

Winterization

Presented by
Frontier Supply Chain Solutions Inc.



WINTERIZATION

TOPIC'S COVERED IN PRESENTATION

- SECTION 1: PREPARE
- SECTION 2: LOOK
- SECTION 3: ADJUST



WINTERIZATION



WINTER DRIVING

There are three basic rules to driving safely and defensively:
Be prepared, look ahead and around and adjust your driving to any adverse conditions.

These rules apply even more to winter driving, where conditions are slippery and more hazardous than in summer weather.

This module will discuss the ways to prepare for winter, what to be aware of during a trip and how to avoid or deal with hazardous winter conditions.

WINTERIZATION



WINTER DRIVING

After completing this course, you will be able to:

- Explain the importance of preparing for winter early
- Create a checklist to prepare for winter weather
- Explain how your equipment is affected by winter weather
- Describe how to recognize and take action against adverse conditions caused by winter weather
- List methods of safely driving through adverse conditions
- Explain precautions to take when driving through mountains

**THIS LESSON WILL TAKE APPROXIMATELY
20 MINUTES TO COMPLETE.**

- After completing this topic, you will be able to:
- Explain why it's important to prepare early for winter driving
- Explain why it's important to check your tires
- Describe the importance of the correct fuel in cold weather
- Explain how to prevent your air lines from freezing up in cold weather
- List the fluids, equipment and systems that should be checked before the winter season

TOPIC ONE INTRODUCTION

Prepare

SUBTOPICS IN THIS SECTION INCLUDE:

- Meet Rob
- Be Prepared
- Planning for Winter Trips
- Checking Tires
- Checking When Cold
- Chains
- Winter Fuel
- Coolant and Lubrication
- The Air System
- Visibility
- Don't Forget!
- Before You Head Out
- Topic One Review: Prepare

TOPIC ONE INTRODUCTION

Prepare

TOPIC ONE INTRODUCTION

Prepare



MEET ROB

Rob is a seasoned driver, but he's just moved North from Southern Texas and has joined a company that hauls freight throughout the northern United States and Canada. He's driven through a little snow, but after talking to his fellow drivers who have seen some brutal winters, he's a little nervous about his first experience with sub-zero weather.

For many drivers who have spent their lives in northern climates, winter driving isn't new. But it is always hazardous and if you aren't prepared, you can find yourself in a nasty situation. A little reminder of what the season has in store is never a bad thing.

TOPIC ONE INTRODUCTION

Prepare



HERE ARE SOME OF THE TOP CAUSES OF COLLISIONS IN THE WINTER:

- Limited or reduced visibility
- Limited or reduced traction
- Aggressive braking on a slick road
- Inability to judge safe speed for conditions
- Failure to adapt to changing weather patterns
- Poor shifting skills on a slick road
- Poor negotiation of a curve
- Failure to prepare vehicle properly
- Failure to plan route properly

So let's follow Rob as he learns about the hazards of winter weather and techniques for keeping himself and other drivers safe on the road. He already knows the three rules of defensive driving:

Be prepared, look ahead and around, and adjust to the conditions.

Now, he's going to learn how these rules apply to winter driving.

TOPIC ONE INTRODUCTION

Prepare



BE PREPARED

This is the first, and probably the most important of the three rules for safe driving through the winter that Rob needs to know. But unfortunately, even when you are well prepared, you may still spin out or get stuck in the snow. Rob needs to take supplies on the road with him in case of an emergency, including the following:

- Charged cell phone
- Ice scraper, snow brush, flashlight, extra blankets
- Hat, gloves/mitts and extra clothing
- Canned food (and a can opener), energy bars
- Safety flares or warning lights, waterproof matches
- Medication (if you need it) and a first aid kit
- Paper towels or cloth, reflective vest
- Extra windshield washer fluid and lock de-icer

TOPIC ONE INTRODUCTION

Prepare



BE PREPARED

Click the links to see more information about handy supplies to have on hand in the winter.

Some things you may not have thought of include...

- Candles, matches and a tin can
- Old, heavy socks
- Kitty litter
- Collapsible shovel
- Lip balm

TOPIC ONE INTRODUCTION

Prepare



PLANNING FOR WINTER TRIPS

Trip planning is always important, but especially during the winter months where more dangerous conditions exist. During a trip, you may encounter severe and rapidly changing weather patterns and you need to be prepared for whatever nature throws in your path.

As Rob decides where he is going to stop, he needs to check the weather forecasts for each destination to be prepared. He hasn't ever dealt with a wind chill, but he's been told that he needs to make sure he has his head, ears and hands protected. The "wind chill factor" can make the temperature feel much colder.

TOPIC ONE INTRODUCTION

Prepare



PLANNING FOR WINTER TRIPS

By checking the weather beforehand, Rob can change his route to avoid storms or icy conditions or simply give himself extra time. Because he's new to these routes, he has been getting as much information from his fellow drivers about the weather that he might face.

Rob knows that he's going to need chains on his route and since chain regulations differ from place to place, he makes sure that he knows the requirements for each state or province he'll be driving through.

TOPIC ONE INTRODUCTION

Prepare



CHECKING TIRES

If you've had any experience with a snowy, icy, winter, you'll know that good tires are extremely important to prevent sliding across the highway. Balding tires will reduce starting traction by 30 to 50%, so your tires need to have a good tread depth. Check your tire pressure with a tire gauge on a regular basis when the weather starts getting colder.

Why?

TOPIC ONE INTRODUCTION

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CHECKING TIRES

Rob knows that truck tires can lose as much as 2 psi per month, even if the vehicle is standing still. This is because air molecules gradually work their way out through the sidewalls of your tires. As they lose pressure, they lose traction and wear more quickly. What Rob didn't know was that as it gets colder, tires lose even more pressure. When it's cold, it becomes even more important to check pressure. You want all your tires providing as much traction as you can get on a slippery road.

TOPIC ONE INTRODUCTION

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CHECKING WHEN COLD

Remember to check your tire pressure when the tires are 'cold', or when the temperature of the air inside your tires is the same as the air outside. If you have been driving for a few hours, the air in your tires will heat up, which increases the pressure. This means that the best time to check pressure is after the truck has been parked for a few hours or after it has been driven less than a mile after sitting overnight.

TOPIC ONE INTRODUCTION

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CHECKING WHEN COLD

Duals should be the same size and shape and have the same tire pressure. Duals driven with mismatched tire pressure end up with mismatched sizes and shapes as well. When this happens, duals don't work together the way they're designed to do. The smaller tire is "dragged" by the larger one, reducing your vehicle's traction as well as increasing the wear on the smaller tire.

Rob has made a note to check pressure often - especially when the temperature significantly cools down or warms up during his trip. He also knows to check that the valve stems and caps on his tires are in good condition. If water freezes inside a valve stem, it can disrupt the seal.

TOPIC ONE INTRODUCTION

Prepare



CHAINS

Tire chains are a must for driving in snow, ice or extreme weather conditions. They increase your vehicle's traction by as much as 500%, they prevent skidding and increase your rig's pulling and braking power.

Most provinces and states have specific rules about using chains and they are generally only required in certain areas. Be aware of the rules and make sure that you have chains if you enter a chain control or chain advisory area. In these areas, you may be fined for spinning out, jackknifing or blocking a highway if you're driving without chains.

TOPIC ONE INTRODUCTION

Prepare



CHAINS

When preparing to install chains, remember to:

- Pull well off the road.
- Park on a level, solid surface. Be careful as you walk on a snowy or icy surface.
- Put on your emergency brake to make sure the vehicle doesn't roll or slide.
- Wear heavy gloves.
- Check the tire pressure to make sure the tires are inflated properly.
- Once the chains are installed, drive a quarter mile and then retighten as necessary to remove the slack.
- Make sure that your chains fit well before you have to use them. Otherwise, you can do damage to your tires.

TOPIC ONE INTRODUCTION

Prepare



WINTER FUEL

This is Rob's first winter where he needs to use a different fuel. Why?

Diesel is a heavy fuel, which is a benefit because the heavier the fuel, the more energy it can deliver to your vehicle (and the more miles you can drive). On the downside however, heavier fuels contain more paraffin wax. This wax usually stays dissolved, but as the temperature drops, it crystallizes. As it gets colder, the wax starts to solidify and the fuel flows more slowly. Eventually, the fuel gels and doesn't move at all. The wax clogs your filters and lines and the vehicle will stall.

TOPIC ONE INTRODUCTION

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WINTER FUEL

To prevent gelling, you have a few options:

- Buy a winter fuel that is blended with kerosene (also known as #1 diesel). Since kerosene is lighter and contains less paraffin, it will prevent the fuel from gelling. However, your mileage decreases at least 1% with every 10% of added kerosene (it is lighter and doesn't have the same power). Running over hills or mountains will decrease your fuel economy even more.
- Blend fuel conditioners with standard #2 diesel. They are most effective when they're added before it gets too cold.
- Use a fuel heater in your vehicle. Fuel can be warmed in two ways:
With an electrical heater, or With the engine coolant.

Coolant heaters circulate heated coolant around the fuel lines or into your fuel tanks. They're favored because high-capacity electric heaters can drain your batteries.

TOPIC ONE INTRODUCTION

Prepare



WINTER FUEL

Coolant heaters circulate heated coolant around the fuel lines or into your fuel tanks. They're favored because high-capacity electric heaters can drain your batteries.

Beware of water!

The water in your fuel also creates problems in cold weather when it freezes. Water that condenses in tanks and lines can be handled with a fuel/water separator and filters. If you have a sight glass to indicate when it needs to be drained, make sure that you check it on a regular basis when the temperature drops.

Remember! Water is a particular problem with low quality fuel. Better quality fuel is less likely to cause this problem, but you still need to check regularly.

TOPIC ONE INTRODUCTION

Prepare



COOLANT AND LUBRICATION

Just when Rob thought that he had all his winter preparation under control, he finds out that there's more!

Your Radiator

Check the quality of the coolant in your radiator and add some supplemental coolant additives well before the winter begins. If you know you'll be running in particularly cold weather (more than -30 degrees Celsius or -22 degrees Fahrenheit), your proportion of antifreeze should be increased from 50/50 to about 68%. Check for radiator leaks!

TOPIC ONE INTRODUCTION

Prepare



COOLANT AND LUBRICATION

Your Oil

In the winter months, you should also switch your oil if you're going to be driving through chilly temperatures. When oil is cold, it thickens and can cause engine wear, so you want to use oil that performs well at low temperatures.

The numbers on oil products will tell you how well they perform in the cold. The first number describes how fluid the oil is at low temperatures. The second number indicates how well the oil protects your engine at high temperatures (after your engine has been running for a few hours). So a 0W-30 or 5W-30 will perform better in the extreme cold than a 15W-40.

TOPIC ONE INTRODUCTION

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COOLANT AND LUBRICATION

Your Fifth Wheel Lubricant

Lastly, make sure a winter grade of lubricant is used on the fifth wheel. Some heavy summer grades of lubricant at low temperatures become too heavy and interfere with steering on slippery surfaces.

TOPIC ONE INTRODUCTION

Prepare



THE AIR SYSTEM

During the winter, air system freeze-ups can be a hassle. Take preventative action rather than wait until you're stuck, by using these suggestions:

Avoid idling the engine for extended periods of time. This tends to cause discharge line freeze-ups, leading to compressor failures. The discharge line should slope down from the compressor discharge port without forming water traps or kinks. To warm up the engine, drive it around the yard rather than leave it idling.

Check the air brake system for leaks.

If the system does not have an air dryer, the reservoirs must be drained (on a daily basis if possible) since they can all accumulate water and contaminants. Check the operation of automatic drain valves before the weather turns cold and drain them manually on a periodic basis.

TOPIC ONE INTRODUCTION

Prepare



THE AIR SYSTEM

Proper air dryer operation is critical to helping your system run clean and dry. Make sure that your air brake system isn't leaking and replace filters when necessary.

Make sure that glad-hands are snug. If they aren't tight, they may come off during a tight turn and cause the air compressor to cycle unnecessarily.

Air hoses should be properly hooked up with one another or to the dummy glad-hands. If you find moisture present in the air hose, pour recommended brake line anti-freeze ONLY in the red (EMERGENCY) side. Never put the anti-freeze in the blue side as it may result into locking up of the brakes.

TOPIC ONE INTRODUCTION

Prepare



VISIBILITY

Driving through snow and freezing rain is dangerous at the best of times, but more so when your windows and mirrors are streaky and dirty. Your wiper blades get a workout in the winter, so check that they're in good condition. Rob has just had new blades installed and he has checked the arm pressure to make sure they will be effective.

It's very important for Rob to use windshield washer fluid that's appropriate for the temperature. Washer fluid contains between 30% and 50% methyl alcohol to prevent it from freezing under the hood. However, the alcohol evaporates quickly and if the antifreeze isn't powerful enough, the water in the fluid will freeze on your windshield. Run the defroster before using your wiper fluid and don't dilute it beforehand!

TOPIC ONE INTRODUCTION

Prepare



VISIBILITY

Rob also needs to make sure his heater and defroster are working properly. This is extremely important during the winter months as the windshield fogs up regularly.

Lastly, Rob knows that how well he can see others isn't the only important thing - he also needs to make sure that other drivers can see him. Lights are particularly important in winter weather to make sure your vehicle is clearly visible to other drivers. Be sure both headlights work on upper and lower beams and are correctly adjusted. All stop, tail, clearance lights and directional signals should be clean and working properly.

TOPIC ONE INTRODUCTION

Prepare



DON'T FORGET!

Below are some items that will help you and Rob avoid unpleasant stops at the side of the road.

- Batteries

Cold weather lowers battery power so it's important to check before winter arrives. Fully charged batteries can freeze at -5° Celsius (23° Fahrenheit), so a battery blanket is a good investment.

- Muffler and Exhaust System

You're probably not keeping the windows open in November, so make sure that the muffler and exhaust system are in good condition and tightly fitted. If they aren't, carbon monoxide can seep into the interior of the vehicle and cause serious illness or death to anyone inside.

TOPIC ONE INTRODUCTION

Prepare



DON'T FORGET!

- Cracks

Don't wait for slush to congeal around your frame. The autumn is the best time of year to power wash the truck and check for hairline cracks that can form in everything from mounting brackets to spring suspensions. Hoses should also be checked. They may be flexible enough to seal hairline cracks in the summer, but they'll break wide open once the colder weather hits.

- Thermometer

A thermometer is important to have so that you always know the outside temperature. This can give you a forewarning of black ice conditions (which often occur after the temperature drops suddenly).

- Winter Fronts

A winter front can keep the cold air from cutting through the grill and is useful anytime temperatures dip below -20° Celsius (-4° Fahrenheit). Remember to leave enough of the radiator exposed so that your engine isn't starved for air.

TOPIC ONE INTRODUCTION

Prepare



BEFORE YOU HEAD OUT

As you and Rob have seen, it is important to make sure that your vehicle is ready for the winter. In winter conditions, it is crucial to perform a thorough pre-trip inspection as well, especially the following:

- **Windows and mirrors.** Because of reduced visibility in winter, it is extra important to make sure all glass and mirrors are clean.
- **Wipers, heater and defroster.** If your windows fog up, you'll have difficulty seeing even if your windows are clean!
- **Fluids.** Check your fluids. Winter-strength windshield washer fluid should be topped up and oil levels should be checked on a regular basis.

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BEFORE YOU HEAD OUT

- **Tires.** Check your tire pressure *every* time you drive. Your pressure can drop in cold conditions overnight!
- **Lights.** Make sure you can see and that everyone else on the road can see you. Wipe off the headlights, brake lights, taillights and turn signals.
- **Fuel.** Make sure that you have at least half a tank of fuel at all times.
- **Snow and Ice**

After it snows, your vehicle can accumulate a lot of extra snow and ice, especially on the trailer, hood, roof, lights and windows. To prevent injury to other drivers, this should be cleared off as much as possible. Clearing snow and ice also reduces your vehicle's weight and improves your mileage.

TOPIC ONE INTRODUCTION

Prepare



TOPIC ONE REVIEW: PREPARE

Rob has found that as a driver in the north, winter preparation starts well before the cold weather arrives. Winter weather can really abuse a vehicle and any weakness can become a major issue at the worst possible time. Rob needs to do the following to make sure that he's prepared for the weather:

- He makes sure that the fuel and lubricants used in his vehicle are specially formulated for the weather
- He checks the tires on a regular basis knowing that the cold weather causes tires to lose pressure, which gets worse as the temperature drops

TOPIC ONE INTRODUCTION

Prepare



TOPIC ONE REVIEW: PREPARE

- He makes sure that there are no leaks in the air system and that the connections are snug. He makes a habit of draining the reservoir daily since he doesn't have an air dryer.
- Lastly, Rob knows that he needs to take extra care during his pre-trip inspections during the winter. Not only are conditions more dangerous, but he has a feeling that they're much more unpleasant in the event of a problem. Make sure that you clear all snow and ice from your windows, mirrors and lights before you start off.
- And Rob knows that even the best preparation doesn't make you completely immune to the elements. In case he breaks down or has to make an emergency stop, he has supplies handy that can get him through it safely.