Refer to “Recommended Air Pressure” on chapter 5 page 25.

Mounting/Dismounting



Before getting on or off machine, if there is any oil, grease, or mud on handrails or steps, wipe it off immediately. Always keep these parts clean. Repair any damage and tighten any loose bolts.

Never jump on or off machine. In particular, never get on or off a moving machine. These actions can result in death or serious injury.

When getting on or off machine, always face machine. Maintain a three-point contact (both feet and one hand or one foot and both hands) with handrails and steps to ensure that you support yourself securely.

Never hold onto any control levers when getting on or off machine.

Do not carry tools or supplies when you mount or dismount the machine.

Cleaning

Remove all straw, wood chips, leaves, grass, paper and other flammable debris accumulated in engine compartment, mufflers and around battery. Remove any dirt from window glass, mirrors, handrails, and steps.

Do not leave tools or spare parts in operator's cabin. Vibration of machine during operation can cause tools or spare parts to fall and damage or break control levers or switches. Tools and spare parts can also get caught in spaces between control levers and cause accidental movement of work equipment causing death or serious injury.

When entering operator's cabin, always remove all mud and oil from your shoes. If you operate travel pedal with mud or oil stuck to your shoes, your foot could slip off the control, or dirt and debris may interfere with proper operation of control levers.

After using ashtray, make sure that any matches or cigarettes are properly extinguished, and be sure to close ashtray.

Clean window glass and working lights for good visibility.

Do not stick suction pads to window glass. Suction pads act as a lens and can cause fire.

Never bring flammable or explosive items into operator's cabin.

Do not leave cigarette lighters laying around operator's cabin. If temperature inside operator's cabin becomes too high, there is a potential hazard that lighter could explode.

Secure all loose items such as lunch boxes, and other items that are not a part of the machine itself.

Operator station

Inspect condition of seat belt and mounting hardware. Replace any parts that are worn or damaged. Do not use a seat belt extension on a retractable seat belt.

Adjust seat so full pedal travel can be achieved with operator's back against back of seat.

Keep all windows and doors closed on machine.

Adjust operator's seat to a position where it is easy to perform operations, and check that there is no damage or excessive wear to seat belt or mounting clamps.

Never reach in through a window to work a control. Do not try to operate the machine unless in operator's seat with the seat belt fastened.

Adjust and clean mirrors so area to rear of machine can be seen clearly from operator's seat.

When standing up from operator's seat, always place the controls in neutral and engage the parking brake. If you accidentally move work equipment levers, the machine could suddenly move and cause damage, death or serious injury.

Seat belt



Check seat belt on both the operator seat and instructor seat daily for correct function.

Inspect seat belt system more often if machine is exposed to severe environmental conditions or applications. Conduct the following inspection and replace seat belt system as necessary:

1. Check webbing. If system is equipped with a retractor, pull webbing completely out and inspect full length of webbing. Look for cuts, wear, fraying, dirt and stiffness.
2. Check buckle and latch for correct operation.
3. Make sure latch plate is not excessively worn, deformed or buckle is not damaged or casing is broken.
4. Check retractor web storage device (if equipped) by extending webbing and checking that it spools out and retracts correctly.
5. Check webbing in areas exposed to ultraviolet (UV) rays from sun or extreme dust or dirt. If original color of webbing in these areas is extremely faded and/or webbing is packed with dirt, webbing strength may be reduced.

NOTE: Contact your Hyundai distributor for seat belt system replacement parts.



WARNING

AVOID DEATH OR SERIOUS INJURY

Failure to properly inspect and maintain seat belt and seat belt system can cause lack of operator restraint and can result in death or serious injury.

Before fastening seat belt, check that there is no problem in belt mounting bracket. If it is worn or damaged, replace seat belt immediately. Fasten seat belt so it is not twisted.

Always wear seat belt when operating machine.

Visibility information

A rear view camera and mirrors provide the operator with additional means to see the work area.

NOTE: These devices may vary from one region to another, depending upon local and regional laws and regulations. If a machine is moved or sold into another region or marketplace, it is the owner's responsibility to make sure it complies with all applicable laws and regulations.



WARNING

AVOID DEATH OR SERIOUS INJURY

Failure to check for and clear people from the surrounding area of a machine can result in death or serious injury. The operator should make sure that visual aids (mirrors and camera(s)) are in proper working condition.

Your machine may be equipped with visual aids such as mirrors or a rear view camera. Even with these aids, there still may be areas around the machine which cannot be seen from the operator's seat. Always keep bystanders out of the work area. Be careful when operating and always look in direction of travel.

Adjust visual aids for best visibility around machine.

When backing up, press camera button (if equipped) to change display mode on display monitor so you can check rear and side of machine.

Before moving machine, look around work site and use mirrors and display monitor to confirm that no one is in the work area.

While operating or travelling in places with poor visibility it may be impossible to confirm conditions of the work site. Inspect and remove any obstacles around the machine that could be damaged and keep other personnel and bystanders out of the work area.

Inspect equipment and repair immediately if there are problems with visual aids. If machine cannot be fixed immediately, DO NOT use the machine. Contact your Hyundai distributor and arrange for repairs.

Work site rules

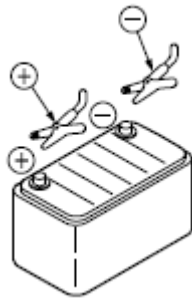
- If visibility cannot be sufficiently assured, use a flagman. The operator should pay careful attention to signals and follow instructions from flagman.
- Signals should only be given by one flagman.
- When working in dark places, turn "ON" work lights and front lights on the machine. Set up additional lighting in area.
- Stop operations if there is poor visibility, such as fog, snow, rain, or sandstorms.
- Check mirrors and rear view camera (if equipped) on machine before starting operations. Clean off any dirt and adjust view for good visibility.

When operating or travelling during poor visibility conditions, follow the preceding work site rules.

It may not be possible to adjust the visual aids to see all the way around the machine. Therefore, additional precautions such as flagman, barricades, etc., must be taken to keep personnel and bystanders out of the work area.

Boost starting or charging engine batteries

Follow these instructions to prevent an explosion or fire when connecting booster cables to batteries:



- Turn "OFF" all electric equipment before connecting leads to battery. This includes electric switches on battery charger or battery booster equipment.
- When boost starting from another machine or vehicle, do not allow two machines to touch. Wear safety goggles and gloves while battery connections are made.
- 24 volt battery units consisting of two series connected 12 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 none serial connected positive (+) terminals and between the negative (-) terminal of the booster battery and metal frame of the machine being boosted or charged. The final booster cable connection, at metal frame of the machine being charged or boost started, must be as far away from the batteries as possible.
- Connect positive (+) cable first when installing cables and disconnect negative (-) cable first when removing them.

Starting engine

Only operate the machine from the operator's seat with your seat belt fastened.

Only operate controls while engine is running.

Check for proper operation of all controls and all protective devices while you operate the machine slowly in an open area.

- Check operation of work equipment and travel system.
- Check for any problems with machine. Check for: unusual sounds, vibration, heat, odor, or improper readings from gauges. Check for any oil or fuel leaks.
- If any problem is found, stop operation and perform repairs immediately.

Do not use cellular telephones inside operator's cabin when driving or operating the machine.

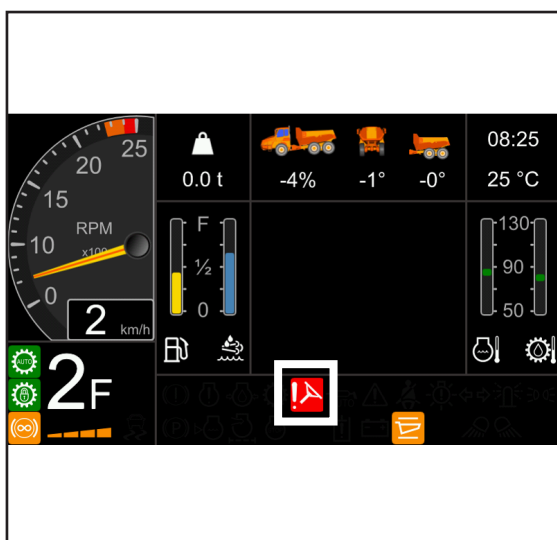
When operating the machine, do not extend your hands or head out of window.

Do not attempt to start engine by short-circuiting engine starting circuit. This can result in death or serious injury, or fire.

When starting engine, sound horn as a warning to alert personnel in the work area.

If there is a warning tag or "DO NOT OPERATE" tag hanging from machine control, do not start engine or move control.

Prevent personnel and all bystanders from walking or standing under raised dump body, unless it is properly supported.



Driving

When travelling with the machine, always keep lights on; make sure that you are in compliance with all federal, state and local laws and regulations concerning warning flags and signs.

If engine stops while machine is travelling, the emergency steering pump will be activated. It is possible to steer the dump truck when it is in motion, but the steering speed will be slower. If the engine stops, do the following:

- Stop as soon as possible and engage park brake. Continued driving may result in uncontrollable steering.
- Correct the fault before operating the dump truck again. If necessary, contact your Hyundai Distributor.

When travelling on rough ground, travel at low speed, and avoid sudden changes in direction.

Keep to permissible water depth. See "Working in Water" on page 2-62 in this manual.

When travelling over bridges or structures check first that bridge or structure can withstand weight of machine. Never exceed the maximum permitted load for bridges or structures.

It is important to keep in mind that the machine, in comparison with the rest of traffic, is a slow moving and wide vehicle which can cause traffic delays. Pay attention to traffic behind you and allow traffic to pass you.

Before operating the machine, always observe the following

precautions to prevent death or serious injury.

- When changing travel direction from forward to reverse or from reverse to forward, reduce speed and stop machine before changing travel direction.
- Sound horn to alert people in area.
- Check that there is no one in area around machine. There are restricted visibility areas behind machine.
- When operating in areas with poor visibility, designate a flagman to direct work site traffic.
- Keep unauthorized personnel away from turning radius or travel path of the machine.

Be sure to observe these precautions even if a backup alarm or mirrors are installed:

- Check that backup alarm works properly and that mirrors are clean, not damaged and properly adjusted.
- Always latch door and windows of operator's cabin in position (open or closed).
- On work sites where there is a hazard of flying or falling objects, or of objects entering operator's cabin, check that door and windows are securely closed. Install additional guards, if work site application requires them.

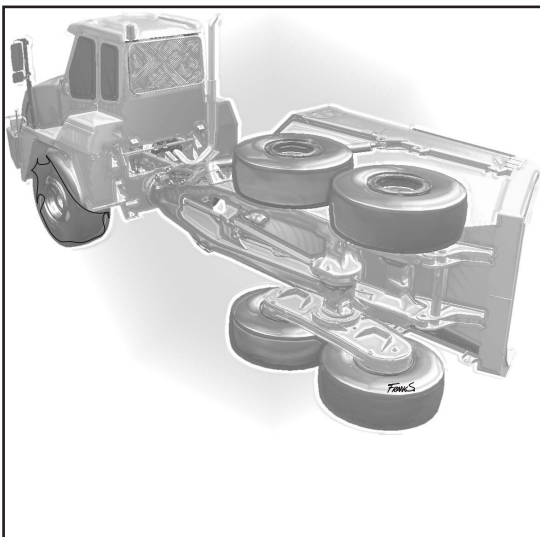
Never turn starter switch to "O" (OFF) position when travelling. This can cause a loss of steering control.

Do not operate dump body while travelling.

Never travel over obstacles or excessive slopes that will cause machine to tilt severely.

Know permitted ground pressure. Ground pressure of the machine may change depending on attachment and load.

Keep height and length of machine in mind.



Machine turning

This articulated dump truck has two frames and the design allows unrestricted turning between front and rear chassis. Overturn of one frame while the other remains level is possible.

It is possible that the operator will not receive warning signs of an overturn, therefore:

- Avoid high speed turning and hard braking in curves.
- Reduce speed, avoid sudden turning if travelling across slopes.
- The rear chassis stability decreases when tipping dump body. Be alert when body is raised.

Do not under any circumstance, drive with raised dump body.

Operation on slopes

Travelling on hills, banks or slopes that are steep, can result in the dump truck starting to slide/slip or roll over.

Check ground conditions before travelling. Be careful to avoid any ground condition which could cause the machine to roll over. Roll-over can occur when you work on hills, on banks, or on slopes. Roll-over can also occur when you cross ditches, ridges, or travel over unexpected obstructions.

Always operate machine up slopes and down slopes. Avoid operating machine across slope.

Do not change travel direction on a slope. This could result in tipping or sliding sideways of machine. Always go down to a flat place to change position of the machine, then travel back up the slope again.

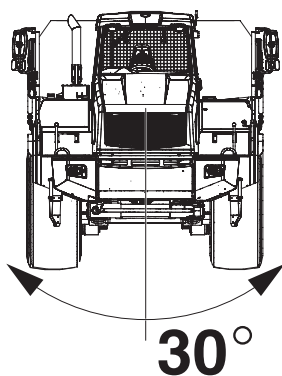
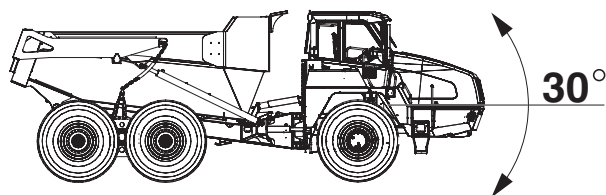
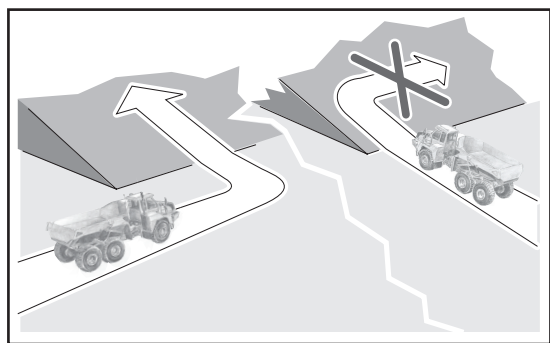
Do not travel on grass, fallen leaves, or wet steel plates. Even slight slopes can cause machine to slide down a slope. Travel at low speed and make sure that the machine is always travelling directly up or down the slope.

Keep the machine under control. Do not overload the machine beyond capacity.



DANGER

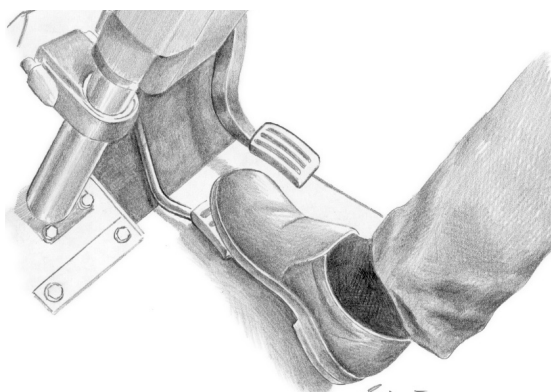
Damage to components may occur if maximum recommended gradient is exceeded.

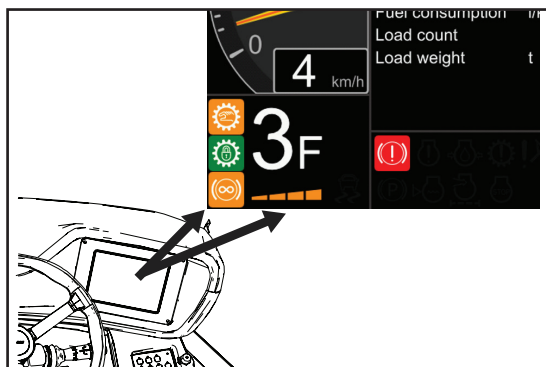


Operation of brakes

The service brakes must never be applied for long periods due to danger of fading (loss of braking effect due to overheating). To avoid fading, depress the pedal firmly and release it after the speed is reduced.

Select a gear and adjust the speed on a downhill slope so that the speed can be controlled with the engine or retarder brake, without the use of the service brake to hold the speed. Never use the service brake for long periods. Avoid racing the engine. See also Operating Instructions .





Retarder brake operation

When the operator releases his foot off the accelerator pedal, the retarder brake is automatically engaged.

Pressing the accelerator pedal slightly will reduce retarder brake power.

Pressing accelerator pedal further down, until meeting the engine rpm, will disengage the retarder brake.

Standard retarder setting is 50%, and can be reduced from 100% to 25%, with a retarder lever on the steering column. Last state is restored when ignition is switched off/on.

Engine over speed

The transmission is equipped with an emergency up-shift function to protect the engine from over speed. If the engine exceeds 2400 rpm the transmission automatically shifts up.



WARNING

When driving in 8th gear there will be no automatic up-shift to protect engine. Use service brakes to reduce speed!

Vehicle over speed protection

The vehicle maximum operating speed is set to 55 km/h as factory default. This limit can be reduced by Hyundai Dealer. If set speed limit is exceeded by 2 km/h the retarder will automatically be activated.



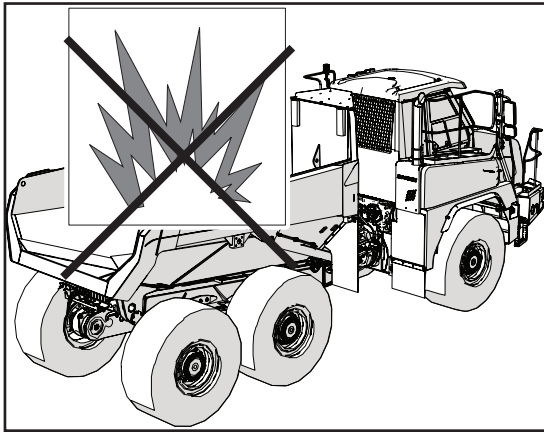
WARNING

The transmission retarder braking force will reduce if the oil temperature exceeds 130°C. Use the service brake to slow down.



DANGER

Never drive with too high transmission oil temperature. It will cause a danger situation and result serious injury or death.



Hauling hazardous loads

If the body is exhaust heated, hazardous loads such as explosives or flammable materials like petrol's, oils etc. **MUST NOT BE TRANSPORTED.**

In some countries there may be special national regulations for transportation of hazardous loads.

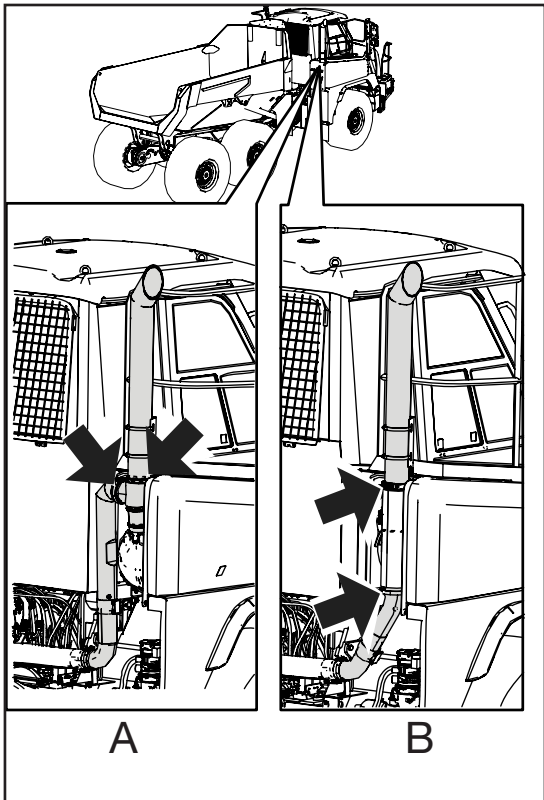
To shut off the exhaust heating, do as follows:

A - Only Engine T4F

B - Only Engines T2 /T3/ StageV

- Always allow the dump truck to cool down before changing exhaust direction.
1. Remove the clamps on both the vertical exhaust pipe and the pipe which goes to the body.
 2. Remove the plate which gives heating to the body (in the vertical exhaust pipe). Replace with the ring in the same dimension.
 3. Remove the ring from the pipe which goes to the body.
 4. Install the plate which will block the exhaust to the body (in the pipe which goes to the body).
 5. Be aware about different dimensions of the rings and plates
 6. Refit the clamps.
 7. There are 2 variations due to different engine versions, refer to Transport Guide for exhaust heating. See also chapter 5

For further information, refer to the Hyundai Shop Manual Chapter 9.



WARNING

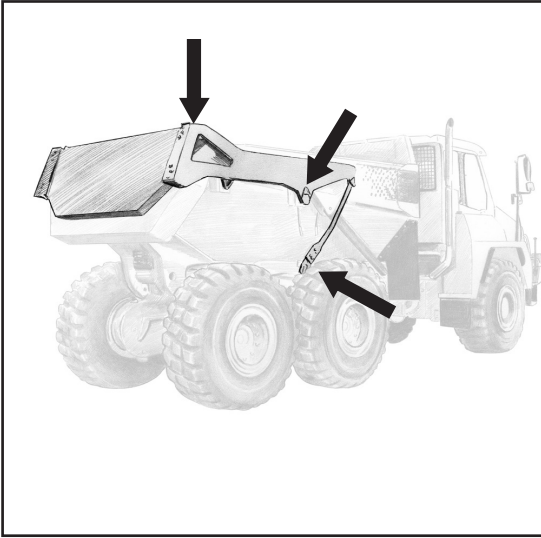
Closing top exhaust outlet could cause serious damage to the truck.

Top tailgate

If top hinged tailgate is fitted to the dump truck, particular attention should be paid to the material handled in the interest of both safety and efficiency.

The top tailgate is suitable for materials which are both well fragmented and free floating, such as dry earth, gravel, sand, coal, etc. In such instances, discharge should be continuous during the whole cycle of tipping.

However, if the material is poorly fragmented or adhesive, such as clay, bulky boulders etc., it is imperative that the top tailgate is NOT fitted. Such materials do not have an even discharge and problems could arise during the tipping cycle when the material comes in contact with the top tailgate. The tailgate can restrict material causing material to collect in the rear of the dump body. This excess material may cause the front wheels of the dump truck to raise off the ground.

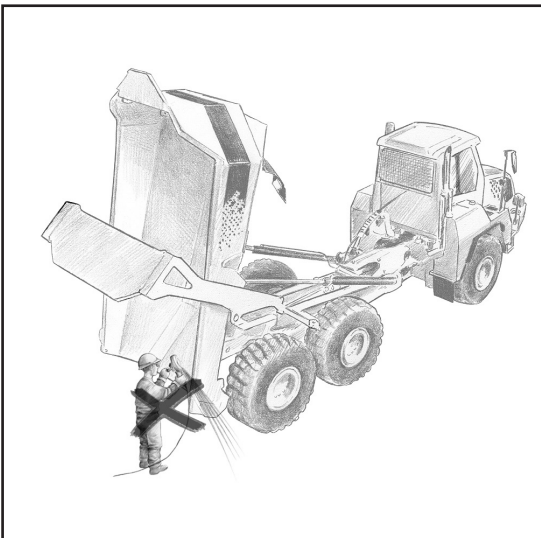


WARNING

CRUSHING CAN CAUSE DEATH OR SERIOUS INJURY

DO NOT stand under the tailgate while the dump body is raised.

The tailgate must be removed if any work is to be done inside the dump body while it is raised.



Removal of top tailgate

1. Attach wire or chain to the lifting points. The tailgate shall be disassembled in three parts, tailgate arms (left and right) and the rear tailgate plate. Be sure that wire or chain are attached to all three tailgate parts before disassembling.
2. Remove all screws (see arrows) on the tailgate (both sides) and lift off the tailgate parts.

Approx. weight:

HA30/HA30A - 1050 kg

HA45/HA40A - 1400kg

Equipment lowering with engine stopped

Before lowering any equipment with the engine stopped, clear the area around the equipment of all personnel and bystanders. The procedure to use will vary with the type of equipment to be lowered. Keep in mind most systems use high-pressure fluid or air to raise or lower equipment. The procedure will cause high-pressure air, or hydraulic pressure, or some other media to be released to lower the equipment.

Wear appropriate personal protective equipment and follow the established procedures.

Engine stop

Turn engine starter switch to “O” (OFF) position and remove engine starter switch key.

Before lowering any equipment with engine stopped, clear area around equipment of all personnel and bystanders. This procedure will cause high-pressure air or hydraulic pressure to be released to lower equipment.

Do not stop engine immediately after the machine has been operated under load. This can cause overheating and accelerated wear of engine components.

After the machine is parked, allow engine to run for at least five (5) minutes before stopping the engine. This allows hot areas of engine to begin to cool gradually.

- Do not leave operator’s seat when there is a raised load.

Parking machine

Park machine on firm and level ground away from traffic and away from high walls, drop-offs and any area of potential water accumulation or runoff. If parking on an incline is unavoidable, block wheels to prevent movement. Lower dump body onto stops to prevent unintended or accidental movement.

When parking on public roads, provide fences, barricades, signs, flags, or lights, and put up any other necessary signs to ensure that passing traffic can see machine clearly. Park the machine so the machine, flags, signs and fences do not obstruct traffic.

Position and place the pilot cut-off switch to “O” (OFF) position. This will disable all pilot control functions.

Always close door of operator’s cabin and lock all equipment to prevent any unauthorized person from operating the machine.

The hydraulic system remains pressurised, provided that the accumulators are charged even when engine is not running. Accumulator pressure should decrease in a short time (approximately one minute). While hydraulic system maintains a charge, hydraulic work tools and machine controls remain functional.

Machine movement will occur if any controls are moved. This can result in death or serious injury.

Maintenance

Improper operation and maintenance can result in death or serious injury. Read manual and safety decals before operating or maintaining the machine. Follow all instructions and safety messages.



WARNING

AVOID DEATH OR SERIOUS INJURY

Follow instructions before operating or servicing machine.

Read and understand the Operation & Maintenance Manual and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can result in death or serious injury.

Never service Hyundai equipment without instructions.

- Always fully lower dump body before doing any maintenance.
- Use correct procedure to lift and support machine.
- Cleaning and maintenance are required daily.
- Welding or grinding painted parts must be done in well ventilated areas.
- Wear a dust mask when grinding painted parts. Toxic dust and gas can be produced.
- Vent exhaust to outside when engine must be running for service.
- Exhaust system must be tightly sealed. Exhaust fumes are hazardous and can cause death or serious injury.
- Stop and allow engine to cool and clean engine of flammable materials before checking fluids.
- Never service or adjust machine with engine running unless instructed to do so in this manual.
- Avoid contact with leaking hydraulic fluid or diesel fuel under pressure. It can penetrate skin or eyes.
- Never fill fuel tank while engine running, while smoking, or when near an open flame or sparks.
- Keep body, jewelry and clothing away from moving parts, electrical components, hot parts and exhaust.
- Wear eye protection to guard from battery acid, compressed springs, fluids under pressure and flying debris when engine is running or tools are used. Use eye protection approved for welding.
- Lead-acid batteries produce flammable and explosive gases.
- Keep arcs, sparks, flames and lighted tobacco away from batteries.
- Batteries contain acid which burns eyes or skin on contact.

- Wear protective clothing. If acid contacts body, flush well with water. For eye contact, flush well and get immediate medical attention from a physician familiar with this injury.
- The maintenance procedures which are given in this manual can be performed by the owner or operator without any specific technical training. Maintenance procedures which are not in this manual must be performed **ONLY BY QUALIFIED SERVICE PERSONNEL**. Always use genuine Hyundai replacement parts.
- Only authorised personnel should service and repair the machine. Do not allow unauthorized personnel access to the machine or into work area.
- Lower dump body and stop engine before performing maintenance.
- Park machine on firm and level ground.
- Engage the parking brake.
- Stop the engine and remove key.
- Apply articulation lock.
- Check that battery relay is “OFF” and main power is shut off. (Wait for approximately one minute after turning “OFF” engine starter switch key and press horn button. If horn does not sound, the main power is shut off.)
- Put blocks against tire to prevent the machine from moving.
- To prevent injury, do not perform maintenance with engine running. If maintenance must be done with engine running, perform maintenance with at least two workers and do the following:
 1. One worker must always sit in the operator’s seat and be ready to stop engine at any time. All workers must maintain contact with other workers.
 2. When maintenance operations are near fan, fan belt, or other rotating parts, there is a potential hazard of being caught in rotating parts. Keep hands and tools away.
- Never drop or insert tools or other objects into rotating fan or fan belt. Parts can break off and hit someone.
- Do not touch any control levers or control pedals. If any control levers or control pedals must be operated, always give a signal to other workers and instruct them to move away.

- When performing maintenance of engine that causes exposure to engine noise for long periods of time, wear hearing protection while working.
- If noise from the machine is too loud, it can cause temporary or permanent hearing loss and/or other problems.
- Do not smoke when you service an air conditioner or if refrigerant gas is present.
- Inhaling fumes either from a flame or gas from a cigarette that has contacted air conditioner refrigerant can cause death or serious injury.
- Never put maintenance fluids into glass containers. Drain all liquids into a suitable container.
- Unless instructed otherwise, perform maintenance with equipment in servicing position. Refer to this manual for the proper procedure for placing equipment in servicing position.

Warning tag

Alert others that service or maintenance is being performed by attaching a “DO NOT OPERATE” warning tag to the operator’s cabin controls – and other machine areas, if required. Use of the pilot cut-off switch in the “O” (OFF) position, complies with the occupational Safety and Health Administration’s (OSHA) lockout requirements.

“DO NOT OPERATE” warning tags are available from your Hyundai distributor.

- Always attach “DO NOT OPERATE” warning tag to work equipment control lever in the operator’s cabin to alert others that service or maintenance is being performed on the machine. Attach additional warning tags on the machine, if necessary. Keep warning tags in tool box while they are not being used. If there is no tool box, store them in the owner manual storage pocket.
- If another person starts engine, and operates control levers or control pedals while you are performing service or maintenance, it can result in death or serious injury.

Attach a “DO NOT OPERATE” warning tag to starter switch or to controls before servicing or repairing equipment. Warning tags (Special Instruction, SEHS7332) are available from your Hyundai distributor.



Wheel chocks

Always place wheel chocks under the wheels to prevent rolling:

- When parking.
- During maintenance and other work.
- During transportation of dump truck.

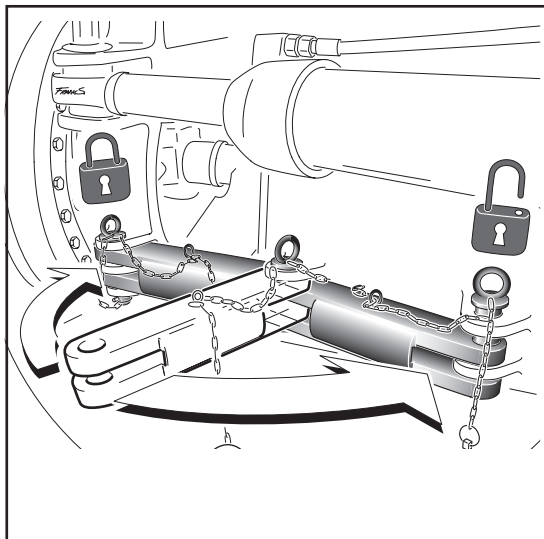
Articulation lock

The lock prevents the dump truck turning when applied.

- Apply the lock:
 1. Take out the spring cotter, lift the pin and swing the linkage forward into the hinge ear.
 2. Insert the pin through linkage and ear and refit the spring cotter.
- Release the lock:
 1. Take out the spring cotter, and remove the pin through the linkage and ear.
 2. Swing the linkage backwards, insert the pin through the linkage and ear, and refit the spring cotter.

The lock must always be applied:

- During maintenance, greasing and other work.
- When lifting or hoisting the truck, see below Lifting/Hoisting.
- During dump truck transportation, see section Transportation.



Lifting/Hoisting



WARNING

AVOID DEATH OR SERIOUS INJURY

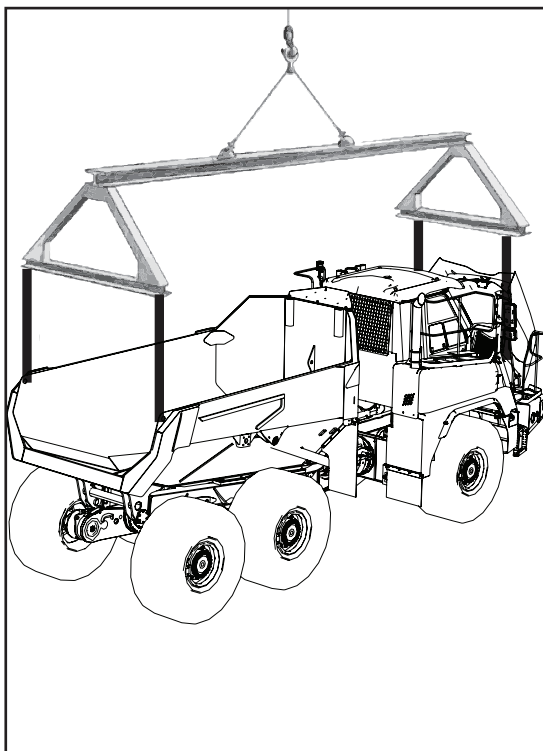
Never lift or hoist a loaded truck. The lift points are intended for an empty dump truck only.

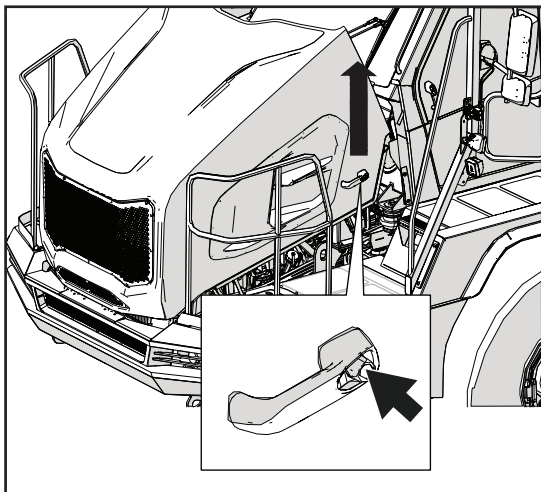
1. Apply the articulation lock (See section Articulation lock).
2. Open and secure the bonnet (see next page).
3. Fit suitable lifting wires or chains to the hoisting points at both sides of the body and engine, and use a suitable lifting beam as shown.

Machine net weight may vary with optional equipment.:

HA30/HA30A: approx. 23,200 kg

HA45/HA45A: approx. 30,100 kg





Engine bonnet

Do not open the bonnet when the engine is running. The bonnet is fitted with lockable bonnet opener on left hand side. The bonnet must always be closed and secured with the lock when operating the dump truck.

When the bonnet is open, make sure that the bonnet catcher for open position (on left hand side) secures the bonnet from falling down.

To open the bonnet:

1. Depress the button on the handle grip on left hand side.
2. Push up the bonnet.

To close the bonnet:

1. Push down the bonnet.

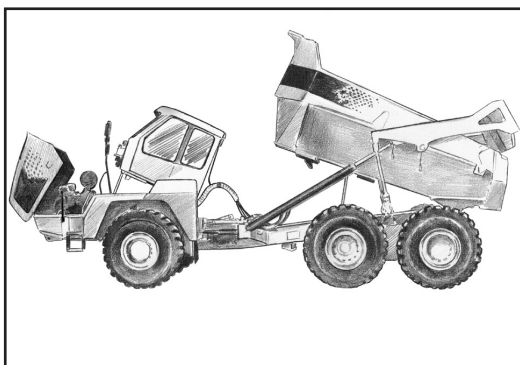


WARNING

CRUSHING CAN CAUSE DEATH OR SERIOUS INJURY

DO NOT work/stand under the bonnet without applying the bonnet catcher.

DO NOT operate the dump truck with a raised or unsecured bonnet.



Tiltable cab

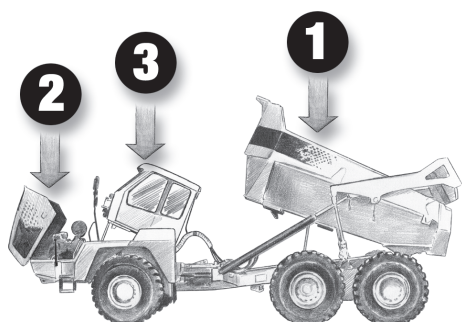
Always secure the tilted cab with the support before working underneath the cab. The cab must always be closed and secured with the locks when operating the dump truck.

Before tilting the cab, check that there are no loose objects in the cab.

When the cab is tilted, make sure that the support secures the cab from falling down.

To tilt the cab:

1. Lift the body and secure it with the body support (see section body support).
2. Stop the engine.
3. Open the bonnet and apply the bonnet catcher (see section Engine bonnet).
4. The cab has two tilted positions:
 - Service position
 - Must be secured with the safety support, see next page.
 - Top position
 - If exhaust heating is fitted, this must be removed.



5. Remove one bolt on each side of the cab.

Spanner: 30 mm

6. Push up the cab by using the hydraulic pump (a) on left hand side.

- Make sure that the handle for up- and down- pushing (b) is in the up-position (the illustration shows the down position).

7. In service position: Fasten the safety support (c) to the anchorage point at the cab.

Location of the safety support:

HA30/HA30A - Is placed on the front frame support bar.

- **To lower the cab:**

1. Remove the safety support (c). Re-locate it back in its storage position.

2. Lower the cab by using the hydraulic pump (a) on left hand side.

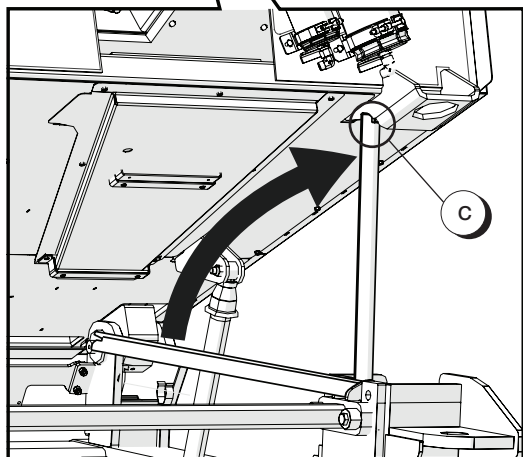
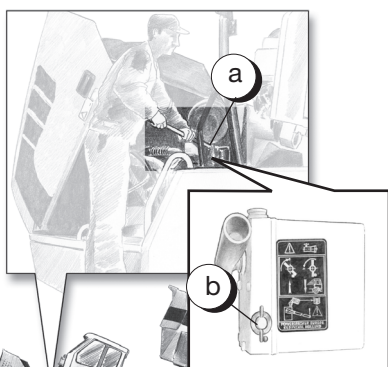
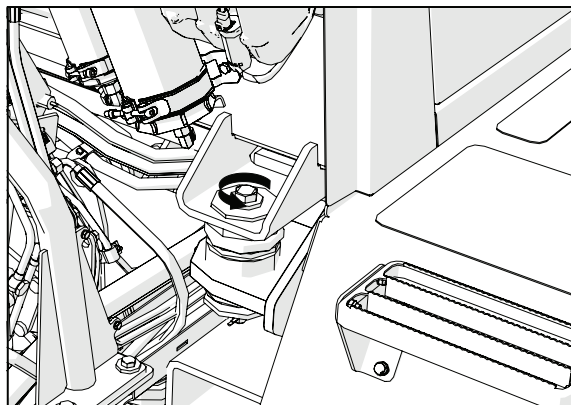
- Make sure that the handle for up- and down- pushing (b) is in the down-position (the illustration shows the down position).

3. Refit the bolt on each side of the cab.

4. Close the bonnet.

5. Lower the body.

6. Refit the exhaust heating, if this was removed.



WARNING

CRUSHING CAN CAUSE DEATH OR SERIOUS INJURY

DO NOT work/stand underneath the cab without applying the safety support.

Do not enter the cab while it is tilted.

Do not operate the dump truck with a tilted or unsecured cab!

Body support

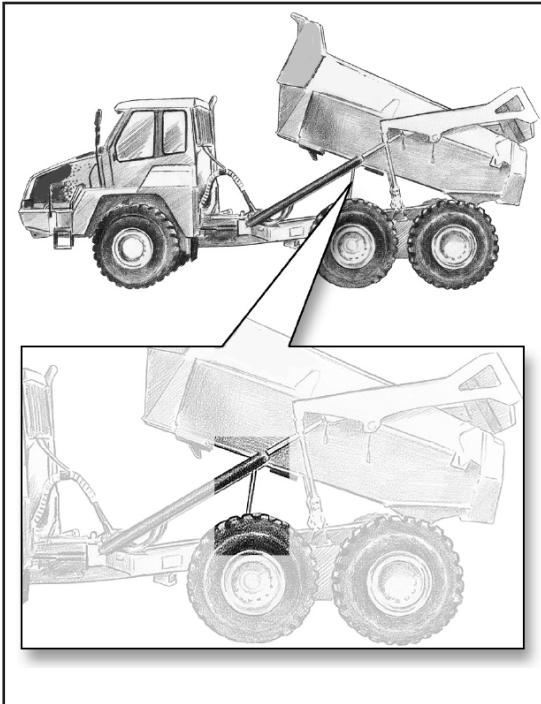


WARNING

CRUSHING CAN CAUSE DEATH OR SERIOUS INJURY

DO NOT work/stand underneath the dump body without applying the body support device.

Do not operate the dump truck with a raised body.



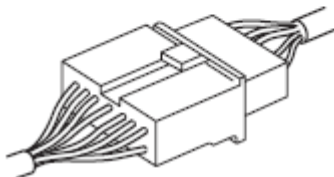
Always secure the raised body with the body support device before service/inspection and other work underneath the body. The body support device is intended for empty body only.

- Engagement of the support device:

1. Raise the body.
2. Make sure that the parking brake is on (locked) before leaving the cab.
3. Lift the body support in top position.
4. Slowly lower the body towards the support device until firmly positioned.
5. Return the tip control lever to hold position.
6. Stop the engine and remove the starter switch key.

- Disengagement of the support device:

1. Start the engine.
2. Lift the body slightly.
3. Return the tip control lever to hold position when the body is off the body support.
4. Make sure that the parking brake is on (locked) before leaving the cab.
5. Lower the body support.
6. Lower the body.



Cleaning

Clean machine before performing inspection and maintenance.

If inspection and/or maintenance are done when machine is dirty, it will become more difficult to locate problems, and this increases the risk of serious injury from slipping on steps and/or the work platform areas.

When washing machine, do the following:

- Wear shoes with nonslip soles to prevent slipping and falling.
- Wear safety goggles and protective clothing when washing machine with high-pressure steam or water.
- Do not spray water directly on electrical components (sensors and connectors). If water gets into electrical system, it can cause operation problems.
- Pick up any tools or hammers that are laying in workplace. Wipe up any grease or oil to prevent slippery surfaces, that can cause tripping or slipping.
- When cleaning cabin top window which is made of polycarbonate material, use tap water. Avoid use of organic solvents for cleaning, such as benzene, toluene or methanol. These solvents can cause a chemical reaction that will dissolve and damage the window.

Proper tools and clothing

Only use tools that are intended for the type of service to be done. Metal pieces from low quality or damaged tools, such as chisels or hammers, can break off and cause death or serious injury.



Disassembling precautions

When using a hammer to remove pins, pins can fly out or metal particles may break off. Always do the following:

- Hitting hard metal pins, bucket teeth, cutting edges or bearings with a hammer, can cause metal pieces to break or fly off resulting in serious injury. Always wear safety goggles and leather gloves. Keep personnel and bystanders away.



Use of lighting

When checking fuel, oil, battery electrolyte, window washer fluid, or coolant, always use proper lighting equipment to prevent arcs or sparks that could cause a fire or explosion resulting in death or serious injury.

Fire and explosion prevention

Fuels, most lubricants and some coolant mixtures are flammable. Flammable fluids that are leaking or spilled onto hot surfaces or onto electrical components can cause a fire resulting in property damage or death or serious injury.

Store all fuels and all lubricants in properly marked and approved containers and keep away from all unauthorized personnel.

Store oily rags and other flammable material in a protective container.

Tighten all fuel and oil caps.

Do not smoke while you refuel machine or while you are in a refuelling area.

Do not smoke in battery charging areas or in areas that contain flammable material.

Clean all electrical connections and tighten all electrical connections. Check electrical wires daily for wires that are loose or frayed. Tighten all loose, and repair or replace all frayed electrical wires before operating machine.

Remove all flammable materials and debris from the engine compartment, exhaust system components and hydraulic lines.





Burn prevention

When checking radiator coolant level, stop engine, let engine and radiator cool down, then check coolant recovery tank. If coolant level in coolant recovery tank is near upper limit, there is enough coolant in radiator.

Using gloves, loosen radiator cap slowly to release internal pressure before removing radiator cap.

If coolant level in coolant recovery tank is below lower limit, add coolant.

Cooling system conditioner contains alkali which can cause personal injury. Do not allow alkali to contact skin, eyes, or other body parts.

Allow cooling system components to cool before draining cooling system.

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact skin, eyes or other body parts.

Vent hydraulic tank only after engine has been stopped and hydraulic tank is cool. Using gloves, slowly tilt hydraulic tank air breather to relieve pressure.

Relieve all pressure in hydraulic oil system, in fuel system, or in cooling system before disconnecting any lines, hoses, fittings, or related components.

Batteries give off flammable fumes that can explode and start a fire.

Do not smoke while you are checking battery electrolyte level.

Electrolyte is an acid. Electrolyte can cause personal injury. Do not allow electrolyte to contact skin, eyes or other body parts.

Always wear safety goggles and face protection when working with batteries.

Rubber that contains fluorides

Observe extra great care when it is suspected that you may have to handle rubber that contains fluorides.

Certain seals which have to withstand high operating temperatures (e.g. in engines, transmissions, axles, hydraulic motors and pumps) may be made from rubber that contains fluorides, which, when exposed to high heat (fire), forms hydrogen fluoride and hydrofluoric acid. This acid is very corrosive and cannot be rinsed or washed off from the skin. It causes very severe burns which take a long time to heal.

It usually means that damaged tissue must be surgically removed. Several hours may pass after contact with the acid, before any symptoms appear and therefore one is not given any immediate warning. The acid may remain on the machine parts for several years after a fire.

If swelling, redness or a stinging feeling appears and one suspects that cause may be contact with heated rubber that contains fluorides, contact a medical doctor immediately. If a machine, or part of a machine, has been exposed to fire or severe heat, it must be handled by specially trained personnel. In all handling of machines after a fire, thick rubber gloves and protective goggles must be used.

The area around a part which has been very hot and which may be made of rubber that contains fluorides must be decontaminated by thorough and ample washing with limewater (a solution or suspension of calcium hydroxide, i.e. slaked lime in water). After the work has been completed, the gloves must be washed in limewater and then discarded.

Rubber and plastics

Polymer materials when heated, can form compounds that create a health hazard and can harm the environment. Scrapped rubber and plastic must never be burned. Extra precautions must be taken when servicing machines that have been in a fire or exposed to extreme heat.

If gas cutting or welding is to be done near such materials, the following safety instructions must be followed:

- Protect the material from heat.
- Use protective gloves, protective goggles and an approved respirator.

Waste Hazardous to the Environment

Painted parts or parts made of plastic or rubber which are to be scrapped must never be burned, but must be taken care of by an approved refuse handling plant.

Batteries, plastic objects and anything else which is suspected of being dangerous to the environment must be taken care of in an environmentally safe way.

Check List After Fire

When handling a machine which has been damaged by fire or been exposed to intense heat, the following protective measures must under all circumstances be followed:

Use thick, gloves made of rubber and wear goggles which are certain to protect your eyes.

Never touch burned components with your bare hands, as there is a risk that you may come into contact with melted polymer materials. First wash thoroughly with plenty of limewater (a solution or suspension of calcium hydroxide, i.e. slaked lime in water).

As a precaution, seals (O-rings and other oil seals) should always be handled as if they were made of rubber that contains fluorides.

Treat skin, which is suspected of having touched burned rubber that contains fluorides, with Hydrofluoric Acid Burn Jelly or something similar. Seek medical advice. Symptom may not appear until several hours afterwards.

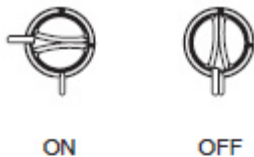
Discard gloves, rags etc. which are suspected of having touched burned rubber that contains fluorides.

Welding repairs

IMPORTANT

When disconnecting or connecting connectors between VCU and engine, or connector between VCU and the machine, always disconnect the battery to prevent damage to VCU.

If you do not follow this procedure, the VCU will be damaged and/or the engine will not operate properly.



When performing welding repairs, perform welding in a properly equipped and well ventilated area. Repairs should only be performed by a qualified welder. Welding operations, can create potential hazards, including generation of gas, fire, or electric shock. Never let an unqualified welder do welding.

A qualified welder must do the following:

- To prevent battery explosion, disconnect battery terminals and remove batteries.
- To prevent generation of gas, remove paint from location of the weld.
- If hydraulic equipment, piping or component ports close to them are heated, a flammable gas or mist could cause an explosion or fire. To prevent this, protect and insulate components from excessive heat.
- Do not weld on pipes or on tubes that contain flammable fluids. Do not flame cut pipes or tubes that contain flammable fluids. Before welding on pipes or tubes, or before flaming cut pipes or tubes, clean them thoroughly with a non-flammable solvent. Make sure pressure inside pipes or tubes does not cause a rupture of the component parts.
- If heat is applied directly to rubber hoses or piping under pressure, they may suddenly break, so cover and insulate them with a fireproof covering.
- Wear protective clothing.
- Make sure there is good ventilation.
- Remove all flammable objects and make sure a fire extinguisher is available for immediate use.

Preparation for Electrical Welding on Body Structure

To prevent damage to VCU by electrical welding, observe the following procedures:

1. Turn battery disconnect switch to "OFF" position.
2. Unplug the connectors on the electronic control units for the engine(S3) and the transmission(S4). The connectors are located on the back under the cabin.
3. Ground connection should be less than 1m from welding point.
4. Proceed with welding.
5. After welding, connect the connector between VCU and machine, and the connector between VCU and engine.
6. Clean battery compartment.
7. Turn battery disconnect switch to "ON" position.
8. Close battery compartment door.



Accumulators

The hydraulic system is equipped with an accumulator. For a short period of time after engine has been stopped, accumulators will store a pressure charge that allow hydraulic controls to be activated. Activation of any controls will allow selected functions to operate.

When performing maintenance on hydraulic system, release pressure in system.

The accumulators are charged with high-pressure nitrogen gas. If it is improperly handled, it can explode causing death or serious injury. Always observe the following precautions:

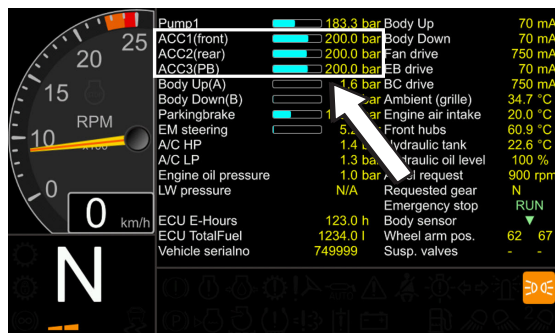
- Do not drill or punch holes in accumulators or expose it to any flames, fire or external heat source.
- Do not weld on accumulators.
- When performing disassembly or maintenance of accumulators, or when disposing of accumulators, charged nitrogen gas must be properly released before beginning such work. Contact your Hyundai distributor for assistance.
- Wear safety goggles and leather gloves when working on an accumulator. Hydraulic oil under pressure can penetrate skin and result in death or serious injury. If fluid enters skin or eyes, get immediate medical attention from a physician familiar with this injury.

Accumulators contain oil under high pressure!

Always empty the accumulators before working on or opening the hydraulic system.

Procedure:

- Completely sink down the front suspension. Refer to additional manual *Transport of Machine* placed in the cab.
- Stop the engine.
- Repeatedly press the brake pedal until pressure be equal to 0 on the main screen ACC1 and ACC2.
- Repeatedly turn ON/OFF parking brake button until pressure be equal to 0 on the main screen ACC3.



Compressed air

- When cleaning filters, radiator or other components with compressed air, there is a hazard of flying particles that can result in serious injury.
- Always wear safety goggles, dust mask, leather gloves, and other protective devices.

Supports and blocking for equipment

Do not allow weight or equipment loads to remain suspended and unsupported.

Lower dump body onto stops before leaving operator's seat.

Do not use hollow, cracked or unstable supports. Always use an approved support to prevent sudden lowering of the dump body or cab.

Do not work under any equipment supported only by a lifting jack.



High pressure lines, tubes and hoses

When inspecting or replacing high-pressure piping or hoses, check to verify that pressure has been released from circuit. Failure to release pressure can result in death or serious injury. Release pressure as described in "Handling of Accumulators" on page 2-51. Always do the following:

- Wear eye protection and leather gloves.
- Fluid leaks from hydraulic hoses or pressurised components can be difficult to see but has enough force to pierce skin and can result in death or serious injury. Always use a piece of wood or cardboard to check for suspected hydraulic leaks. Never use your hands or expose your fingers. Always wear safety goggles.
- Do not bend high-pressure lines. Do not strike high-pressure lines. Do not install lines, tubes or hoses that are bent or damaged.
- Make sure that all clamps, guards and heat shields are correctly installed to prevent vibration, rubbing against other parts, and excessive heat during operation.
- Replace hose or components if any of the following problems are found:
 - Damage or leakage from hose end fitting.
 - Wear, damage, cutting of hose covering, or wire braiding is exposed on any hose.
 - Cover portion is swollen in any section.
 - The hose is twisted or crushed.
 - Foreign material is embedded in hose covering.
 - Hose end is deformed.
 - Connection fittings are damaged or leaking.

NOTE: Refer to "Hose In-service Lifetime Limit (European Standard ISO 8331 and EN982 CEN)" for additional European regulations.

High-pressure is generated inside fuel lines when engine is running. Before performing inspection or maintenance of fuel line system, wait for at least thirty seconds after stopping engine to let internal pressure drop and tip breather cap up to release residual pressure.

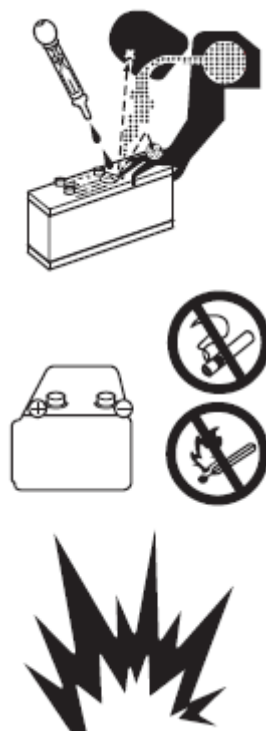
Oil or fuel leaks from high-pressure hoses can cause fire or improper operation, which can result in death or serious injury. If any loose bolts are found, stop work and tighten to specified torque. If any damaged hoses are found, stop operations immediately and contact your Hyundai distributor for replacement parts.

Battery

Battery Hazard Prevention

Battery electrolyte contains diluted sulfuric acid and generates hydrogen gas. Hydrogen gas is highly explosive, and improper handling can cause death or serious injury, or fire. Do not allow electrolyte to contact skin or eyes. Always wear safety goggles and protective clothing when servicing batteries. Wash hands after touching batteries and connectors. Use of acid-resistant gloves is recommended. Always observe the following precautions.

- Do not smoke or bring any flame near battery.
- When working with batteries, always wear safety goggles, protective clothing, and acid-resistant gloves.
- If you spill battery electrolyte on yourself or your clothes, immediately flush area with water.
- If battery electrolyte gets into your eyes, flush them immediately with large quantities of water and get immediate medical attention from a physician familiar with this injury.
- If you accidentally drink battery electrolyte, call a poison prevention centre immediately and get immediate medical attention from a physician familiar with this injury.
- When cleaning top surface of battery, wipe it with a clean, damp cloth. Never use petrol, thinner, or any other organic solvent or detergent.
- Tighten battery caps.
- If battery electrolyte is frozen, do not charge battery or start engine with power from another source. This could cause the battery to explode and start a fire.
- When charging battery or starting with power from another source in cold temperatures let battery electrolyte thaw and check that there is no leakage of battery electrolyte before starting operation.
- Always remove battery from machine before charging.



Do not use or charge battery if battery electrolyte level is below LOW LEVEL line. This can cause an explosion. Periodically check battery electrolyte level and add distilled water to bring electrolyte level to FULL LEVEL line.

Before maintaining or working with batteries, turn starter switch to "O" (OFF) position and battery main switch to "OFF" position.

Since there is a potential hazard that sparks could be generated, always do the following:

Do not let tools, rings or other metal objects make any contact with battery terminals. Do not leave tools or other metal objects lying near battery.

When disconnecting battery terminals, wait for approximately one minute after turning engine starter switch key to "O" (OFF) position, and be sure to disconnect grounding terminal / negative (-) terminal first. Conversely, when connecting them, begin with positive (+) terminal and then grounding (-) terminal. Make sure that all terminals are connected securely.

Flammable hydrogen gas is generated when battery is charged. Remove battery from machine, take it to a well ventilated place, and remove battery caps, before charging it.

After charging, tighten battery caps securely.

After charging, secure battery back in machine. When repairing or welding electrical system, wait for approximately one minute after turning engine starter switch key "OFF". Then disconnect negative (-) terminal of battery to stop flow of electricity.

Preservation/Storing machine

Perform the following if storing the machine for more than one month.

Conditions	Maintenance required.
Cleaning	Pressure wash entire machine. Inspect for damage or loose or missing parts.
Lubrication	Perform all daily lubrication procedures.
	(If equipped) Everyday, turn on the central lubrication pump over 1 cycle (approximately 10 minutes). Use the auto grease switch in cabin.
	Apply a coating of light oil to exposed plated metal surfaces, such as hydraulic cylinder rods, etc.
	Apply a coating of light oil to all control linkages and control cylinders (control valve spools, etc.)
Battery	Turn "OFF" the battery disconnect switch.
Cooling system	Inspect coolant recovery tank to make sure that anti-freeze level in system is at correct level.
	Every 90 days, use a hydrometer to measure protection level of coolant. Refer to "Anti-freeze Concentration Tables" on page 7-63, to determine amount of protection cooling system requires. Add coolant as required.
Hydraulic system	Once a month, start engine and run at low idle speed until pressure in the various circuits is normal.

Complete the steps listed above.

Wash machine and touch up paint finish to avoid rusting.

Treat exposed parts with antirust agent, lubricate machine thoroughly and apply grease to unpainted surfaces like lifting and tilting cylinders etc.

Fill fuel tank and hydraulic oil tank to "FULL" marks.

Cover exhaust pipe (if parking outside).

Make sure that coolant is at proper concentration for expected lowest temperatures.

Parking machine on firm and level ground where there is no risk of freezing, landslide or flooding. Avoid parking machine on a slope.

Keep in mind that theft and burglary risk can be minimized by:

Removing starter key when the machine is left unattended.

Locking doors and covers after working hours.

Turning off electrical current with battery disconnect switch.

Parking machine where risk of theft, burglary and damage is minimized.

Removing valuables from cabin such as cellular phone, computer, radio and bags.

Check After Long-term Parking

- All oil and fluid levels.
- Tension of all belts.
- Air pressure.
- Air cleaner.
- Batteries and electrical connections.
- Lubricate all greasing points.
- (If equipped) Check the reservoir of the central lubrication pump, and change the grease if it is divided into two layers, oil and soap. It can cause blockage of system.
- Wipe off grease from piston rods.
- Inspect for signs of nests (i.e. birds, rodents, etc.)

Transportation

Obey State and Local Over-the-Road Laws and Regulations

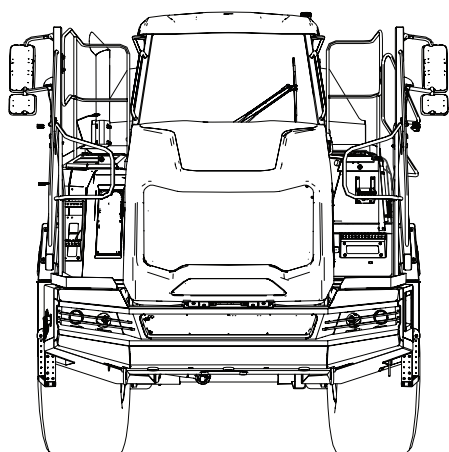
Check federal, state and local laws and regulations regarding weight, width and length of a load before making preparations for transporting on public roads or highways.

The hauling vehicle, trailer and load must be in compliance with applicable regulations for the shipping route.

Partial disassembly of the machine may be necessary to meet travel restrictions or particular conditions at work site. See Shop Manual for information on partial disassembly.

Refer to "Transportation" manual stored in cab, for information on loading, unloading and towing.

The machine can be disassembled into parts for transporting. Contact your Hyundai distributor for assistance with disassembly.



Transportation:

- Apply the parking brake.
- Apply the articulation lock.
- Apply wheel chocks.(2)

Attach suitable wires or chains to the tie down points on the front and rear frame as shown and secure safely.



WARNING

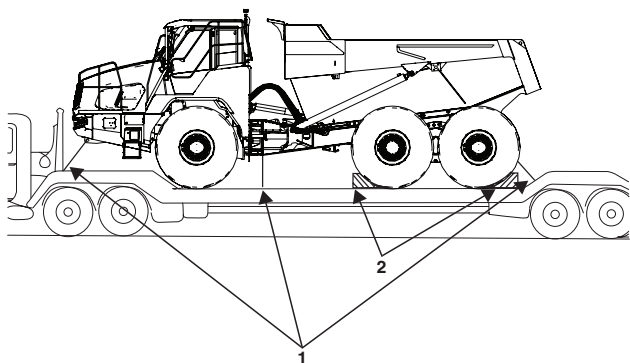
When tying down the machine, ensure machine does not come into contact with cables and chains. Machine can be damaged by inappropriate tie down method. Use only the main tie points (1) marked with the stickers.

Always transport the truck without load in the body!

Loading and Unloading

To prevent machine tip over or roll-over when loading or unloading machine, always do the following:

- Perform loading and unloading only on firm and level ground. Maintain a safe distance from edge of road or drop-off.
- Never use work equipment to load or unload machine. The machine may fall or tip over.
- Always use loading ramps of adequate strength and capacity. Be sure that ramps are wide, and long enough to provide a safe loading slope. Take steps to prevent ramps from moving out of position or coming off.
- Clean ramp surfaces so they are free of grease, oil, ice and loose materials. Remove dirt from machine tires. On a rainy day, be careful since ramp surfaces can be slippery.
- Run engine at low speed and travel slowly.
- When on ramps, do not operate any control lever except for gear shift lever.



- Never correct your steering on ramps. If necessary, drive off ramps, correct machine direction, then drive back onto ramps.
- Always lock door after loading machine to prevent door from suddenly opening during transportation.

Transporting Machine

When transporting machine on a trailer or truck, do the following:

- The weight, transportation height, and overall length of machine may change depending on work equipment attached to it. Always check the machine dimensions and work equipment's dimensions before transporting.
- When passing over bridges or structures on private land, check that structure is strong enough to support weight of machine. Before travelling on public roads, check with appropriate authorities and follow their instructions.

Environment and circumstances

Work Site Areas Requiring Extra Caution

- Do not operate too close to edge of a quay, ramp, etc.
- Do not operate too close to edge of a steep slope or drop-off. Use caution when working in a place where machine may tip over.
- Do not operate on soft ground or near riverbank that could collapse or where ground may not support weight of machine.
- Observe changes in ground and traction conditions after a rain or other changes in weather.

Drop-off or Edge

When working near or at an edge of a drop-off, the machine could tip over, which can result in death or serious injury. Always fasten your seat belt. Check ground conditions of work site before operating to prevent the machine from falling or rollover, and to prevent ground, stockpiles, or banks from collapsing.

Poor Visibility

For good visibility, always do the following:

- When working in dark areas, attach working lights and front lights to the machine. If necessary, set up additional lighting at work site.
- Stop operations when visibility is poor, such as in fog, mist, snow, and rain. Wait for visibility to improve before starting operation.

To avoid hitting work equipment and damaging other property, always do the following:

- When working in tunnels, on bridges, under electrical wires, or when parking the machine or performing other operations in places with limited height, be careful not to hit and damage other equipment or property.
- To prevent hitting objects, operate machine at a slow speed when working in confined spaces, indoors, or in crowded areas.

Loose or Soft Ground

Do not operate on soft ground or near edge of drop-offs, overhangs, or deep ditches. The ground can collapse because of the weight of the machine, causing the machine to fall or rollover.

Check ground conditions before beginning work with the machine. If ground is soft, reposition the machine before operating.

The excavated material must not be dumped too close to edge. The distance from an edge of an excavation where the excavated material must be dumped depends on soil type and moisture content. If loose clay is being excavated, place it at least 5 m (16 ft.) away from edge.

If excavated material is dumped too close to edge, its weight can cause a landslide.

Thawing of frozen ground, rain, traffic, piling and blasting are other factors which increase risk of landslide. The risk also increases on sloping ground.



High-voltage Cables

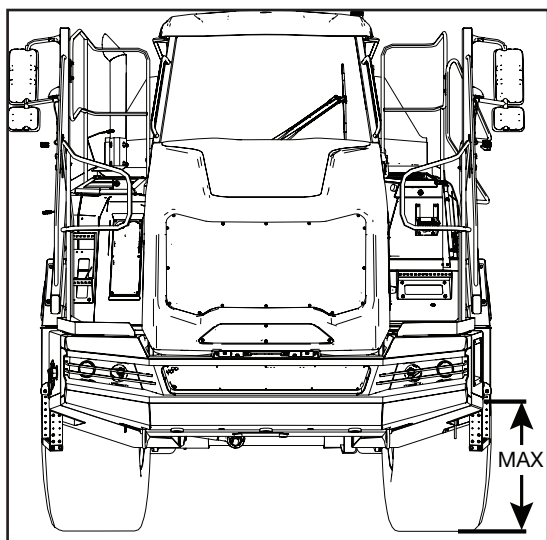
Do not travel or operate machine near electrical cables or overhead power lines. There is a hazard of electric shock, which can cause property damage and result in death or serious injury. The dump truck does not have to make physical contact with power lines for current to cause an electrocution.

Use a spotter and hand signals to stay away from power lines not clearly visible to operator. On work sites where machine may operate close to electrical cables, always do the following:

- Remember that the electrical voltage determines what minimum distance must be retained to stay safe from power lines. Please see the following table for minimum distances when working near to the electrical power lines. Electrical flashover can occur and cause damage to the machine and serious injury or death.

Voltage	Minimum distance
6,6 kV	3 m (9' 10")
33,0 kV	4 m (13' 1")
66,0 kV	5 m (16' 5")
154,0 kV	8 m (26' 3")
275,0 kV	10 m (32' 10")

- Always contact the power company responsible before beginning work near high voltage power lines.
- If the dump truck body should contact an electrical cable, the operator should not leave the operator's cab. The operator should remain in the cab until it has been confirmed that the electricity has been shut off.



Working in water

The water depth is an important factor to take into consideration when the machine is working in swampy areas. Do not enter water whose depth exceeds the machine's maximum wading depth.

The maximum wading depth is:

HA30/HA30A - 1100 mm, i.e. up to the main power box located in the left front fender.

HA45/HA45A - 1350 mm, i.e. up to the main power box located in the left front fender.

Observe the following conditions:

1. Check the water depth in advance when crossing a river.
2. Use the same precautions before crossing across a swampy area.
3. Do not enter rivers whose riverbed is steep or has a rapid flow.

After working in water, lubricate all lubrication points on components which have been under water so water is removed.

The parking brake linings must be checked/replaced more often when driving in wet and swampy areas, because wear of the linings will increase (see 500 hours service for procedure).

NOTE

Under no circumstances, let water flow through the front grill.

Working in Contaminated Environment

When working within an area which is contaminated or where there is a health risk, check local laws and regulations and contact your Hyundai distributor for assistance with identifying what additional safety precautions need to be taken.

Exhaust Ventilation

Engine exhaust gases can cause unconsciousness, loss of alertness, judgment and motor control. This can result in death or serious injury.

Make sure there is adequate ventilation before starting engine in any enclosed area.

Check for and be aware of any open windows, doors or ductwork where exhaust may be carried, or blown by wind, exposing others to hazardous exhaust gases.

Ventilation for Enclosed Area

If it is necessary to start engine within an enclosed area, or when handling fuel, flushing oil, or paint : open doors and windows to ensure that adequate ventilation is provided to prevent gas poisoning.

Diesel engine exhaust contains combustible materials which can be harmful to your health.

Always run engine in a well ventilated area. If you are in an enclosed area, vent exhaust to outside.



WARNING

AVOID DEATH OR SERIOUS INJURY

Avoid exposure to dust containing asbestos as it can cause death or serious injury to the lungs and other organs (mesothelioma, lung and other cancers, and asbestosis).



Asbestos dust can be HAZARDOUS to your health if it is inhaled. Materials containing asbestos fibre can be present on work sites. Breathing air that contains asbestos fibre can ultimately cause serious or fatal lung damage or diseases such as mesothelioma, lung and other cancers, and asbestosis. To prevent lung damage from asbestos fibre, observe the following precautions:

- Use an approved respirator that is approved for use in an asbestos-laden atmosphere.
- Use water to keep down dust.
- Always observe any laws and regulations related to work site and working environment.
- Avoid brushing or grinding materials that contain asbestos.
- Use a vacuum cleaner that is equipped with a high efficiency particulate air filter.
- Comply with applicable laws and regulations for workplace.
- Stay away from areas that might have asbestos particles in air.

Silica Dust Information



WARNING

AVOID DEATH OR SERIOUS INJURY

Avoid exposure to dust containing crystalline silica particles as it can cause serious injury to the lungs (silicosis).



Cutting or drilling concrete containing sand or rock containing quartz can result in exposure to silica dust. Do not exceed permissible Exposure Limits (PEL) to silica dust as determined by OSHA or other work site rules, laws and regulations. Use a respirator, water spray or other means to control dust. Silica dust can cause lung disease and is known to the state of California to cause cancer.

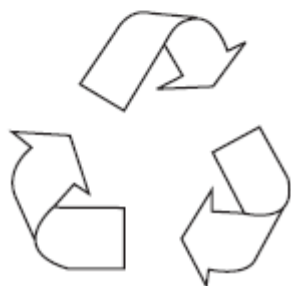
Disposal of Hazardous Materials

Physical contact with used motor oil or gear oil could create a health risk. Wipe oil from your hands promptly and wash off any remaining residue.

Used motor oil or gear oil is an environmental contaminant and should only be disposed of at approved collection facilities. To prevent pollution of environment, always do the following:

- Never dump waste oil in sewer systems, rivers, etc.
- Always put drained oil from your machine in approved, leak proof containers. Never drain oil directly onto ground.
- Obey appropriate laws and regulations when disposing of harmful materials such as oil, fuel, solvent, filters, and batteries.

Improperly disposing of waste can threaten environment. Potentially harmful fluids must be disposed of according to local laws and regulations.



Sound

Sound Level Information: Hearing protection may be needed when machine is operated with an open operator station for extended periods or in a noisy environment.

Sound pressure level (LpA) at operator position (Measurement according to ISO 6396:2008)	HA30/HA30A/ HA45/HA45A
	72 dB
Sound power level (LwA) around the machine (Measurement according to 2000/14/EC with applicable appendices and measuring method according to ISO 6395:2008)	107 dB

Vibration

Hands and Arms: The weighted root mean square acceleration to which hands and arms are subjected to less than 2.5 m/s².

Whole Body: The weighted root mean square acceleration to which whole body is subjected to less than 0.5 m/s².

Measurements are obtained on a representative machine, using measuring procedures as described in the following standards: ISO 2631-1, ISO 5349 and SAE J1166. Recommendations for Reducing Vibrations:

1. Select proper machine, equipment and attachments for a particular application.
2. Replace any damaged seat with a genuine Hyundai seat. Keep seat properly maintained and adjusted.
 - Adjust seat and suspension for weight and size of operator.
 - Inspect and maintain suspension and adjustment mechanisms of seat regularly.
3. Check that the machine is properly maintained.
4. Operate controls smoothly when steering, accelerating, slowing down, loading, or moving attachments.
5. Adjust machine speed and travel path to reduce vibration level.
 - Slow down when travelling over rough terrain or long distances.
 - Avoid obstacles and rough terrain.