# **Safety Precautions**

Failure to follow the instructions or heed the hazard alerts, safety signs and precautions could result in injury, death or property damage.



### Table of Contents

Personnel Precautions	4-5
Operator - General Precautions	4-5
Mounting and Dismounting Precautions	4-7
Starting Precautions	4-8
Stopping Precautions	4-10
Operating Precautions	
General Operating Precautions	4-10
General Operating Precautions Roading the Grader Precautions Job Site Precautions	4-12
Job Site Precautions	4-12
Night Operation Precautions	4-13
Snow Removal Precautions	4-13
Special Hazards Precautions	4-14
Fire Precautions	4-14
Maintenance Precautions	4-14
General Maintenance Precautions	4-14
Hydraulic System Maintenance Precautions	
Accumulator Maintenance Precautions	
Tire Maintenance Precautions	4-19

#### Table of Contents continued

Battery Maintenance Precautions	4-20
Ether - Cold Start Precautions	4-21
Air Conditioning Unit Precautions	4-22
Fuel Handling Precautions	
Towing Precautions	4-24
Transporting Precautions	
All Wheel Drive Precautions	



#### **Personnel Precautions**

■ Avoid loose fitting clothing, loose or uncovered long hair, jewelry and loose personal articles. These can get caught in moving parts. Jewelry may also ground a live circuit.

■ Know and use the protective equipment that is to be worn when operating or servicing the grader. Hard hats, protective glasses, protective shoes, gloves, reflector type vests, respirators and ear protection are types of equipment that may be required.



Do not rush. Walk, do not run.

• Never drive or operate the grader while you are under the influence of alcohol or drugs.

#### **Operator - General Precautions**



Do not operate this machine unless you have read and understood the instructions and warnings in the Champion Operator's Manual and the CIMA Grader Safety Manual. Failure to follow the instructions or heed the warnings could result in injury or death. Proper care is your responsibility. Contact your distributor or Champion for replacement manuals and decals. 48630 • Do not operate the grader unless you are a qualified operator.

■ Read and understand the entire Operator's Manual. Before you operate the grader, understand its performance characteristics, capabilities and limitations, and become thoroughly familiar with all controls and instruments.

• Consult your supervisor if you do not understand the Operator's Manual.

#### **Operator - General Precautions** continued

Read and obey all safety signs on the grader. Ensure they are kept clean and in good condition. Replace the safety signs if they are damaged, missing or illegible. Refer to the section - Safety Sign Locations page 3-1.

Know and follow your safety program rules.

For specific safety requirements, potential work area hazards and the necessary precautions, consult your supervisor.

Before operating the grader, ensure it is properly equipped. Consult your supervisor or your Champion Distributor for details.

- Do not permit riders in or on the grader.
- Ensure all doors, panels, inspection covers and the battery box cover(s) are in place and secure.

Remove or secure loose objects in the cab such as lunch boxes, tools etc. Remove all objects which do not belong in or on the grader.

Before backing up, use extra care to ensure all persons and vehicles are clear of the grader.



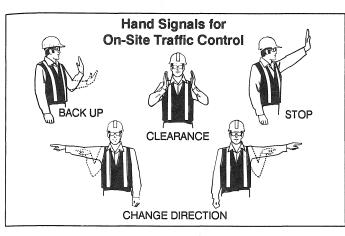
Adjust the seat and fasten the seat belt. The seat belt must fit snug and low around your hips. The holding strap must be free of slack. Refer to the section -Driving the Grader - Seat Belt page 8-8.

• Keep the steps, handholds, operator's platform, seat, pedals and controls in good condition. Keep them clean and clear of debris, mud, ice and grease.

• Do not dismount from the grader with the engine running. Before leaving the operator's cab, place the transmission in neutral, lower the moldboard and all the attachments to the ground. Apply the hand brake. Shut down the engine. Remove and retain the ignition key.

**Operator - General Precautions** continued

• Know and use the hand signals required for particular jobs. Know who has the responsibility for signaling.



Ensure the lights are working properly at all times.

■ Clean the grader regularly. Keep windows, mirrors and lights clean. Replace all broken windows and mirrors.

If the grader is equipped with a back-up alarm and/or lights, ensure they are working properly. Never disconnect the back-up alarm or lights. • Ensure that your grader is properly equipped for emergencies. Equipment such as a fire extinguisher, first aid kit, flares may be required. Locate and know how to use this equipment.

Ensure the snow wing is fully raised when not in use and secured with the proper chains.

#### **Mounting and Dismounting Precautions**

• Face the cab when climbing in or out of the grader. Use the handholds and steps provided. Maintain three points of support. For example, two hands and one foot or one hand and two feet.



Do not mount or operate the grader with wet or greasy hands, muddy shoes or boots.

#### Mounting and Dismounting Precautions continued

Do not jump from the grader at any time.

Never try to mount or dismount the grader while it is moving.

#### **Starting Precautions**

Walk around the grader. Check for loose or missing parts, excess wear, trash build-up, fluid leaks and damaged tires. Visually inspect the condition of other items such as:

#### Hoses

Controls and Instruments Circle and Moldboard Assembly Engine Compartment Hydraulic System Cooling System Windows and Mirrors Brake Lines Driveshafts Cylinders Lighting Rim Lugs Tire Inflation Safety Equipment Front Axle Attachments Snow Wing Cables

Report any leaks, wear or damage. Fasten a 'DO NOT OPERATE' or similar warning tag to the steering wheel and/ or isolation switch(es). Remove and retain the ignition key.

• Walk around the grader and warn all personnel who may be servicing the grader or are in its path prior to starting. Do not start until all personnel are clearly away from the grader.

Prior to starting the grader, check the grader for 'DO NOT OPERATE' or similar warning tags.

Perform the 'Pre-start Checks' in this manual before starting the grader.



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Adjust the seat and fasten the seat belt. The seat belt must fit snug and low around your hips. The holding strap must be free of slack. Refer to the section -Driving the Grader - Seat Belt page 8-8.

Start and operate the grader only from the operator's seat.

#### Starting Precautions continued

Know how to shut the engine down before attempting to start it.

Check the transmission mode lever to ensure it is in NEUTRAL before starting the engine.

Ensure the hand brake is applied.

- Sound the horn before starting the engine.
- Do not bypass the battery isolation switch(es). Have the switch(es) repaired if they are not working properly.



**A**WARNING

Never short across starter terminals. Grader could move unexpectedly. See Operator's Manual.

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• Use jumper cables only in the recommended manner. Improper use can result in battery explosion or unexpected movement of the grader. Refer to the section - **Pre-Start Checks - Batteries** page 7-24.

Do not operate the engine in an enclosed area without adequate ventilation.

■ After the engine has been started, check that all the gauges and instruments have the proper readings. Shut down the engine immediately if any improper readings are observed. Refer to the section - **Driving the Grader - Engine Start and Shut Down** page 8-10.

Ensure the lights are working properly.

Check that the hydraulic controls function properly.

Check that the hand and service brakes function properly. Refer to the section - Maintenance and Lubrication - Hand Brake Adjustment page 14-14.

Check that the engine hand throttle and accelerator function properly.

Listen for unusual noises.

Look around and behind the grader before moving it.

Check that the left-hand and right-hand steering functions properly.

#### 4-10

### **SAFETY PRECAUTIONS**

#### **Stopping Precautions**

Park the grader on level ground whenever possible and apply the hand brake. On grades, park the grader with the wheels securely blocked.

Depressing the clutch pedal only may not stop the grader.
You must depress the brake pedal also to stop the grader.

Lower the moldboard and all attachments to the ground. Do not apply down pressure.

Remove and retain the ignition key. Turn the battery isolation switch(es) to the OFF position, before leaving the grader.

Always park the grader completely off highways and roads.

Always set up safety cones, red flags, red lights or flares when parking the grader near traffic areas.

#### Operating Precautions-General Operating Precautions

Before operating your grader, test the brakes, steering, transmission, clutch and all controls and functions. Perform the test in an area where the safety of personnel and property will not be in jeopardy. If a malfunction is observed, park the grader and place a 'DO NOT OPERATE' or similar warning tag on the steering wheel and/or isolation switch(es). Be sure to remove the ignition key. Report the problem and have it repaired before operating the grader.

If a failure occurs that causes loss of control such as steering, service brakes or engine, stop the grader as quickly as possible. Keep the grader securely parked until the malfunction is corrected or the grader can be safely towed. See this page - Stopping Precautions.

• Understand the graders limitations and keep the grader under control.

Drive the grader with care and at speeds compatible with conditions. Use extra caution when operating over rough ground, on slopes, when ditching and when turning the grader.

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General Operating Precautions continued

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Do not coast downhill. Excess speed could cause serious transmission damage and loss of control of grader. Severe personal injury or death could occur.

Select a gear that will prevent excessive speed when going downhill.

Know your stopping distance at any speed. Regulate the speed of your grader accordingly.

Note and avoid all hazards and obstructions such as overhangs, ledges, slide areas, electrical lines, underground cables, water mains, gas lines, etc.

When operating close to electrical lines, underground cables, water mains or gas lines, contact the responsible authority and request assistance. Contact with buried pipeline or cable could result in serious injury or death due to fire or explosion.

Know and understand the job site traffic flow patterns and obey flagmen, road signs and signals.

Crush zone. Keep clear when engine is running.

Watch for bystanders and never allow anyone to be under or to reach into the grader and its attachments while operating.

Signal before turning.

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Do not use float control to lower moldboard. Loss of control of grader or damage to hydraulic system could result.



**AWARNING** 

4-12

### **A**WARNING

Sudden loss of any fluid indicates a serious malfunction. Stop grader. Consult a qualified service technician.

Do not operate the cold start switch when the engine is running. Serious engine damage could result.

#### **Roading the Grader Precautions**

Understand and obey traffic laws, road signs and signals.

• Keep both ends of the moldboard high and within the width of the grader.

Use extra caution at all intersections.

■ Be aware of traffic behind you. If necessary, pull over to the side of the road and allow the vehicles to pass safely.

Stop and look both ways at railway crossings. Proceed when clear.

Ensure your grader is properly equipped for roading. Such equipment as lights, flashing beacon, turn signals and warning devices such as flags and a slow moving vehicle sign may be required. Check the local traffic laws for the correct traveling requirements.

Ensure the articulation lock pins are installed when roading the grader.

Drive cautiously when entering or leaving the shoulder of the road to avoid a rollover.

■ If an electronic failure of the controller occurs while operating the grader, a 'Limp-home' feature allows you to move the grader away from certain situations or an emergency such as crossing railway tracks, operating in traffic areas or at your job location. Refer to the section - Driving the Grader - 'Limp-home' page 8-24.

Do not use the hand throttle when roading the grader.

#### **Job Site Precautions**

Know and understand the job site traffic flow patterns and obey flagmen, road signs and signals.

■ When moving the grader backwards, have a flagman direct you and the traffic around you. If a flagman is not available, look around and behind the grader to ensure the area is clear before moving.

#### Job Site Precautions continued

■ When scarifying or ripping across a slope, keep the moldboard parallel with the front axle, centered to the frame and lowered close to the ground to provide protection against rolling over.

Do not dismount from the grader with the engine running. Before leaving the operator's cab, place the transmission in neutral, lower the moldboard and all the attachments to the ground. Apply the hand brake. Shut down the engine. Remove and retain the ignition key.

Use the clutch pedal when you are starting, stopping, or when changing direction.

### **A**WARNING

Do not articulate the grader when operating on steep slopes. Grader could roll over. Severe personal injury or death could result.

#### **Night Operation Precautions**

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Ensure the grader is properly equipped for night operation. Equipment such as worklights, headlights, beacons and a slow moving vehicle sign may be required. • Ensure the worklights are properly aimed. Dim the headlights for approaching traffic.

• When stopping at night near traffic areas, drive the grader off to the side of the road and set out flares or reflectors.

#### **Snow Removal Precautions**

Snow removal presents unique hazards due to weather conditions, poor visibility, slippery road surfaces, high operating speed, and other traffic. Be sure your grader is in good condition and that you have been properly trained before doing this work.

■ Ensure your grader has the proper attachments before plowing snow. Equipment such as tire chains, warning lights, additional beacons and markings may be required.

• Keep your windshield and other window areas clean and clear for the best possible visibility. Use the windshield wipers and the window defrosters.

■ Be alert for any obstructions covered by snow. Obstructions such as manhole covers, curbs, bridge abutments, embankments and fire hydrants etc. may be hazardous.

Ensure the snow wing is fully raised when not in use and secured with the proper chains.

#### **Special Hazards Precautions**

Do not stop or turn the grader around on curves or at the crest of hills.

Be alert when grading haul roads as normal rules of the road might not be observed.

Use extra care when grading against oncoming traffic. Precautions such as flags, barricades, flashing lights, and flagmen may be needed to alert traffic.

Do not operate the grader in areas where volatile gases may be present. Explosion could result. If you encounter an area where volatile gases may be present, shut down the grader and leave the area immediately.

#### Fire Precautions

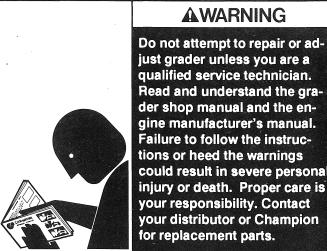
Remove dust and combustible debris from the grader regularly.

Inspect the grader daily for potential fire hazards such as damaged electrical wires. Have necessary repairs made immediately.

Ensure that excess oil, grease or fuel is cleaned up immediately.

Ensure the grader is properly equipped for grading in dry or forested areas. Equipment such as a spark arrestor may be required.

#### Maintenance Precautions-**General Maintenance Precautions**



qualified service technician. Read and understand the grader shop manual and the engine manufacturer's manual. Failure to follow the instructions or heed the warnings could result in severe personal injury or death. Proper care is your responsibility. Contact your distributor or Champion for replacement parts.

Place the grader in the service position before performing any service, maintenance or inspection procedure. Refer to the section - Maintenance and Lubrication - Service Position page 14-5.

General Maintenance Precautions continued • Know and use the proper protective equipment. Equip-

ment such as hard hats, protective glasses, protective shoes, gloves, reflector type vests, respirators and ear protection may be required.

Avoid loose fitting clothing, loose or uncovered long hair, jewelry and loose personal articles. These can get caught in moving parts. Jewelry may also ground a live circuit when working on the electrical system.

• Wear gloves to protect hands when handling cable.

Disconnect the battery cables before working on the electrical system. Remove the negative cable first and install it last.

Avoid lubrication or mechanical adjustments with the grader in motion or the engine operating. If the engine must be in operation to make certain adjustments, place the transmission in neutral, apply the hand brake, place the grader in a safe position, lower the moldboard and attachments, securely block the wheels and use extreme caution.

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### **AWARNING**

Do not work on graders supported only by moldboard or attachments. Hydraulic or mechanical failure could cause grader to fall resulting in severe personal injury or death.

• Ensure that adequate stands or blocks are used to support the grader when servicing.

Securely block the moldboard or any attachments that may fall before working on them.

• When servicing the grader, fasten a 'DO NOT OPERATE' or similar warning tag on the steering wheel. Be sure that the isolation switch(es) is in the OFF position and that you remove and retain the ignition key.

Ensure the work area is clean, organized and safe.

• When servicing or replacing pins, etc; use a brass drift or other suitable material between the hammer and pin.

• Keep the brakes and the steering systems in good operating condition. General Maintenance Precautions continued

### **A**WARNING

When using pressurized air for cleaning, wear a face shield and protective clothing. Do not direct the air hose nozzle at yourself or others. Severe personal injury could result.

### **A**WARNING

Handle all chemicals carefully and according to manufacturer's instructions. Improper handling can result in burns, poison from fumes, fire or explosion hazards. Severe personal injury or death could result.

■ Safety equipment such as goggles, respirators, and special clothing may be needed.

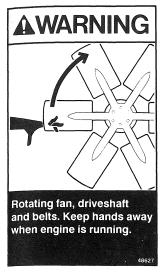
Some parts or assemblies of the grader are very heavy. Use suitable lifting equipment.

- Before welding, disconnect the following items:
  - a) The negative battery cable(s).
  - b) Positive battery cable(s).
  - c) Main power supply harness at the transmission controller.
  - d) Transmission wiring harness at the controller.
  - e) Alternator wiring harness.

Connect the arc-welder ground cable adjacent to the work area. Install the battery box cover(s). After completing your welding procedures, connect the electrical items a) through e) in the reverse order. Ensure to connect the negative battery cable(s) last.



#### General Maintenance Precautions continued



Keep your head, body, limbs, feet and hands away from all moving parts. These include circle and moldboard assemblies, scarifier, ripper and engine fan belts and fan, shafts etc.

#### Before the grader is placed back in service, ensure all doors, panels, inspection covers and the battery box cover(s) are in place and secure.

- After servicing the grader test it in a safe location.
- Do not allow unauthorized personnel on or around the grader.

# Structural damage or unauthorized modifications weaken the ROPS cab and reduce protection in a

roll-over situation. Consult your Champion Distributor if the ROPS is damaged, has been modified, or if grader has been involved in a roll-over incident.

**AWARNING** 



The spray from pressurized coolant can cause serious injury to your eyes and skin. Wait until the engine is cool enough to rest your hand on the radiator cap.

Hot pressurized coolant. Remove cap only when engine is cool.

#### General Maintenance Precautions continued

Avoid burns from direct contact with hot components or splashing hot oil.

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Brake fluid can harm eyes. Wear eye protection. If contact occurs, flush your eyes with large amounts of water. Seek medical attention immediately.

#### Hydraulic System Maintenance Precautions

• Use extreme care when working with hydraulic systems incorporating accumulators. Relieve the hydraulic system pressure before performing any service.

Residual pressure may remain in the hydraulic system.
Relieve all pressure before disconnecting hoses. Tighten all connections before applying pressure.

### **AWARNING**

Fluid escaping under pressure can penetrate the skin causing serious injury. Relieve all pressure before disconnecting hoses. Do not use your hand to check for hydraulic leaks.

If skin penetration occurs seek medical attention immediately

Always wear eye protection when working on the hydraulic system.

Use cardboard or a similar material to check for leaks.

• Do not bend or strike high pressure lines, tubes or hoses, or reinstall them in a bent or damaged condition. Leaks can cause a fire hazard.

Replace fittings or hoses that are damaged, loose or leaking.

Tighten all connections to the specified torque when you reinstall or replace high pressure lines, tubes or hoses.

#### **Accumulator Maintenance Precautions**



### **AWARNING**

Do not use oxygen or compressed air when precharging accumulators. An explosion can occur if oxygen comes in contact with a spark. Use dry nitrogen.



Accumulator contents under pressure. Service by qualified personnel only.

• Ensure the accumulators have the proper precharge before putting the grader back into service. Improper precharge could result in severe personal injury or death. Consult your Champion Distributor.

• Use extreme care when working with hydraulic systems incorporating accumulators. Relieve the hydraulic system pressure before performing any service.

#### **Tire Maintenance Precautions**

Tire repair or replacement must be performed by qualified personnel only.

Check the tires daily for wear and correct air pressure.

Do not stand near the tire while inflating. Use a self-attaching air chuck with a remote shutoff.

Do not overinflate the tires. Refer to the section - Maintenance and Lubrication - Tire Inflation page 14-12.

• Ensure that all tires and rim parts are undamaged and correctly assembled before inflating the tires.



### **AWARNING**

Failure to use a safety cage when inflating tires could result in severe personal injury or death.

#### Tire Maintenance Precautions continued

4-20

### **A**WARNING

Do not weld on the rim. The flame and heat can cause an explosion. The weld can cause premature rim failure. Severe personal injury or death could result.

#### **Battery Maintenance Precautions**

Batteries produce explosive gases. Keep sparks, flames, smoking materials, or other ignition sources away from batteries. Use a flashlight to check the electrolyte level.



### **AWARNING**

Handle batteries carefully. Battery acid is extremely corrosive and poisonous. Contact with the eyes, skin, or clothing can result in severe burns or other serious personal injury.

If contact occurs seek medical attention immediately.

Wear a face shield when working with batteries.

Never lean over a battery during charging, testing or jump starting operations.

■ Be familiar with procedures for charging and testing a battery. Read and follow the manufacturer's instructions for the battery charger.

■ Place a wet cloth over the battery and its vents before charging or jump starting. Ensure that the cloth is not placed near any fan blades, belts or any other moving parts.

Disconnect the negative cable first when removing a battery. Connect it last when installing a battery.

Do not let metal objects come in contact with the battery terminals.

Battery Maintenance Precautions continued

■ Do not charge or jump start a frozen battery. It may explode due to gas trapped in the frozen battery. Allow the battery to warm to  $16^{\circ}C$  ( $60^{\circ}F$ ) before charging or jump starting it.

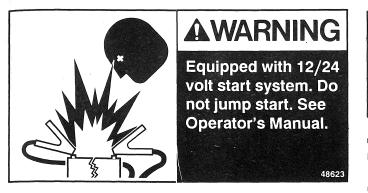
Do not jump start a 12/24 volt start system. Improper connections may cause the batteries to explode resulting in severe personal injury or death. Remove the batteries and recharge them separately.

#### **Ether - Cold Start Precautions**



### **AWARNING**

Diesel cold start system contains ether which is explosive. Keep sparks and flames away. Severe personal injury or death could result.



### **AWARNING**

Diesel cold start system contains ether which is a toxic chemical. Do not breath the fumes, drink the fluid, or allow it to contact the skin. Severe personal injury or death could result.

If swallowed, breathed or contacted on skin or eyes seek medical attention immediately.

• Do not smoke when installing, maintaining, testing or troubleshooting the diesel cold start system.

Wear protective goggles to avoid eye injury when testing the diesel cold start system.

<u>4-21</u>

#### Ether - Cold Start Precautions continued

4-22

Point the openings of the valve, tube or atomizer away from yourself and others while testing the diesel cold start system.

■ When replacing ether cylinders, ensure you are away from heat, open flames or sparks and that you are in a well ventilated area.

Do not burn, puncture, or attempt to remove the core from an ether cylinder.

• Keep ether cylinders away from unauthorized personnel.

Store replacement ether cylinders in a cool dry place away from direct sunlight. Do not keep them in a living area or in the operators compartment of the grader.

### **Air Conditioning Unit Precautions**

Do not attempt to repair or adjust the air conditioning system unless you are a qualified service technician.

## **A**WARNING

Do not smoke in an area where Freon® \* is used or stored. Do not allow Freon®\* to come in contact with an open flame or heated metal. A toxic gas results causing damage to lungs.

### **AWARNING**

Exercise extreme care when handling Freon<sup>®</sup>.<sup>\*</sup> Direct contact with skin will cause frostbite.

If contact with your skin or eyes occurs seek medical attention immediately.

• Wear protective clothing, gloves, goggles or glasses, while working on the air conditioning system.

<sup>\*</sup> Freon<sup>®</sup> is a registered trademark of DU PONT.

Fuel Handling Precautions

Allow the engine to cool before refueling.

- Do not refuel with the engine running.
- Ensure the fueling area is well ventilated.

Turn off all electrical switches, cab heaters and the battery isolation switch(es).

Do not smoke while refueling.



• To refuel, use the handholds and step provided to get to the fuel tank. Ensure the handholds, tires, tandems and the tandem steps are clean and dry to prevent you from slipping.

• Keep the fuel nozzle in constant contact with the filler tube of the tank being filled, and provide a ground to prevent static sparks from igniting the fuel.

Do not fill the fuel tank to capacity. Leave room for fuel expansion.

Clean up any spilled fuel immediately.

Do not mix gasoline or any other non-specified material with diesel fuel. Highly combustible vapors may result.

Tighten the fuel tank cap securely. Should the fuel cap be lost, replace it only with the original manufacturer's approved cap. Use of a non-approved cap without proper venting may result in pressurization of the tank.

• Use the correct fuel grade for the operating season.

#### **Towing Precautions**

When necessary to tow the grader, do not exceed 5 mph (8 kmh).

Be sure the towing machine has sufficient braking capacity to stop the towed load.

If the towed grader cannot be braked, a tow bar or two towing machines must be used - one in front pulling and one at the rear to provide braking. Do not tow over long distances.

■ Use the tow hitch when using the grader for towing. If a cable or chain is used keep people away from the towline.

Shielding of the operator(s) against towline breakage must be provided. Refer to the section - Towing and Transporting page 11-1.

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Improper towing methods or equipment could result in severe personal injury or death. Read and understand the towing instructions and precautions in this manual.

#### **Transporting Precautions**

• Exercise safety and follow all local laws when loading, unloading or transporting the grader. Refer to the section - **Towing and Transporting** page 11-1.

#### **All Wheel Drive Precautions**

Do not attempt to repair or adjust the All Wheel Drive System unless you are a qualified service technician.

### **AWARNING**

Do not bypass or alter any switch or other component in the All Wheel Drive System. Modifications can cause premature engagement or prevent disengagement of the system. Property damage and personal injury can result.

#### All Wheel Drive Precautions continued

■ Use extra care when working on All Wheel Drive System components and hoses. A high pressure leak could result in personal injury.

### **AWARNING**

Wheels may rotate unexpectedly when raised off the ground. Keep clear when engine is running.

Do not operate the All Wheel Drive System with the front wheels off the ground except when testing the system.

Only qualified service personnel should test the system.

Read and understand the section - All Wheel Drive page 12-1, before operating your grader.

