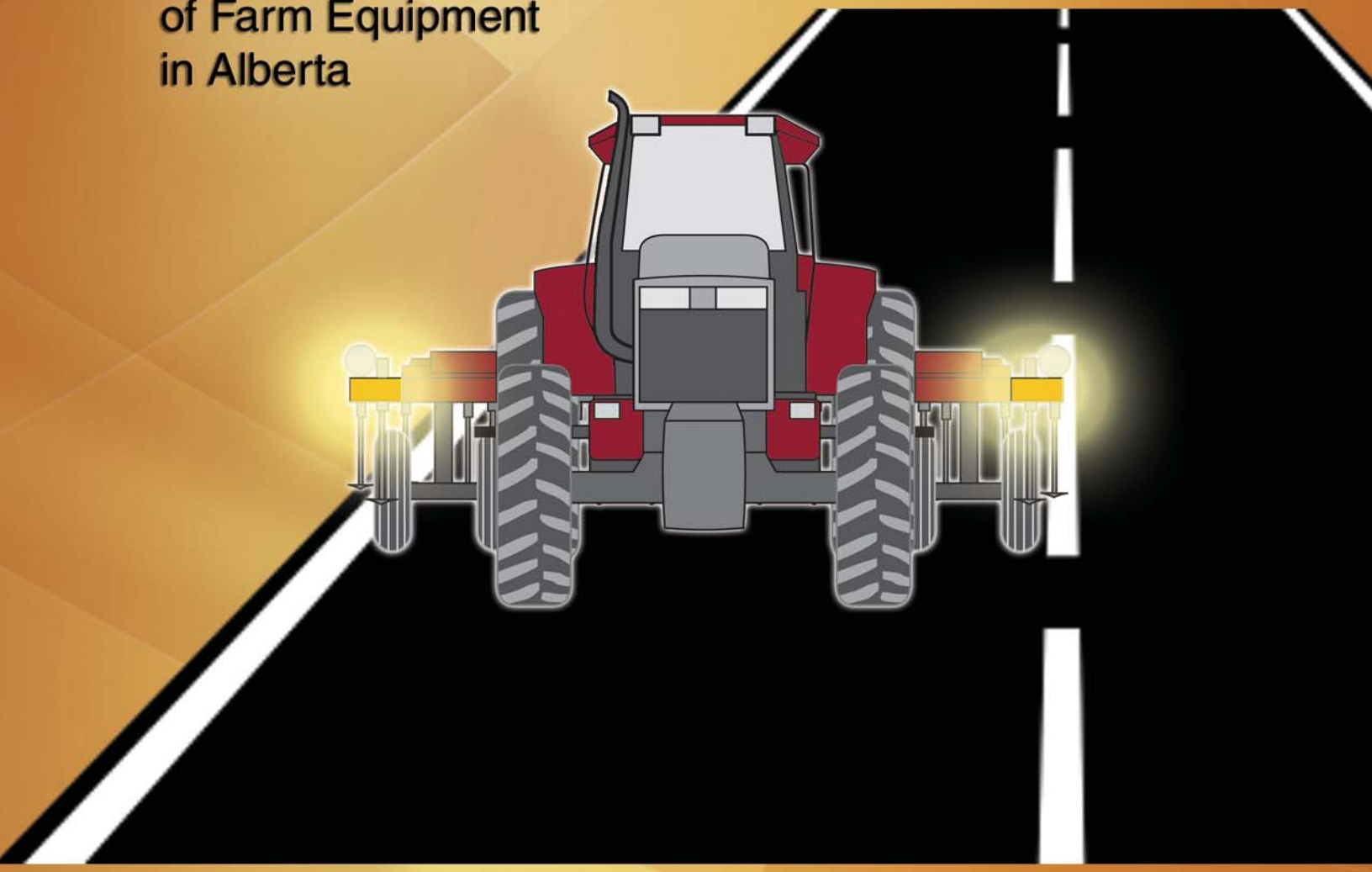
Make It Safe, Make It Visible

Safe Transport of Farm Equipment in Alberta



CANADA WEST
EQUIPMENT DEALERS ASSOCIATION

Alberta

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Disclaimer

The information contained in this publication is presented to assist equipment owners and operators to meet safe operating conditions. It does not replace or supersede the *Traffic Safety Act* and regulations under the Act and is not a legal document for law enforcement.

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Make It Safe, Make It Visible

Use this publication to help you:

- **Identify farm equipment hazards on public roads**
- **Prevent these hazards by making farm equipment safe and visible**
- **Understand and apply the regulations on highway transport of farm equipment as set out under the *Traffic Safety Act*.**

Safe Transport of Farm Equipment on Public Roads

According to the Canadian Agricultural Injury Surveillance program, 13 percent of farm related fatalities across Canada are traffic related, and most of these involve tractors. As a farmer, you often travel long distances between fields, and this requires you to travel on public roads throughout Alberta. Farm equipment is oversized and slow compared to other vehicles using the roads, which can result in collisions and other accidents.

To avoid traffic collisions between your farm equipment and motorists, you need to ensure your equipment is clearly visible and follow all regulated requirements for lighting and signage.

Motorists must do their part by being vigilant and watching for farm equipment on the roads, especially during peak farming seasons in the spring and fall.

Common Types of Accidents Involving Farm Equipment

Before you look at the material in the shaded box on the next page, test your knowledge of common types of accidents involving farm equipment.

1. What is the most frequent type of single-vehicle accident?
   a. A rollover as a result of turning the corner too fast
   b. A rollover due to loss of control from towing a heavy load too fast
   c. A rollover into the ditch from the tractor being driven too close to the shoulder of the road.

2. What is the most frequent type of multi-vehicle collision?
   a. Farm machinery being hit as it is turning onto a public road.
   b. Collision as a motorist attempts to pass farm machinery on the road.
   c. Rear-end collision due to motorists miscalculation of the rate at which they are approaching farm machinery and consequently running into the rear of it.

3. In what three-month period do almost half of all collisions occur?
   a. March, April and May
   b. July, August and September
   c. December, January and February.

There are many situations that can result in collisions on roads.

Accidents Involving Farm Equipment

- The most frequent type of *single-vehicle accident* is a farm tractor being driven too close to the shoulder of the road and rolling into the ditch.
- The most common type of *multiple-vehicle collision* is a farm machine being hit as it is turning onto a public road from a farm road or another public road.
- There is a high number of *rear-end collisions*, usually occurring at intersections and caused by motorists underestimating the size and speed of the farm equipment.
- A large number of collisions occur while the farm equipment is making a *left hand turn* where operators fail to signal or the signal is not visible to other traffic.
- Almost half of all collisions occur in the *period July to September*, the peak harvest time.

Hazards on Rural Roads

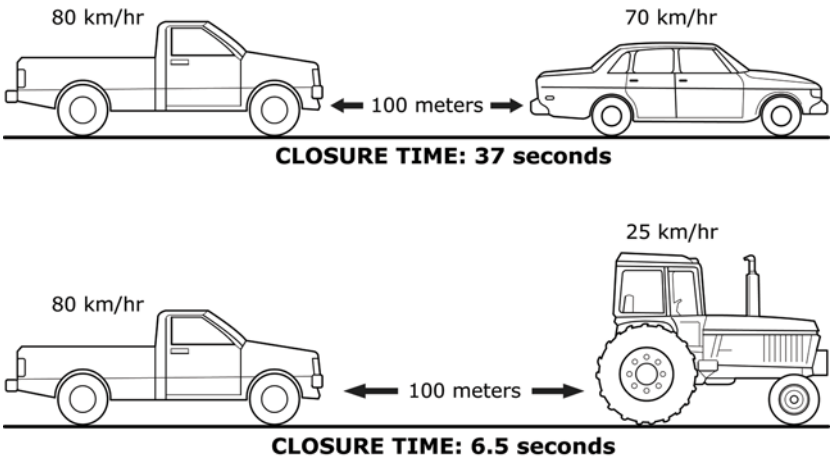
You face many hazards when you move farm equipment on public roads:

- Narrow roads and bridges don't accommodate large equipment.
- Soft shoulders increase the chance of a rollover when you try to make room for other vehicles to pass.
- Poor road conditions, such as potholes, blind corners and washouts, increase hazards for large machinery.
- Dust covered machinery causes poor visibility for you, the operator, who may not see oncoming traffic.
- Dust covered signage and lighting makes farm machinery less visible to motorists.
- Differences in speed between farm machinery and other traffic can result in rear-end collisions. Motorists often miscalculate the rate at which they are approaching farm equipment and consequently run into the rear of it.

The driver of the car may catch up to the farm equipment sooner than expected.

Reaction Times

The diagram shows the difference in reaction times for approaching another motor vehicle and approaching slow-moving farm equipment. With slow-moving equipment, the reaction time is so small that quick decisions must be made to avoid a rear-end collision.



If the vehicle ahead of you is driving slightly slower than you, you have time to react.

If the vehicle in front is driving much slower than you, your time to react may be seconds.

- If equipment is too wide to fit safely into one lane, approaching traffic can clip the machinery or hit it head on.

This piece of equipment poses a hazard to approaching traffic.

- Inadequate lighting can result in poor visibility at dawn and dusk. Although most new equipment is fitted with adequate lighting and reflective tape, many older pieces of equipment do not meet the standards for lighting and visibility under the *Traffic Safety Act.*

See Section 2 for standards for lighting and visibility under the **Traffic Safety Act.**

- Inexperienced operators can make mistakes when they are not used to the limitations of equipment in speed and maneuverability.
- Loads not tied down properly can shift or be dumped on the road.
- Towing a heavy load too fast can lead to swaying and loss of control, resulting in a jack-knifed vehicle or an overturn.
- Poor maintenance of equipment such as brakes or tires can lead to loss of control of the vehicle.
- Extra riders on farm equipment are a distraction to the operator and are at risk of falling off the machinery and being run over.

Types of Road Accidents Resulting in Injury and Death

The following describes some of the more common accidents involving farm equipment.

Single-Vehicle Accident

A single-vehicle accident usually involves a farm tractor or a tractor towing some form of equipment. The operator loses control of the vehicle and leaves the road, often resulting in a rollover in the ditch or hitting a stationary object such as a tree. Most commonly, one wheel catches on the loose gravel and the driver loses control. In other situations, loads too heavy to tow cause loss of control when the operator is negotiating steep hills or going around sharp curves.

The driver could lose control if a wheel catches some loose gravel or comes too close to a soft shoulder.

Multiple-Vehicle Accident

A multiple-vehicle accident usually involves a collision with another vehicle when the operator makes a left turn into a farm lane or field. Motorists often pull out to pass equipment as it slows down for the turn but fail to see the left signal due to a lack of signal or a dust covered signal light. Once the equipment enters the opposite lane, a collision occurs.

Rear-End and Other Collisions

A rear-end collision occurs when poor visibility and speed are factors.

Collisions also occur when one or more vehicles try to pass some equipment that is extremely wide or long. Misjudgement can result in the motorist hitting the equipment or oncoming traffic.

If you are driving at dusk, you may be less visible to passing motorists.

Prevention of Farm Equipment Accidents on Public Roads

You can prevent farm equipment accidents on public roads by focusing on three main areas:

- Make your equipment safe and visible
- Follow safe driving tips
- Drive defensively.

Make It Safe, Make It Visible

Ensure your farm equipment is as visible as possible so approaching traffic has more lead time to react to a slow-moving vehicle.

See Section 2 for lighting and signage requirements under the **Traffic Safety Act.**

- Follow all regulated requirements for lighting and signage including the use of a slow-moving vehicle (SMV) sign.
- Make sure that the SMV sign is clean, not faded and properly mounted. It must be on the rear of the tractor or towed implements and clearly visible. SMV signs must only be used on equipment traveling less than 40 km/hr.

This tractor displays a properly mounted slow-moving vehicle sign and follows the regulations for lighting.

- Use reflective tape and reflectors for large equipment travelling at night or in dim lighting conditions. In Canada, reflective material should be red and orange strips. You can purchase tape in kits or by the foot.
- Complete a safety check of tractor and trailed equipment before travel.
- Use safety-type hitch pins, making sure they are securely fastened. Hitch trailed equipment to the drawbar.

- Check all tires for air pressure, cuts and bumps and tread wear.

Properly inflated tires are a safety requirement.

- *Always* lock brake pedals together for highway travel. Sudden braking on one wheel only at high speed could put the tractor into a dangerous skid.
- Match the load to the towing vehicle. Loads that exceed the braking capacity of the towing vehicle can lead to dangerous situations should you have to stop suddenly.

This tractor is equipped with rearview mirrors on both sides of the tractor.

- Equip your tractor with rearview mirrors, advance warning triangles and fire extinguishers.

- Confirm that all lights are operating properly and are free of dust and dirt.

This tractor is well equipped with lights and reflectors.

- Check towed equipment. Balance and properly secure loads to prevent shifting while in transit.
- Equip heavy wagons with independent brakes.
- Use safety chains and proper hitches when towing a load.
- Transport winged and folding equipment in their narrowest configuration to give passing motorists enough space.

Safe Driving Tips

As a farm machinery operator, you can make road travel safer for yourself and others by taking precautions. Use the following checklist to assess your precautions.

- ❒ I avoid busy roads whenever possible, even if travel time will be longer.
- ❒ I use trained and licensed drivers when moving equipment.

If operators drive farm vehicles on or across **public** *roads, they must have valid driver's licences.*

❒ Some rural railway crossings have poor visibility. I always stop and make sure the way is clear before crossing.

❒ All of my tractors are equipped with rollover protective structures (ROPs). I wear a seatbelt, knowing the ROPs are ineffective in a rollover without a seatbelt.

You must wear a seatbelt for the ROP to be effective.

❒ I travel at a speed that will allow me to maintain full control at all times.

❒ I slow down when making turns or rounding curves. Side rollovers or entering a ditch are among the main causes of death with equipment on the road.

❒ I observe road travel precautions listed in my operator manuals. Some tractors free wheel in higher gears. This can be very dangerous when coming down a hill. I use lower gear ranges when climbing or descending hills.

Gear down when climbing or descending hills.

❒ I stay alert for hazards such as soft shoulders, narrow bridges, loose gravel, bumps, potholes and deep ruts.

Pull over on a shoulder, if it is unobstructed, to let traffic pass.

❒ When cars are lined up behind me, and a suitable shoulder is available, I pull over to let traffic pass. I make sure that the shoulder is of **sufficient width and solid enough** to handle my equipment. If there are obstructions, such as deep ruts or mailboxes in the way, I avoid shoulders.

❒ If possible, I move equipment in daylight during periods of light traffic.

❒ I travel after dark only if absolutely necessary and use proper lighting for night driving.

❒ I do not pull onto a road in front of moving traffic. I enter and exit roads very cautiously. I assume that other vehicles are traveling at the speed limit and adjust accordingly when pulling out.

❒ I always signal my intention to make a turn.

See Section 2 for standards for lighting and visibility under the **Traffic Safety Act.**

❒ I slow down when leaving the road, including when I pull onto a shoulder or turn into a lane.

Rollovers occur on the highway because an operator tries to slow down too fast or make a sharp turn.

❒ I obey traffic laws and signs.

❒ Oversized equipment requires careful planning when transporting. I check out the route in advance for obstacles such as narrow bridges or roads with no shoulders.

Credit: Rick Taillieu

❒ I use a pilot vehicle as a guide for large machinery and to warn motorists of oncoming large equipment.

❒ I never take extra riders on equipment.

❒ I avoid other distractions while driving including eating food, smoking, using a cellphone, etc.

Extra riders are a distraction and there is not a proper seat and seatbelt to protect them.

Focus on the task at hand with your undivided attention.

Your farm tractor and other self-propelled implements are vehicles and subject to Criminal Code driving prohibitions. It is illegal to operate any vehicle while you are under the influence of alcohol or drugs that can impair you.

Defensive Driving Tips for You As a Rural Motorist

When you are the motorist:

- Be alert. Watch for your neighbors and other slow-moving farm equipment on the road and adjust your driving accordingly. Give them the courtesy that you would expect if you were on the equipment.
- When you encounter slow-moving equipment, slow down, keep your distance and assess the situation. Watch for farm lanes or agribusiness into which the equipment might be turning.
- Do not pass until you are certain the way is clear. Make sure the operator is aware of your intentions.

Take extra caution when passing farm equipment.

- Be patient. Before you pass, check your rear view mirror for other approaching vehicles. Remember you have already slowed down and don't want to be hit by other traffic.

The *Traffic Safety Act*

This section provides general information and clarification of the laws that apply to farm vehicles and equipment in Alberta. It contains details on sections of the *Traffic Safety Act* that relate to farm vehicles and equipment.

This section does not describe all the laws that apply. For complete details, refer to the appropriate sections of the *Traffic Safety Act* and regulations and any other applicable acts and regulations.

Responsibility for Meeting Regulated Requirements

As an equipment operator and owner, you are responsible for ensuring that your equipment meets regulated requirements. You are also responsible for maintaining lighting and marking equipment on your implements to ensure they continue to meet the requirements.

Equipment transported on roads during the day or night must be marked and lit according to the requirements and regulations of the *Traffic Safety Act*.

Note that the* Traffic Safety Act *and regulations may change from year to year. It is your responsibility to keep up to date.

Canada West Equipment Dealer's Association (CWEDA)

The Canada West Equipment Dealer's Association is working in cooperation with the provincial government to deliver the "Make It Safe, Make It Visible" safety message to Alberta producers and farm equipment owners and operators. The Association supports the recommendations found in this section to improve visibility and safety.

See Appendix 1, "Regulations," for details on how to purchase a copy of the* Traffic Safety Act *and for a list of related Alberta regulations.

Daytime Travel

Daytime is defined in the Use of Highway and Rules of the Road Regulation as "the period that starts one hour before sunrise and ends one hour after sunset." However, when atmospheric conditions such as snow, rain, fog or smoke do not allow enough light to clearly see a person at a distance of 150 metres (490 feet), then equipment must meet the requirements for night-time conditions (see the section, "Night-Time Travel").

Your dealership or lighting supplier can help you get the lighting and marking equipment you need to comply with the regulation. When purchasing equipment from a dealership, ensure it is adequately marked and lit before moving it from the lot.

The following section outlines daytime travel requirements for:

- Tractors and self-propelled implements
- Towed farm implements.

Tractors and Self-Propelled Implements

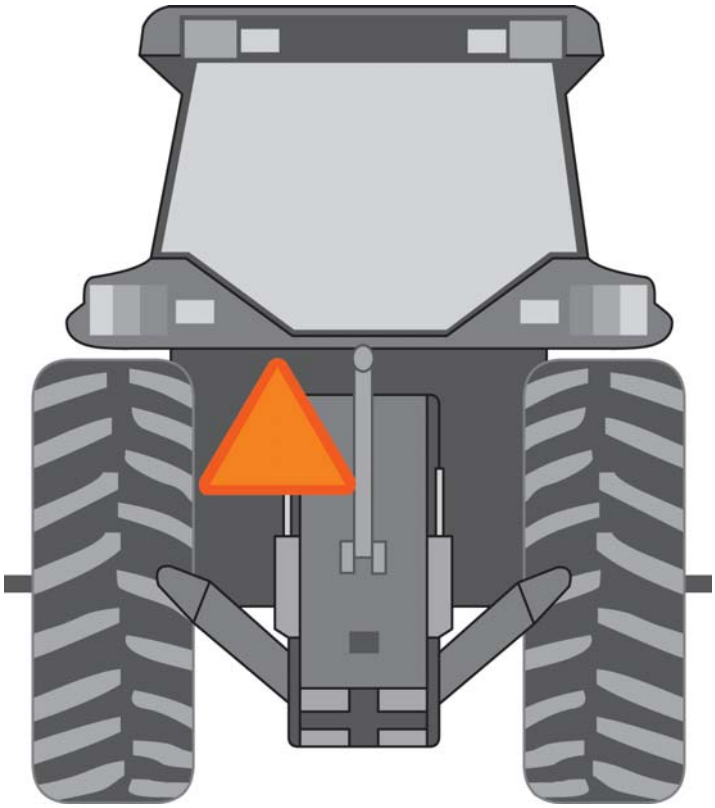
Rearview Mirror

Each tractor or self-propelled implement must have a rearview mirror that gives the driver a clear view of the road behind the implement of husbandry and a clear view of other vehicles approaching from behind.

Slow-Moving Vehicle Sign

Operators must display a slow-moving vehicle (SMV) sign that is attached to the rear end of the machine and is clearly visible to all traffic at the rear of the machine (see Figure 1). You must mount the SMV sign with the broad base down, perpendicular to the direction of travel and visible from the rear. Locate the sign at or as close to the centre line of the vehicle or equipment as practical, at a height between 0.9 to 1.5 metres (3 to 5 feet) above the road.

Figure 1: Slow-Moving Vehicle Sign on Tractor



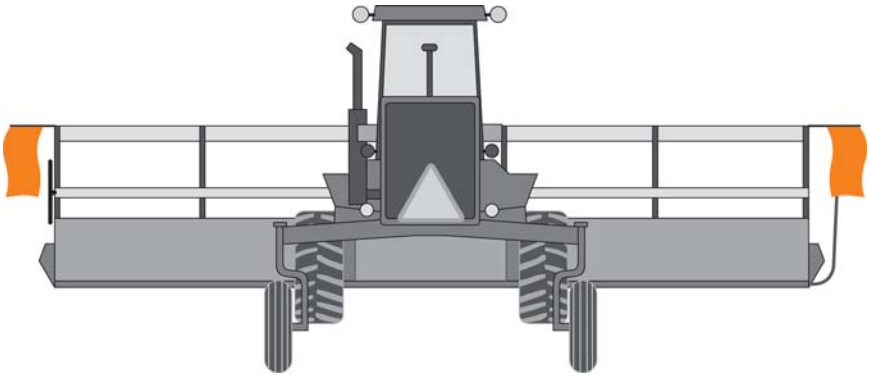
Mount the SMV sign close to the centre line of the vehicle and visible from the rear.

Reflective material used on the sign must meet the durability requirements specified in Canadian Standards Association (CSA) Standard D-198 (Slow-Moving Vehicle Identification Emblem).

Warning Flags

Although not mandatory, you should use warning flags to mark the widest part of the vehicle. The flags should be at least 40 centimetres x 40 centimetres (16 inches x 16 inches) and should be displayed such that their full area is visible to a driver of another vehicle approaching from the front or rear (see Figure 2).

Figure 2: Warning Flags



Ensure that warning flags are visible to drivers approaching from the front or rear.

Mandatory Warning Lights or Flags

A rubber tired farm tractor equipped with a dozer blade can travel on a road if, conspicuously displayed on each side of the widest part of the farm tractor, or displayed at the extremities of the blade, there are:

- Warning flags when the farm tractor is used during daylight
- Warning lights or warning flags (made of fluorescent material that is adequately illuminated by the farm tractor's working lights) when the farm tractor is used during darkness.

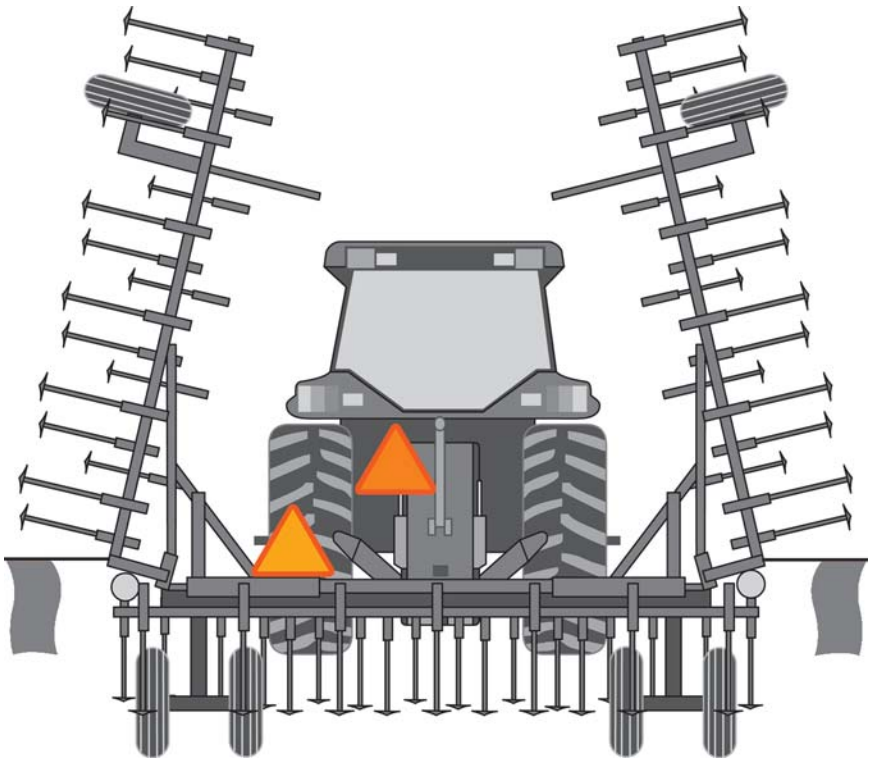
Towed Farm Implements

Slow-Moving Vehicle Sign

A towed implement must have its own slow-moving vehicle (SMV) sign which is clearly visible to the driver of a vehicle approaching from the rear (see Figure 3). Mount the SMV sign with the broad base down, perpendicular to the direction of travel and visible from the rear. Locate the sign at or as close to the centre line of the vehicle or equipment as practical, at a height between 0.9 to 1.5 metres (3 to 5 feet) above the road.

A towed implement must have its own slow-moving vehicle sign.

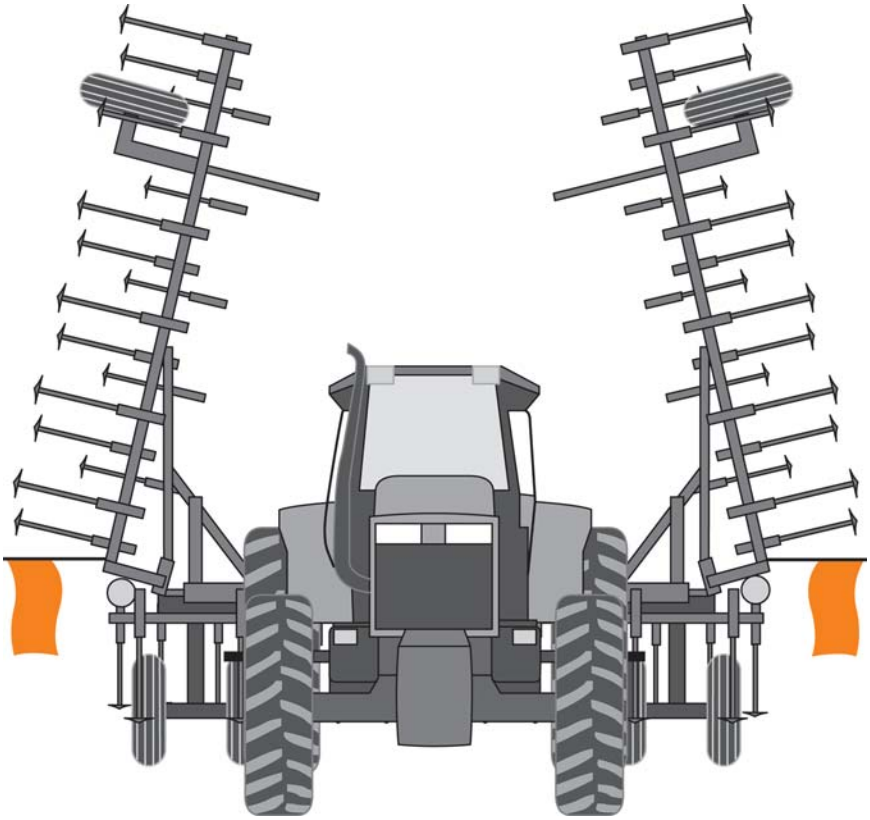
Figure 3: Slow-Moving Vehicle Sign on Towed Implement



Warning Flags

Although not mandatory, you should use warning flags to mark the widest part of the vehicle. The flags should be at least 40 centimetres x 40 centimetres (16 inches x 16 inches) and should be displayed such that their full area is visible to a driver of another vehicle approaching from the front or rear (see Figures 4 and 5).

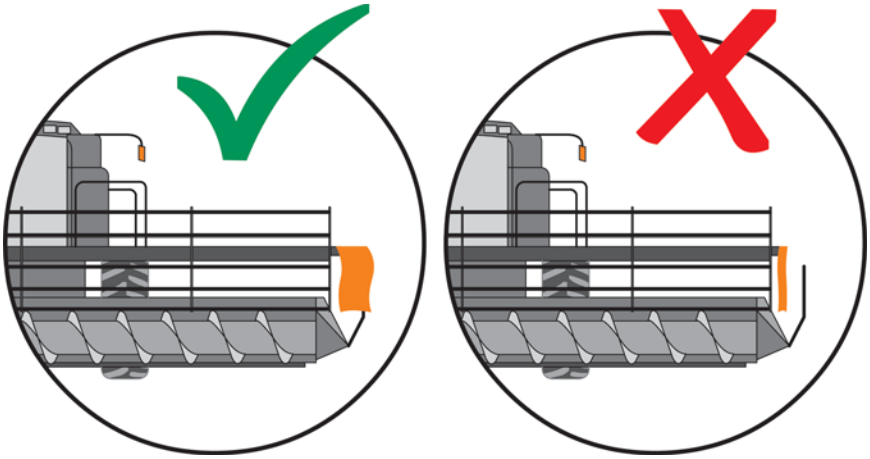
Figure 4: Flags for Daytime Travel



Use flags to mark the extremities of the vehicle.

(For daytime only, flags can mark the extremities of the implement.)

Figure 5: Proper Display of Flags



Flags should be displayed so that their full area is visible from the front and rear. Support the width of the flag from a rigid support such as a stiff wire.

Remember that flags are not allowed in place of warning lights when you move equipment at night.

Night-Time Travel

Night-time or darkness is defined by the Use of Highway and Rules of the Road Regulation as "the period commencing one hour after sunset and ending one hour before the following sunrise, or when atmospheric conditions (such as snow, rain, fog, smoke) do not allow enough light to clearly see a person at a distance of 150 metres".

The following section outlines night-time travel requirements for:

- Tractors and self-propelled implements
- Towed farm implements.

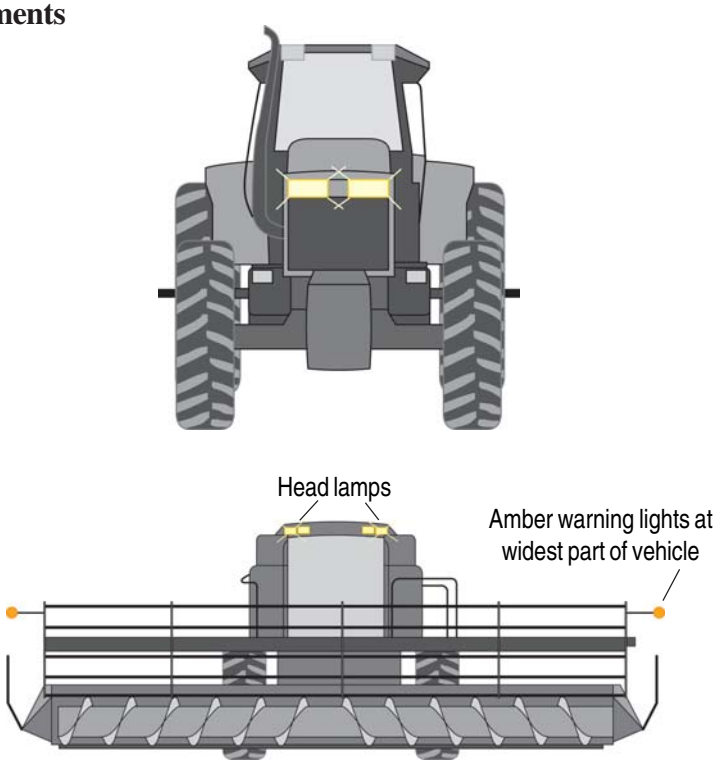
Lighting of Tractors and Self-Propelled Implements

Head Lamps

Tractors and other self-propelled equipment must have at least two, but not more than four, head lamps visible from the front. Mount all head lamps at the same height (see Figure 6).

Tractors and self-propelled equipment require at least two head lamps. If the machine is more than 2.6 metres (8.5 feet) wide, warning lights must mark the widest part of the implement.

Figure 6: Head Lamps for Tractors and Self-Propelled Implements



For detailed specifications on aiming and aligning head lamps, see Appendix 2 "A Guide for Aiming Head Lamps".

Warning Lights

If a tractor or self-propelled implement is wider than 2.6 metres (8.5 feet), you must display warning lights at the widest part of the vehicle. The warning lights are to be continuously lit, showing amber to the front and red to the rear, and shall be visible at a distance of 150 metres (490 feet) in normal darkness (see Figure 6).

Slow-Moving Vehicle Sign

A farm tractor or self propelled implement must have a slow-moving vehicle sign which is clearly visible to the driver of a vehicle approaching from the rear. See the section, "Daytime Travel."

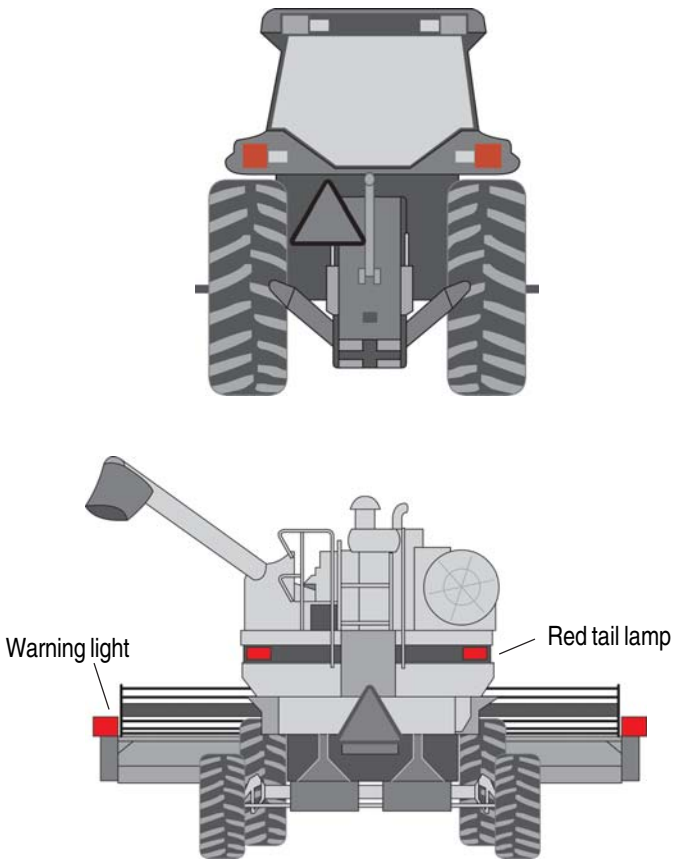
Tail Lamps

Tractors and other self-propelled equipment must have at least two red tail lamps.

When lit, a tail lamp must be capable of emitting a red light plainly visible at a distance of not less than 150 metres (490 feet) to the rear of the vehicle.

Space the tail lamps as wide laterally as practical, and locate them at a height of not more than 1,850 millimetres (6 feet) nor less than 500 millimetres (20 inches) above the ground (see Figure 7).

Figure 7: Placement of Tail Lamps



Tractors and self-propelled equipment must have at least two red tail lamps. If the machine is more than 2.6 metres (8.5 feet) wide, warning lights must mark the widest part of the implement.

Remember that flags are not allowed in place of warning lights when moving equipment at night.

Turn Signals

Turn signals are not required; however, if your vehicle does have them, keep them in good working condition.

Lighting of Towed Farm Implements

Slow-Moving Vehicle Sign

A towed implement must have its own slow-moving vehicle sign which is clearly visible to the driver of a vehicle approaching from the rear. See the section, "Daylight Travel".

Warning Lights

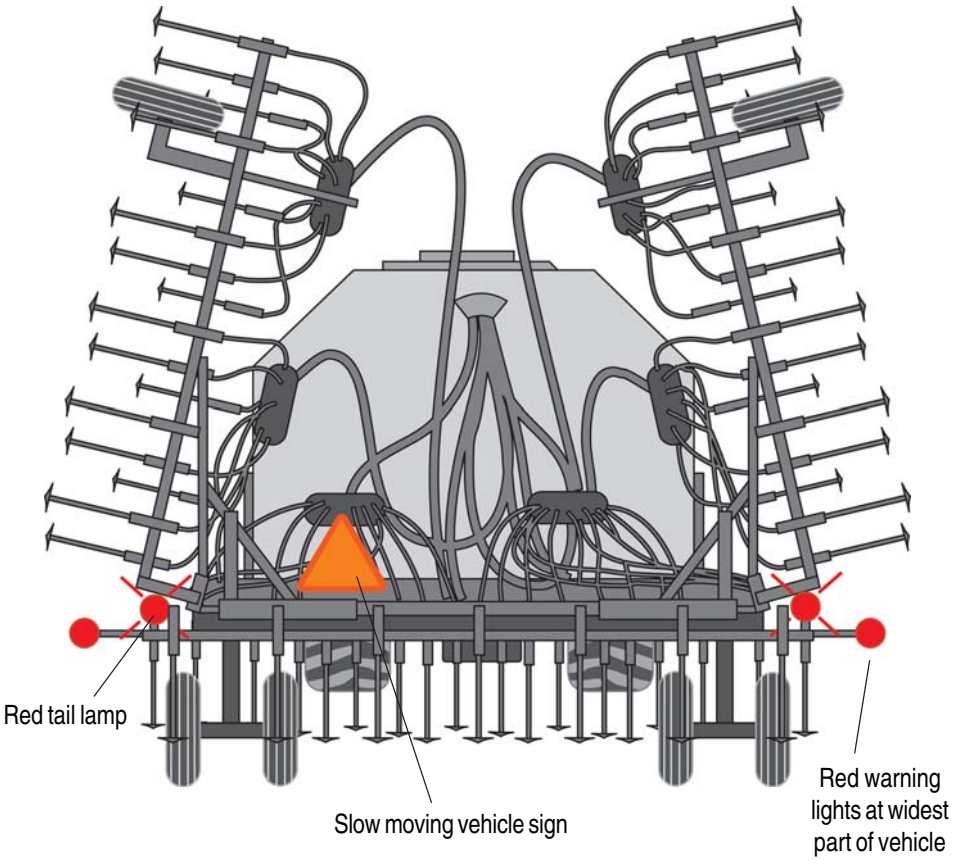
If a towed implement is wider than 2.6 metres (8.5 feet), you must display warning lights at the widest part of the vehicle. The warning lights are to be continuously lit, showing amber to the front and red to the rear, and must be visible at a distance of 150 metres (490 feet) in normal darkness.

Tail Lamps

Towed implements must have at least two red tail lamps (see Figure 8). When lit, a tail lamp must be capable of emitting a red light plainly visible at a distance of not less than 150 metres (490 feet) to the rear of the vehicle.

Space the tail lamps as wide laterally as practical and locate them at a height of not more than 1850 millimetres (6 feet) nor less than 500 millimetres (20 inches) above the ground.

Figure 8: Lighting of Towed Farm Implements



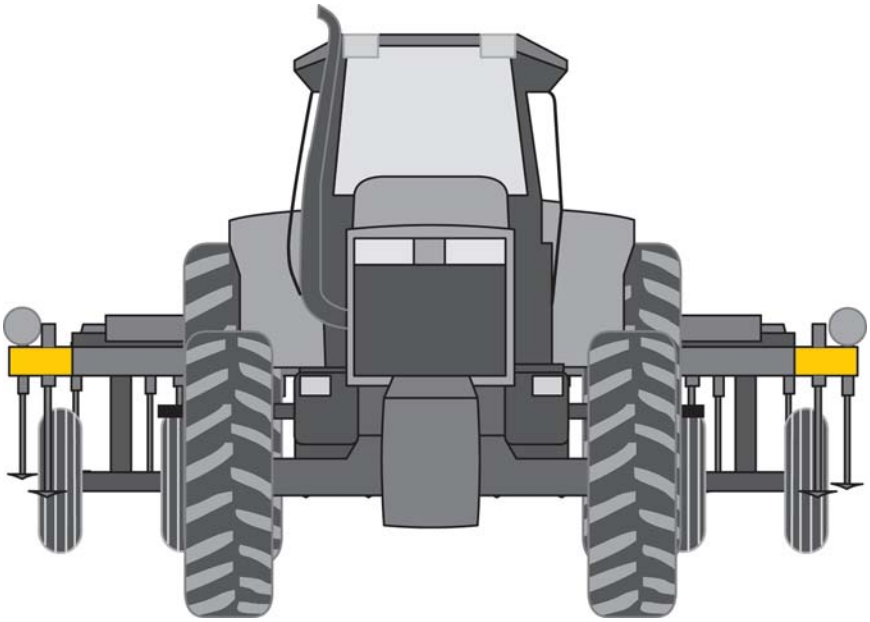
Towed implements must have at least two red tail lamps. If the implement is more than 2.6 metres (8.5 feet) wide, warning lights must mark the widest part of the implement.

Warning lights must show amber to the front and red to rear.

Reflectors

Although not mandatory, you should use reflectors to provide better visibility when you move farm machinery on roads at night. Use amber reflectors to mark the front of towed implements that protrude beyond the width of the towing farm tractor (see Figure 9).

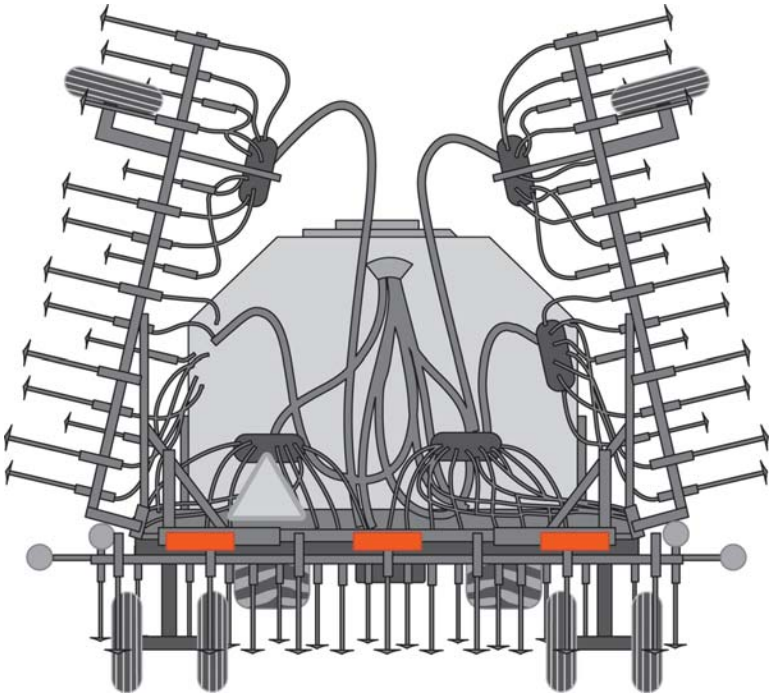
Figure 9: Amber Reflectors on Front of Implement



For maximum visibility, clean your reflectors and lamps before travelling on public roads.

Use at least two red reflectors, visible from the rear, to mark the rear of the implement (see Figure 10).

Figure 10: Red Reflectors on Rear of Implement



Superior grade reflective tapes offer better visibility, are more durable and are less susceptible to damage than reflective lenses in lamp fixtures. Such reflective tapes are also known as retroreflective tapes or conspicuity tapes.

See Appendix 3, "Standards for Lighting and Marking," for information on lighting and marking equipment to the appropriate standard.

Reflective material should be visible at night from a distance of 150 metres (490 feet) in normal darkness when directly exposed to the high beam of headlamps. Reflectors should comply with the requirements of Society of Automotive Engineers (SAE) Standard J594 (see Figure 10).

Summary

- Use your headlamps and tail lamps whenever you are on the road.
- Motorists unaccustomed to large and slow-moving farm and industrial equipment need to be alerted to your position on the road and your slow travel speed. When in doubt, *Make It Safe, Make It Visible*.
- When you purchase lighting and marking equipment, make sure it meets the appropriate Canadian Standards Association (CSA) or Society of Automotive Engineers (SAE) standards.

Questions and Answers

The following are common questions about legislative requirements.

When must I use my lights?

When you move equipment at night or during reduced visibility conditions, all mandated lights must be operational and illuminated.

Can I use flood lamps or general service lamps on public roads?

No, flood lamps and general service lamps are designed to illuminate the machine or field work. Front-facing flood lamps must be aimed downward and to the right to avoid blinding oncoming traffic. Rear-facing service or flood lamps must be off when travelling on public roads. Exception: a work lamp may be used to light the extremities of a dozer blade. Lamps must be aimed at the extermities of the blade.

What are the requirements for transporting dangerous goods?

The Transportation of Dangerous Goods Regulations promotes safety in the handling and transporting of dangerous goods. There are many exemptions in the regulations to ease the movement of essential dangerous goods used in the agricultural industry. These exemptions remove all or some of the requirements of the legislation depending upon the circumstances. For example:

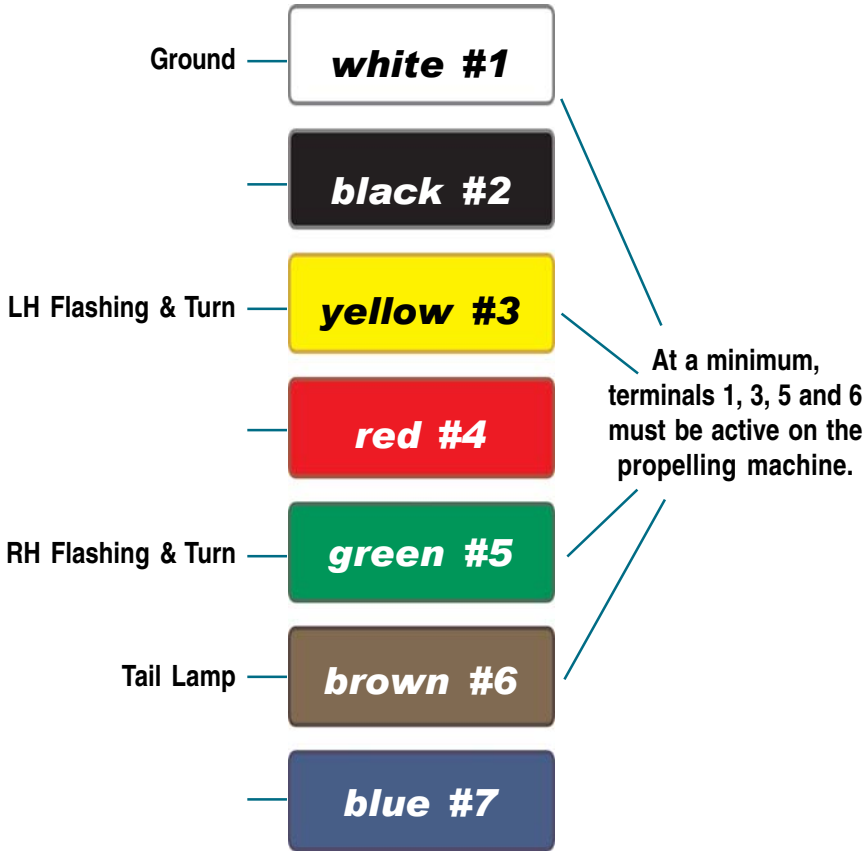
- Quantities of dangerous goods for agricultural purposes up to 1,500 kilograms are exempt from the regulations within 100 kilometres (60 miles) of the farm in farm registered vehicles.
- Gasoline and diesel in tidy tanks up to 2,000 litres (440 gallons) that are secured to the vehicle are exempt from documentation and training if they have the correct safety marks visible.

A technical bulletin is available to all in the agricultural industry detailing both the requirements and the exemptions that are specific to the industry. The bulletin "Dangerous Goods and the Agricultural Industry" is available by calling toll free 1-800-272-9600 within the province or 780-422-9600.

I want to hard wire my own lights. What are the standardized wiring connections?

The wiring diagram in Figure 11 details the industry standardized wiring connections used on manufactured agricultural machinery. At minimum, terminals 1, 3, 5 and 6 should be wired. Also, the receptacle is installed on the towing vehicle, while the plug is installed on the towed implement.

Figure 11: Industry Standard Wiring Connections for Seven-pin Agricultural Connectors



Note: For more information on wiring, contact your equipment dealer.

Appendix 1: Regulations

You can purchase copies of the *Traffic Safety Act* and regulations from:

Queens Printer Bookstore
Park Plaza Building
10611 – 98 Avenue
Edmonton, Alberta
T5K 2P7
Phone (780) 427-4952
For toll free service from anywhere in Alberta, call 310-0000

These laws are also available on-line at:
www.qp.gov.ab.ca/catalogue/index.cfm

Dial 310-0000 for toll free connection from anywhere in Alberta.

Related Alberta Regulations

Vehicle Equipment Regulation

Commercial Vehicle Dimension and Weight Regulation

Use of Highway and Rules of the Road Regulation

Operator Licensing and Vehicle Control Regulation

Commercial Vehicle General Equipment and Safety Regulation

Transportation of Anhydrous Ammonia and other Fertilizers Regulation

Appendix 2: A Guide for Aiming Head Lamps

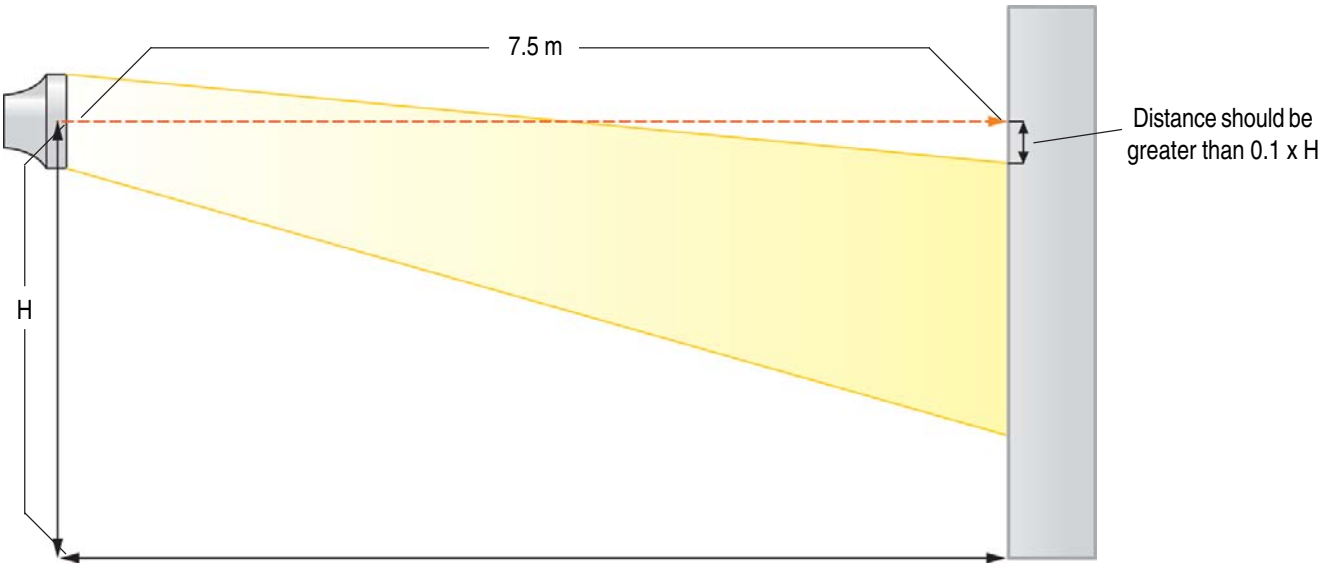
Proper aiming and alignment of head lamps on tractors and other self-propelled equipment reduces the risk of blinding oncoming traffic when travelling at night. Adjust your head lamps according to the following procedure to help reduce this risk of blinding oncoming traffic. Aim flood lamps or lights used for field work downward and to the right to provide illumination close to the ground, and ensure they do not shine rearward when you travel on roads.

Perform the aiming procedure in the dark. Mount head lamps so they are centred laterally. Refer to Figure 12 as you work through the four steps:

1. Park your unit on a flat surface so that its head lamps are 7.5 metres (25 feet) away from a vertical wall that is perpendicular to the ground.
2. Measure the distance between the centre of your head lamps and the ground. Use this measurement (distance "H") to mark a horizontal line (up from ground level) along the wall.
3. Turn on your head lamps (or low beams, if your unit is so equipped) and observe where the light beams fall on the wall. Beyond the outer edge of the *lighted area* is a less bright zone where the intensity of the light drops to 10 percent or less of the peak intensity (brightest area).
4. Adjust your head lamps so that the distance between the upper edge of the lighted area is at least one-tenth of distance "H" below the horizontal line on the wall indicating the centre of your head lamps (0.1 X H).

Example: If distance "H" is 1,200 millimetres (48 inches), then the distance between the upper edge of the **lighted area** and the line on the wall indicating the centre of your headlamp [0.1 X 1,200 (48) = 120 millimetres (4.8 inches)] should be not less than 120 millimetres (4.8 inches).

Figure 12: Setup for Aiming Head Lamps



Appendix 3: Standards for Lighting and Marking

Headlamps for Agricultural Equipment, SAE Standard J975

Reflex Reflectors, SAE Standard J594

Slow-Moving Vehicle Identification Emblem, CSA Standard M671

Tail Lamps, SAE Standard J585

Stop Lamps and Front- and rear-turn Signal Lamps for Use on Motor Vehicles 2,032 mm or More in Overall Width, SAE Standard J2261

Retroreflective Materials for Vehicle Conspicuity, SAE Standard J1967

Standards can be ordered from:

Canadian Standards Association (CSA)
1707-94 Street NW, Edmonton, Alberta T6N 1E6
Phone: 1-800-463-6727 or 780-490-2007
Fax: 780-490-2059
e-mail: westernsales@csa.ca

Website Standards Catalogue:

http://www.shopcsa.ca

http://www.csa-intl.org/onlinestore/GetCatalogDrillDown.asp?Parent=2871

Society of Automotive Engineers (SAE)
400 Commonwealth Drive, Warrendale, PA
15096-0001
Phone: 412-776-4841 FAX: 412-776-5760
e-mail: sae@sae.org

Appendix 4: Glossary of Terms

CSA: Canadian Standards Association

Daytime: The period that starts one hour before sunrise and ends one hour after sunset.

Extremities: An extremity is the extreme projection of the equipment in question. For example, the extremity of a tractor may be the protruding axle stubs. On a cultivator it may be the protruding shovels when folded into transport position.

Hard Wiring: Permanently installed wiring on a self-propelled machine that connects with and works in concert with permanently installed wiring and lighting on attached implements.

Head lamps: A non-interruptible (as opposed to flashing) white colored light source used to illuminate the path of travel of equipment for operators, and to identify moving equipment for oncoming traffic on public roads. Head lamps must conform to SAE Standard J975.

Impair: To dim or conceal (wholly or partly) a lamp or marking with some external interfering object.

Implement of Husbandry: Means a vehicle designed and adapted primarily for agricultural, horticultural or livestock raising operations.

Lateral: Surfaces spanning a horizontal distance.

Left Side: The left hand side of a vehicle as determined from the rear of the vehicle facing in the direction that it moves.

Lensing: Covers on lamps that diffuse and color the light emitted from a source.

Lighting: Lamps used to illuminate and identify various parts of a machine to mark its size and position on a public road.

Marking: Signs and reflectors or reflective materials used to identify various parts of a machine and mark its size and position on a public road.

Night-time: The period commencing one hour after sunset and ending one hour before the following sunrise, or when atmospheric conditions (such as snow, rain, fog, smoke) do not allow enough light to clearly see a person at a distance of 150 metres (490 feet).

Reflective Materials: Other than reflectors which are part of lensing in lamps. Reflective material must meet the reflective requirements of SAE Standard J1967, *Retroreflective Materials for Vehicle Conspicuity.*

Reflectors: Can be part of lensing in lamps provided the lensing meets the reflective requirements of SAE Standard J594, *Reflex Reflectors*.

Right Side: The right hand side of a vehicle as determined from the rear of the vehicle facing in the direction that it moves.

Self-propelled Equipment: Equipment that is conveyed by its own power source.

Slow-Moving Vehicle (SMV) Sign: A brightly colored, triangular sign as described in CSA Standard M671, *Slow-Moving Vehicle Identification Emblem*.

Society of Automotive Engineers (SAE) Standard: A standard approved by the Society of Automotive Engineers.

Tail Lamps: A non-interruptible (as opposed to flashing) red colored light source used to identify the rear of machinery on public roads for approaching traffic. Tail lamps must conform to SAE Standard J585.

Towing Vehicle: A tractor, self-propelled implement of husbandry or motor vehicle.

Warning Lights: Means a light showing amber to the front and red to the rear and that is visible at a distance of 150 metres (490 feet) in normal darkness.

Appendix 5: For More Information

For more information on vehicle weights and dimensions contact:

Alberta Transportation
Transport Engineering Branch
4th Floor Provincial Building
4920 – 51 Street
Red Deer, AB T4N 6K8
Telephone: 403-340-5189

For more information on vehicle lights, reflectors and signs contact:

Alberta Transportation
Vehicle Safety Section
Main Floor Twin Atria
4999-98 Avenue
Edmonton, AB T6B 2X3
Telephone: 780-427-8901
For toll free service from anywhere in Alberta, call 310-0000.

Alberta