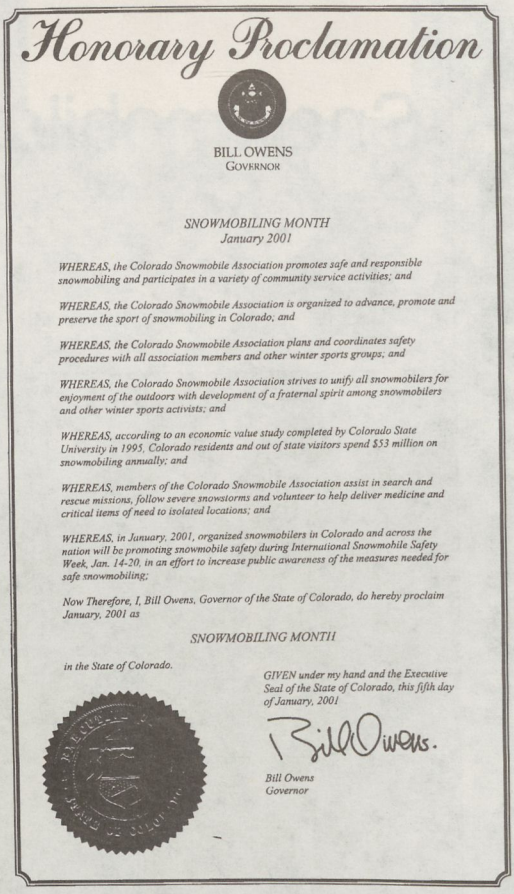
Snowmobile COLORADO!

Snowmobile Safety and You

Colorado State Parks



Honorary Proclamation

BILL OWENS
GOVERNOR

SNOWMOBILING MONTH
January 2001

WHEREAS, the Colorado Snowmobile Association promotes safe and responsible snowmobiling and participates in a variety of community service activities; and

WHEREAS, the Colorado Snowmobile Association is organized to advance, promote and preserve the sport of snowmobiling in Colorado; and

WHEREAS, the Colorado Snowmobile Association plans and coordinates safety procedures with all association members and other winter sports groups; and

WHEREAS, the Colorado Snowmobile Association strives to unify all snowmobilers for enjoyment of the outdoors with development of a fraternal spirit among snowmobilers and other winter sports activists; and

WHEREAS, according to an economic value study completed by Colorado State University in 1995, Colorado residents and out of state visitors spend $53 million on snowmobiling annually; and

WHEREAS, members of the Colorado Snowmobile Association assist in search and rescue missions, follow severe snowstorms and volunteer to help deliver medicine and critical items of need to isolated locations; and

WHEREAS, in January, 2001, organized snowmobilers in Colorado and across the nation will be promoting snowmobile safety during International Snowmobile Safety Week, Jan. 14-20, in an effort to increase public awareness of the measures needed for safe snowmobiling;

Now Therefore, I, Bill Owens, Governor of the State of Colorado, do hereby proclaim January, 2001 as

SNOWMOBILING MONTH

in the State of Colorado.

GIVEN under my hand and the Executive Seal of the State of Colorado, this fifth day of January, 2001

Bill Owens
Governor

Denver — Every year the Governor declares a week in December as "Snowmobile Safety Awareness Week," emphasizing that the key to safe participation in this winter sport lies in the operator's knowledge of the snowmobile and awareness of its capabilities and limitations. It is also important that snowmobilers have knowledge of the trail conditions, a concern for the safety needs of other winter sport enthusiasts and respect for wildlife and the environment.

Colorado's snowmobile safety and education programs, funded by snowmobile registration fees, are the responsibility of the Colorado State Parks and Recreation Board.

Colorado State Parks and the Colorado Snowmobile Association place special emphasis on providing snowmobile safety courses for young people as well as adults.

Free courses and materials are available from State Parks:

Brochures

- *Colorado Snowmobile Facts*

Videos

- *Tracks of Winter:* 27 minutes. A guide to responsible snowmobiling promoting safe and responsible use of a snowmobile.
- *Snowmobile Safety:* 5 minutes.
- *Snowmobile Operation:* 8 minutes.
- *Snowmobile Courtesy & Ethics:* 9 minutes

Correspondence Course

The State of Colorado offers over 3,000 miles of beautifully groomed trails and countless miles of play area for your snowmobiling pleasure. As snowmobiling becomes more popular, so does the use of these areas. Consequently, there is a need for snowmobiling skills and safety awareness on the part of everyone who operates a snowmobile.

Snowmobile COLORADO! will help you gain the knowledge to improve your snowmobiling skills and become a better, more prepared operator. Persons aged 10 and over who successfully complete the Snowmobile Exam on pages 80-86 will qualify for a Colorado snowmobile safety patch. Study the text, and complete the Snowmobiler's Review at the end of each chapter to test and reinforce your knowledge. Then complete the Snowmobile Safety Final Exam Key and return it to State Parks.

When you have finished this book, continue to carry it with you as a handy reference and survival guide. Remember to practice what you have learned and you'll keep the winter recreation areas of Colorado fun and safe for you and others.

Groomed Snowmobile Trails

The statewide groomed snowmobile trails guide can be viewed on CSA's web site at www.sledcity.com. Click on Colorado and Trail Maps.

Benefits of a CSA membership!

1. **Members receive an annual subscription to *The Snow Scoop,* CSA's newspaper, to help keep them informed about snowmobile issues.**
2. **Membership gives people access to safety training and up-to-date information.**
3. **Gives you a voice to help fight for or against important snowmobile issues.**
4. **Provides a $1,000 scholarship for members who apply and are successful in the judging.**
5. **CSA also offers information on how to form a club and provides an outlet for club liability insurance at an affordable rate.**
6. **Your membership helps protect the future of snowmobiling.**

To join, complete and mail application on page 94.

Colorado Snowmobile Association (CSA)

CSA is a state-wide organization of snowmobilers that

- promotes snowmobiling by working for long term growth of opportunities and facilities
- supports and initiates positive legislation and promotes CSA/club membership
- advises State Parks regarding desired levels of service
- assists State Parks in user information programs and in soliciting volunteer involvement in program activities

Safety Training Courses

Snowmobile safety training courses are available through a cooperative program between State Parks and CSA members. Safety courses are offered in early winter at various locations around the state. For more information, contact State Parks at (303) 791-1920.

Become a Snowmobile Instructor

Call Colorado State Parks at (303) 791-1920 for more information.

For more information about Snowmobiling in Colorado, please write or call:

Colorado State Parks
13787 S. Hwy. 85
Littleton, CO 80125
(303) 791-1954

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Snowmobiling in Colorado

Snowmobiling is one of the major winter recreation activities in Colorado. Others which are increasing include snowshoeing, ski mountaineering, dog sledding, snow play, and cross-country skiing.

Snowmobiling's recognition as a major recreational activity occured primarily during the 1970s. During this period, machines, user patterns, and regulations underwent changes because of technological innovations, environmental concerns, and the emergence of this relatively new winter sport.

Snowmobiling is unique because the machines literally float over the snow. Traveling through forests in the wintertime provides an opportunity to observe and learn about wildlife in this special winter environment.

Colorado State Parks, in cooperation with the USDA Forest Service, Bureau of Land Management, county governments and several snowmobile clubs, administers a statewide snowmobile trail grooming program providing approximately 2,500 miles of groomed trails. Based on the advice of the Colorado Snowmobile Association, State Parks contracts with various snowmobile clubs to groom trails primarily on USDA Forest Service lands.

1

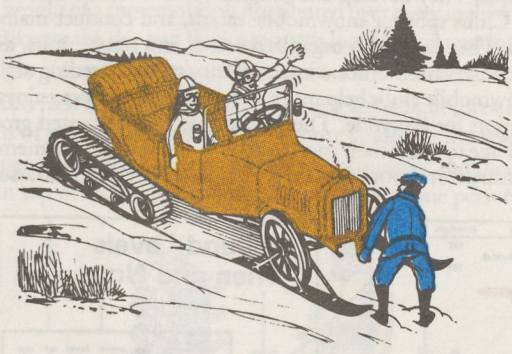
Objectives: Snowmobilers should be able to:

- ***Reconstruct the history of snowmobiling.***
- ***Compare the noise level of snowmobiles in 1968 to the present.***
- ***Compare the amount of energy used in snowmobiling to other activities.***

SPORT AND ENVIRONMENT

How the Sport Grew

Since snowmobiles have become so popular in the 1980s and 90s, you might think of the snowmobile as a recent invention. But someone thought of putting a motor on a sled back in the 1920s. In both the United States and Canada, individuals tried to find a fast and

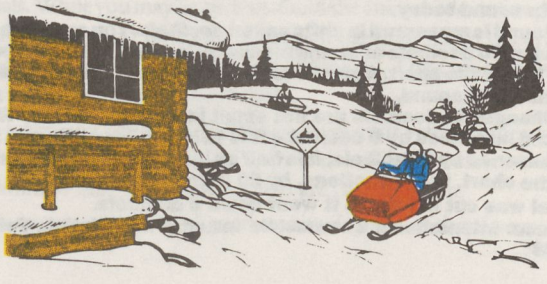


inexpensive way to travel on snow.

How would you make a snowmobile in your backyard? Would you put a motor on skis or skis on a motor? Well, here's what some inventors tried.

One put a steam engine on skis and runners. Others put skis on automobile frames. Some winterized motorcycles, and others tried propellers. There were some successes, but they were usually too bulky, too expensive, or too limited in their use.

During the 1930s, the designs improved. Today's snowmobiles use the basic ideas of these 1930's machines. Since snowmobiles were used for carrying troops in World War II, people continued to do research to make an even better machine. By 1960, a small, fairly inexpensive machine was available for personal use.



Word got around that snowmobiling could be a sport as well as a way of traveling. People wanted to try one of these snow machines, and soon they wanted one of their own.

By 1970, more than 60 companies had produced well over one million machines. Today, four companies build almost all the snowmobiles manufactured in North America. As snowmobiling grew in popularity, other industries began making additional equipment.

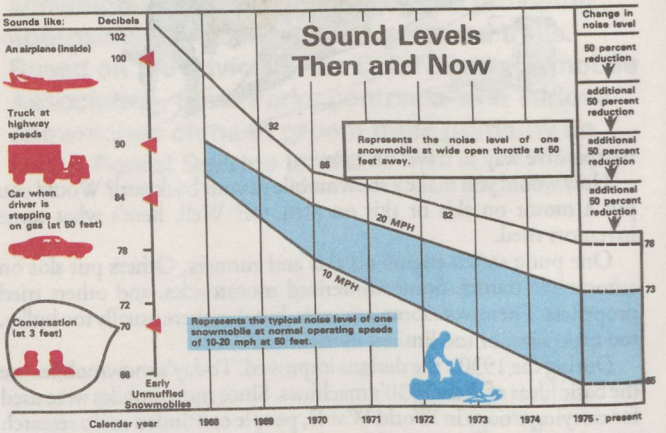
Snowmobiling has opened up the winter to many people—from youngsters to senior citizens—who used to stay inside. Surveys show over 80 percent of snowmobilers consider it a family sport. In fact, there are more than ten million active snowmobilers in the United States and Canada.

Other sports enthusiasts also benefit from snowmobilers. There are more than 140,000 groomed public snowmobile trails in North America. Hikers, bicyclists and horseback riders often use them in the warm weather months.

Many snowmobilers have organized programs to improve their sport. In 1973 an organization was formed called the International Snowmobile Council (ISC). Its purpose is to provide a basis for communication between snowmobile groups across North America.

Today, snowmobile associations representing snowmobilers and snowmobile clubs from 30 states and 11 provinces belong to the ISC. These clubs participate in many recreational and community service programs. They develop and maintain over 140,000 miles of public trails. Clubs sponsor snowmobile safaris, and conduct maintenance clinics. They help with organized search and rescue units, as well as assist conservation officers in emergency wildlife feeding activities.

Snowmobile clubs help make snowmobiling a more enjoyable and safer sport for everyone. They're a proud and dedicated group who would like to share their sport with you. If you are not a member, ask your instructor about local clubs, or contact your state club association.



Snowmobile industries have succeeded in making snowmobiles quieter. This chart compares the sound of a snowmobile in 1968 to its sound today.

Sound is measured in units called *decibels*. You can get an idea of what 90 decibels of sound means by looking at the pictures on the left of the chart. A truck moving at highway speeds makes 90 decibels of sound.

Changes in decibels are not small jumps like inches. When a sound increases by 6 decibels, it is twice as loud. When a sound is lessened by 6 decibels, it is half as loud. On the right-hand side of the chart, the reductions, by 50 percent mean that the sound level was cut in half as it went down 6 decibels.

Source: International Snowmobile Industry Association, February, 1988

Enjoying Nature on Your Snowmobile

Any new method of transportation brings changes to the environment. As a snowmobiler you will get a firsthand look at nature's winter wonderland. Be sure other snowmobilers traveling on the trail after you enjoy the same undisturbed view. One easy rule to follow is to stay on the trail.

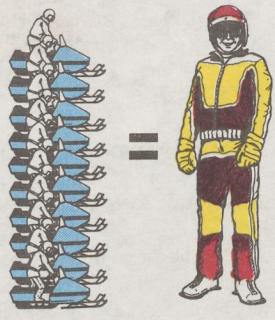
Trails go around trees and shrubs, giving plenty of room to pass without breaking off branches or damaging the bark. But what damage is being done to the grass beneath the snow?

You might be surprised to learn that snowmobiles have little effect on the vegetation under the snow—whether it be grass, flowers, or crops. In fact, a person on a snowmobile is easier on the vegetation than just the person alone. How can that be?

The reason is because the effect is measured in terms of *pressure* (distributed weight) and snow *compaction* (firmly packed snow). Pressure is not the same as weight. Weight is measured in pounds. Pressure is determined by pounds per square inch. The key here is "per square inch."

The weight of a snowmobile is distributed over every inch of ski and track. Because the skis and track are much longer than a person's feet, the weight is spread out over a larger area.

In turn, each area (square inch) is carrying less weight (pressure). So in terms of pressure, a snowmobile is more gentle on the vegetation than a person. In fact, it would take ten snowmobiles and their riders piled on top of each other to equal the pressure of one person!



As the snowmobile travels over the snow it packs the snow together. This is known as compaction. It is similar to picking up a large chunk of soft snow and squeezing it into a snowball. Like a snowball, the compacted snow forms a hard crust and protects the vegetation.

As you ride on the trail you may see rabbits, deer, elk, or other animals. While you may be curious about the animals, do not stop your machine and stand up to get a better look. This could disturb the animals and they may stay away from the trail. Then other snowmobilers would not be able to see them.

So when you come across animals, keep your vehicle running and stay seated. Do not be tempted to leave the trail to get closer to them. The animals may feel as though you are chasing them.

It is important not to chase the animals because they live on a fat

reserve stored in the body during the winter. This fat provides them with the energy needed to live until the following spring. By causing them to run, they will use up their energy. Saving energy is as important to animals as it is to people.

Be a Wise Energy User

Just as animals use energy to "live," you need energy to operate your snowmobile. There are ways to operate your vehicle to save or conserve energy.

You conserve energy at home by not wasting energy; for instance, remembering to turn the light off when you leave the room, or turning off the television when you are not really watching the show.

These same guidelines can be used in snowmobiling. Letting the machine warm up, while you are in the house out of the cold, only wastes gasoline and energy. Instead, drive the snowmobile slowly for

the first couple hundred feet to let the engine warm up. Operating your machine at a lower speed is another way to conserve fuel. One more tip is to keep your engine tuned correctly to get the most miles out of every gallon of gasoline.

Many trails are close to home. This too reduces the amount of gasoline needed to travel to the area. Practice the energy conservation tips above and you will get more trail riding miles per gallon!

Colorado's Fragile Winter Wildlife

Winter is demanding. The survival of animals is often precarious and disturbance by humans can result in death.

Wildlife maintains itself by creating fat reserves and limiting all unnecessary movement to conserve energy. Fat is needed to sustain body temperature in the extreme cold. Since plants are dormant and maintain low nutritional value during the winter, creation of sufficient energy reserves during the summer months is critical. Unnecessary movement caused by escape from a predator in the wintertime, or the fear generated by a human disturbance, speeds the loss of fat reserves and decreases the chance of an animal's survival.

Remember: Be sensitive to the needs of animals. Stop and go around them or wait for them to move. Avoid close contact with wildlife. Minimize noise.

Help animals conserve their food supply. Avoid damaging brush, trees and grass. Little food is available in winter. Respect wildlife's privacy. Stay on established routes or trails. Show your concern and view birds and animals from a distance.

Animals You May See

Various field guides to identification of birds and mammals can be obtained at your local bookstore. Specific wildlife fact sheets are available from the nearest Department of Wildlife office.

Birds

- ☐ Cooper's hawk, red-tailed hawk, goshawk, sharp-shinned hawk
- ☐ white-tailed ptarmigan, blue grouse, spruce grouse
- ☐ great horned owl, saw-whet owl
- ☐ flicker, pileated woodpecker, hairy woodpecker
- ☐ gray jay (camp robber), Steller's jay, common raven, common crow, Clark's nutcracker, mountain chickadee
- ☐ brown creeper, golden-crowned kinglet, evening grosbeak, pine grosbeak, red crossbill, dark-eyed junco

Big Game

- ☐ elk, deer, mountain goat, mountain sheep

Small Mammals

- ☐ long-tailed weasel, porcupine, varied hare, coyote, red fox, raccoon, marten, mink, fisher, ermine, wolverine, skunk, lynx, bobcat

Snowmobiler Activity: Environmental Quiz

Circle the letter which best completes the sentence.

1. Today's snowmobiles use the basic ideas of
   (a) motorcycles
   (b) the 1930's snowmobiles
   (c) cars
2. Snowmobile trails are used
   (a) by hikers, bicyclists, or horseback riders during the warm-weather months
   (b) only by snowmobilers
   (c) only by snowmobilers and cross country skiers
3. Snowmobile clubs help
   (a) with organized search and rescue units
   (b) conservation officers in emergency wildlife feeding activities
   (c) both (a) and (b)
4. People who enjoy snowmobiling are
   (a) under the age of 15
   (b) between the ages of 15 and 35
   (c) of all ages–from youngsters to senior citizens
5. The weight of the snowmobile
   (a) is distributed over every inch of ski and track
   (b) rests on the back half of each track
   (c) rests on the front half of each track
6. It would take ten snowmobiles and their riders piled on top of each other to equal the pressure of
   (a) one car
   (b) one person
   (c) neither (a) nor (be) is correct
7. When you see animals on the side of the trail you should
   (a) stop your machine until they disappear
   (b) turn your snowmobile around and head in the opposite direction
   (c) proceed slowly and stay seated
8. Pressure is measured in
   (a) pounds
   (b) inches
   (c) pounds per square inch
9. The form of energy snowmobiles use is
   (a) electricity
   (b) gasoline
   (c) coal
10. You can conserve energy on your snowmobile by
    (a) driving faster, so you will get there sooner
    (b) keeping your engine tuned
    (c) letting your machine warm up by running the engine without moving the vehicle

2

Objectives: Snowmobilers should be able to:

- ***Identify the names and functions of the major parts of a snowmobile.***
- ***Identify the control switches.***
- ***Identify the label of certification.***
- ***Identify the safety features.***

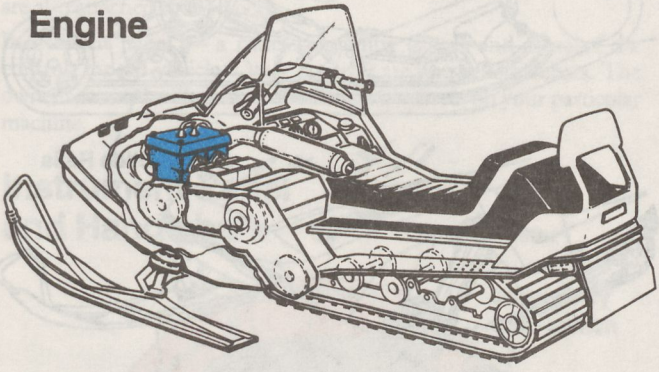
THE NAMES OF PARTS

This chapter is not meant to make you a mechanic, but rather to show you some basic repairs in case of an emergency. Before even attempting to drive the snowmobile, **read the owner's manual carefully.** With the wide variety of machines available today, this is very important. Be sure you know what all the parts of your vehicle are for.

Following is a list of the most common names of the parts of your snowmobile.

Chassis — the frame, or "backbone," of the vehicle. It is usually made of steel or aluminum. It supports the engine, drive system, and suspension.

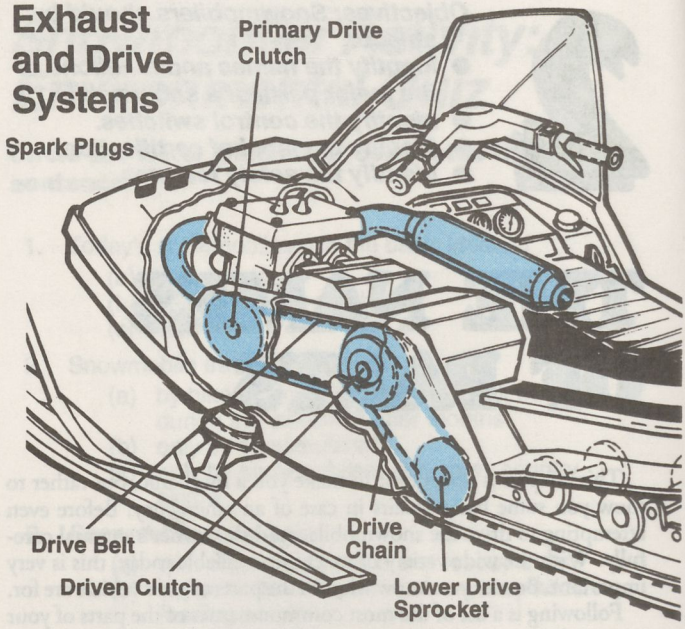
Engine — the main power source which operates the drive system. Most snowmobile engines are of the two-stroke design, which runs on a mixture of gasoline and oil. The engine is a lightweight design for power output and easy starting in cold temperatures.



Exhaust system — the *exhaust manifold* which carries the waste from the engine out through the muffler. The muffler quiets the engine, helps the engine run smoothly, and directs the exhaust fumes away from the engine. The exhaust is factory tuned, and should not be modified.

Drive system — a series of turning wheels, chains, and belts which changes the energy from the engine into the movement of the track. The crankshaft is turned by the power from the *piston* moving up and down. The *primary drive clutch*, attached to the end of the crankshaft, turns, making the *drive belt* turn. This starts the *driven clutch* turning, which turns the *drive chain* around two toothed wheels, or *sprockets*,

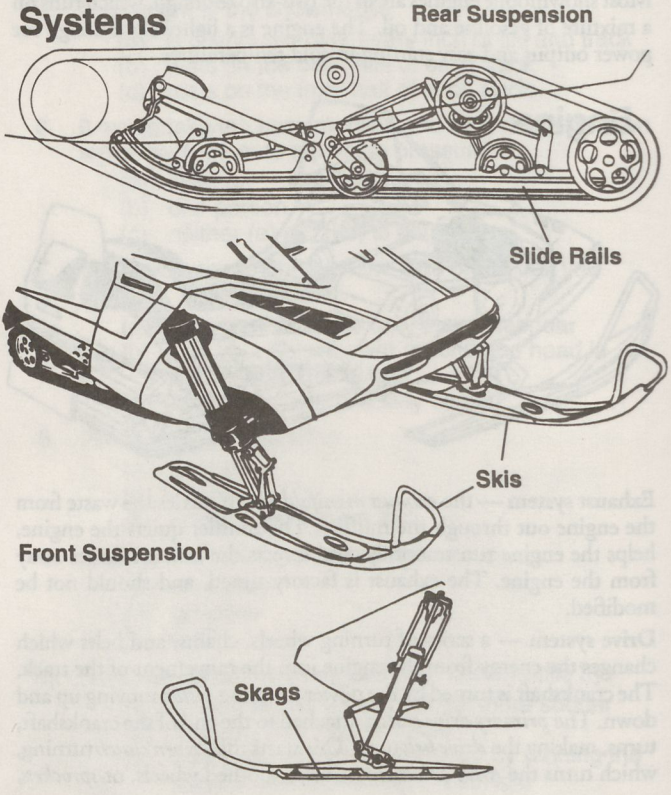
Exhaust and Drive Systems



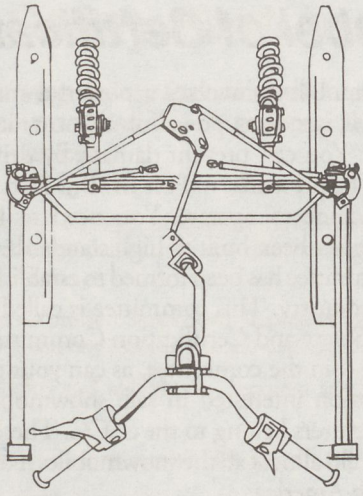
just like a bicycle chain. The *lower drive* sprocket turns the track which move the snowmobile.

Suspension system — a series of springs and wheels, and/or front

Suspension Systems



Steering System



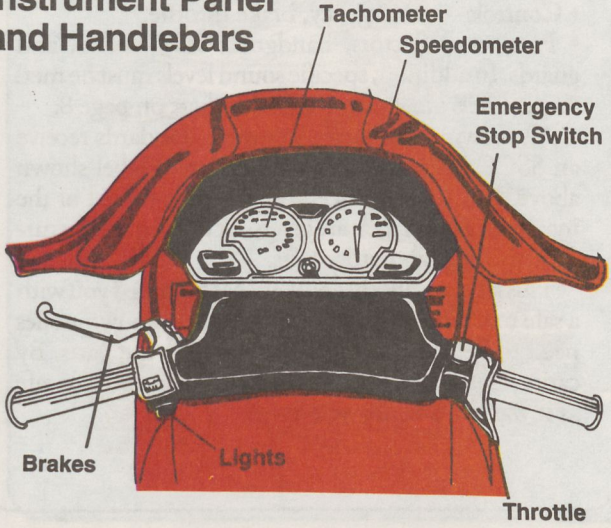
suspension and skies *(hifax)* which keep the bottom of the machine from hitting the ground. It includes the rear axle, springs, and *bogie wheels,* or slide rails or a combination of both. These combine to keep the track flat on the snow, give a comfortable ride, and make the machine handle easily. It makes the machine "float" over the snow.

Steering system — steering column, tie rods, steering arms, ski columns, ski springs, and skis. There are two types of front suspension: leaf springs and independent front suspension (IFS).

Hood — a covering for the engine and drive system. Openings called louvers on the hood let fresh air into the engine compartment and used air out. Most windshields are mounted on the hood. Most headlights are also attached to the hood.

Instrument panel — a panel containing gauges and some of the controls for the vehicle. Other controls are on the handlebars. The owner's manual will show the location of controls on your particular machine.

Instrument Panel and Handlebars



Label of Certification

Snowmobiling involves a powerful machine. Although it is not as powerful as a car, it can cause damage. You can prevent damage by driving safely; this will be presented in Part III. But first, you need a safe machine to operate. You need to know your machine has been built to high standards.

A committee has been formed to establish standards for the industry. This committee is called the Snowmobile Safety and Certification Committee (SSCC). You can join the committee, as can your club or any organization interested in safe snowmobiling. Four manufacturers belong to the SSCC. These manufacturers build almost all the snowmobiles manufactured in North America.

Since February 1, 1975, all snowmobiles produced by participating manufacturers must meet the minimum safety standards of the SSCC. These exceed federal government standards in Canada and State government standards in America.

Nearly all necessary systems and equipment of the snowmobile are tested:

- Systems — electrical, lighting, brake, fuel, alternate starting.
- Controls — emergency, brake throttle.
- Parts — reflectors, handgrips, seat, shields, and guards. In addition, specific sound levels must be met. These levels are illustrated in the chart on page 8.

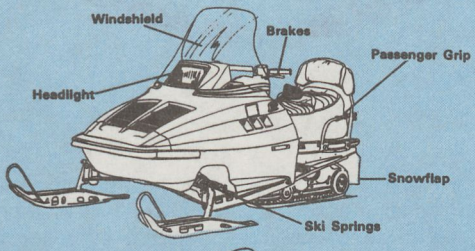
All snowmobiles that meet these standards receive an SSCC black and white certification label shown above. It is usually placed on the right tunnel of the machine. These labels are given out to the manufacturers only after laboratory tests.

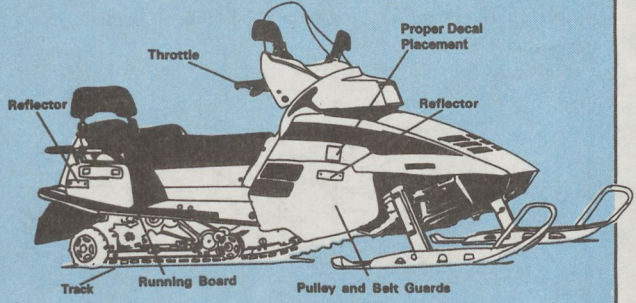
This label means the industry has provided you with a safe machine. But like a car or bicycle, snowmobiles need to be checked as usage wears out the parts. By caring for your snowmobile, you will be sure it is as safe as it was the first day you bought it.

Safety Features

The following safety features are found on most snowmobiles. See if you can find them on your vehicle.

- ☐ **Throttle** — changes the speed of the snowmobile. When pushed down, the machine speeds up; when released, the engine idles.
- ☐ **Brakes** — pressure slows down the snowmobile. *Braking distances* will vary according to snow conditions and speed.
- ☐ **Headlights and taillights** — required and in operating order.
- ☐ **Reflectors** — for easy visibility at night.
- ☐ **Pulley and belt guards** — protects operator from sticking hand into moving belt during operation.
- ☐ **Windshield** — helps protect face and eyes from wind, snow, debris.
- ☐ **Emergency stop switch** (kill switch or shut-off switch) — allows easy shut-off of engine in an emergency.
- ☐ **Running board** — a footrest which supports and protects the feet
- ☐ **Passenger grips** — for passenger to hold onto.
- ☐ **Snowflap** — prevents stones, ice and other objects from shooting back at other machines that are behind.





3

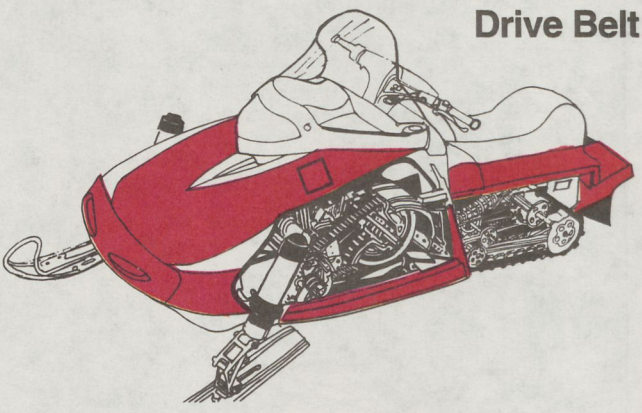
Objectives: Snowmobilers should be able to:

- ***Describe several maintenance procedures.***
- ***Describe storage procedure.***
- ***Describe the pre-season check.***
- ***Identify procedures listed on the troubleshooting chart.***

MAINTENANCE AND REPAIR

Before you attempt any maintenance or repair of your snowmobile, you should review the **owner's manual**, and decide just how much mechanical ability you have. Don't attempt a repair which you do not understand completely. You might end up with a pile of parts and no snowmobile.

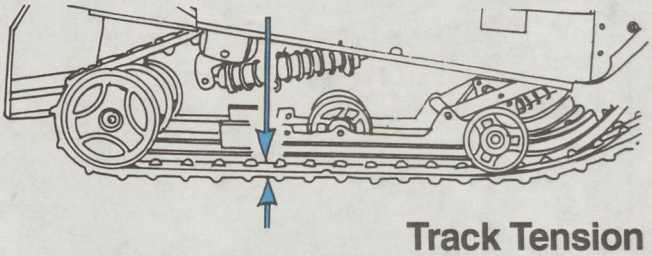
If a repair is beyond your ability, you should have a snowmobile dealer or mechanic take care of it for you. It is important to check your machine often, but you should not make adjustments which could



Drive Belt

endanger you and others when you are driving. Once you make an adjustment on your snowmobile, remember to check it periodically throughout the season. Out on a trail, your snowmobile could have a problem which would stop it completely. For this reason, you should never travel alone.

Here are some suggestions for regular checkups. Refer to your

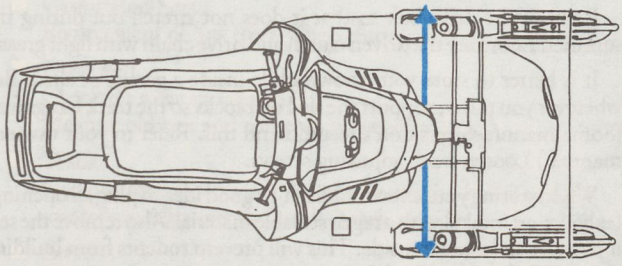


Track Tension

owner's manual for instructions.

Drive belt inspection — If a drive belt needs changing, do it with the engine turned off. Check the drive belt before each trip. Read the **owner's manual** carefully if you have to change the drive belt in the field.

Ski Alignment



Track tension adjustment — Your **owner's manual** will tell you how much free play there should be in the track. If the track is too loose or too tight, it will wear out quickly. Always check track tension and alignment at the same time.

Ski alignment — Normal driving may push skis out of line with each other. If your snowmobile pulls in one direction, place the machine on a solid surface and face handlebars straight ahead. Measure the distance between the skis at the front and at the rear. Check your **owner's manual** for proper ski alignment.

Brake adjustments — On most machines, about ¾ inch play on the brake handle is recommended, but you should refer to the **owner's manual** for exact adjustment. This prevents brake drag and excessive wear. Check your brakes, because normal wear makes adjustment necessary every now and then. Know the braking distances of any machine you drive.

Recoil starter — If you take good care of the starter, it will last a long time. You will shorten its life if you pull the cord to the end and let it snap back. Replace cord if it is frayed.

Clutches — Clutches are like a car transmission - if it does not work the vehicle will not move or perform like it should. The drive and driven clutches should be serviced once a year so the machine will perform properly.

Storage

Before putting your snowmobile away for the warm months, clean it thoroughly. Use upholstery cleaner on the vinyl seat cover. Use touch-up paint on any bare metal surface to prevent rust. Then give it a wax job.

When the sled is clean, check hardware and various components for tightness. Replace worn or missing screws and bolts.

Make any repairs that are necessary after consulting your **owner's**

manual. If you do the work yourself, you'll find that parts are easier to find in spring. If you take the sled to a dealer for servicing, you'll find he has more time available for fast service work. Either way, your machine will be in tip-top condition come autumn and you won't have to wait for service work.

Drain all fuel from the tank and run the engine at idle speed to clear the fuel lines and carburetor. Remove the spark plugs and add one teaspoon of 2-cycle oil in each cylinder. This will prevent rust from forming. Pull the recoil start rope six or seven times to lubricate the cylinder walls, then replace the plugs or put in new ones.

Remove the drive belt so that it does not stretch out during the summer. Lubricate the driven clutch and drive chain with light grease.

It is better to store your snowmobile inside a garage or shed. But wherever you put it, support the sled on blocks so the track hangs free. (Some manufacturers don't recommend this. Refer to your **owner's manual.**) Loosen track adjusting screws.

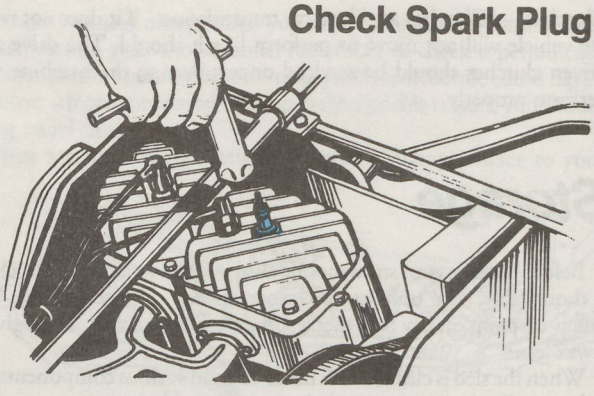
When storing your snowmobile, it's a good idea to plug all openings (exhaust, air intake) with a rag or suitable material. Also remove the seat if possible and store it inside. This will prevent rodents from building nests with the seat material.

Put a board under the skis and paint rust-stopping paint on wear bars and bare metal areas on the skis. Cover the machine for protection.

General Tune-up

- ☐ *Lubrication*— Lubricate the suspension system. Check bogie wheels or slides for extreme wear. Replace if necessary.
- ☐ *Ignition* — **Spark plugs** are one of the most important parts of snowmobiles. Without them, the machine will not run. One of the main reasons for plug fouling is an improper gas/oil mixture. Be very careful in measuring the right amounts of oil and gasoline.
- ☐ *Carburetor*— Follow carefully the instructions in the **owner's manual** if you need to adjust carburetor settings.
- ☐ *Drive Belt* — Change.

Check Spark Plug



Pre-season Checklist

Read the operator's manual written specifically for your model snowmobile. Be sure you make all proper adjustments and lubrications, and follow safety suggestions. If any repairs or adjustments are needed, get them done before you travel anywhere on your snowmobile.

- ☐ **Ignition**
  Replacement of spark plugs.
- ☐ **Carburetor/Fuel**
  Replacement of fuel filter. Check fittings.
- ☐ **Drive belt**
  Check for wear and cracks.
  Measure old belt and compare to specifications.
- ☐ **Track**
  Examine for broken *cleats,* loose or torn drive holes, and ply separation. Alignment of track. Track tension.
- ☐ **Skis**
  Alignment. Examine for loose weld joints, loose or worn out *wear rods.*
- ☐ **Chain**
  Lubrication. Examine chain tension.
- ☐ **Shocks**
- ☐ **Lights**
  Replace burned out bulbs. Apply brakes and check stoplights.
- ☐ **Clutch**
  Lubrication.
- ☐ **Brakes**
  Proper setting. Free operation. Worn brakes.
- ☐ **Check for loose nuts and bolts on the sled**
- ☐ **Bogie wheels and/or slides**
  Wheel condition.
  Lubrication.
  Axle wheels and bearings.
  Loose nuts and bolts.
  Broken welds and springs.
  Slide rails.
- ☐ **Check spare parts and tools**
  Light bulbs: pack so they won't break. Always replace with correct type. Incorrect type could damage electrical system.
  Spark plugs need to be gapped. Check **owner's manual** for proper setting. In an emergency, a match cover will approximate gap.
  Spare belt.
  Tools (pliers, adjustable wrench, screwdrivers: flat and Phillips).
  Starter pull rope.
  Owner's manual.
  Emergency survival kit.
  Duct tape.
  Siphon hose.
  Tow rope.

Snowmobiler Activity: Quiz on Parts

Decide whether each statement is true or false. Circle the T or F.

T - F 1. When changing the drive belt, always do it with the engine off.

T - F 2. Bogie wheels may be part of the suspension system.

T - F 3. The brakes are not located on the instrument panel — you operate them with your feet.

T - F 4. One of the standards the Snowmobile Safety and Certification Committee tests for is sound levels.

T - F 5. The Label of Certification is given to all snowmobiles.

T - F 6. One of the main reasons for spark plug fouling is an improper gas/oil mixture.

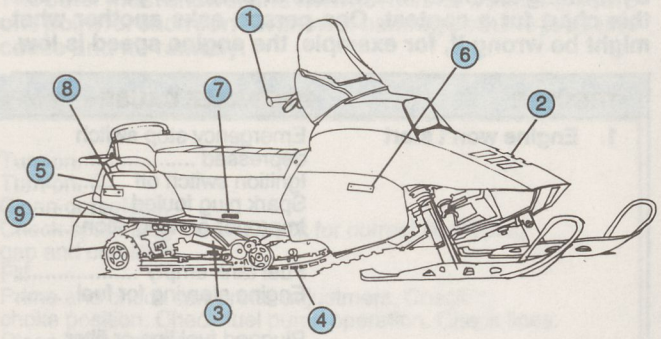
T - F 7. When storing your snowmobile for the summer you should remove the drive belt.

T - F 8. After taking your snowmobile out of summer storage you should first drive it to find out what maintenance work it needs.

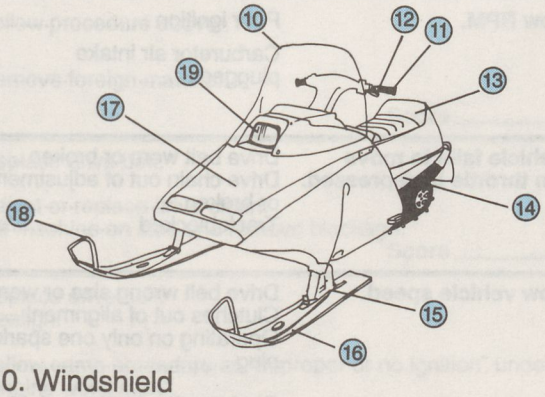
T - F 9. When storing your snowmobile, it is a good idea to plug all openings with a rag or other suitable material.

T - F 10. A possible cause of low vehicle speed is a worn drive belt.

Nomenclature



1. Steering Control (Handlebar)
2. Vents
3. Track Suspension
4. Track (Propels vehicle)
5. Taillight/Brake Light
6. Reflectors/Side Marker Lights
7. Vehicle Identification Number (Right side of vehicle)
8. Reflector/Side Marker Lights
9. Running Board and Footrest



10. Windshield
11. Handlebar Grip
12. Brake Control
13. Seat
14. Tunnel
15. Ski Suspension
16. Ski
17. Hood
18. Ski Handle or Tip
19. Headlight

Snowmobiler Activity:

By forming teams of individuals or partners, you can use this chart for a contest. One person asks another what might be wrong if, for example, the engine speed is low.

TROUBLE	PROBABLE CAUSE
1. Engine won't start	Emergency stop switch depressed Ignition switch off Spark plug fouled Improper or no ignition Fuel tank empty Engine starving for fuel Plugged fuel line or filter Engine floods
2. Rewind starter rope does not retract	Friction too high in starter
3. Rewind starter rope fails to engage or retract.	Broken or worn parts internally
4. Engine runs rough or will not idle.	Carburetor out of adjustment Poor ignition Idle speed set too low
5. Low RPM.	Poor ignition Carburetor air intake plugged
6. Vehicle fails to move when throttle is depressed.	Drive belt worn or broken Drive chain out of adjustment or broken Track blocked
7. Low vehicle speed.	Drive belt wrong size or worn Clutches out of alignment Operating on only one spark plug Chain and/or track too tight or loose Packed snow in vehicle
8. Lights won't light	Loose connections Corroded connections Bad switch Bulb burned out Fuse burned out

CAUTION: If headlight burns out, voltage rise can also burn out taillight.

Do not operate your machine when it is faulty,

Trouble-shooting Chart

The other must answer and tell what he/she would do. Score one point for each correct answer naming both the probable cause and its remedy.

REMEDY
Turn on. Turn on. Clean or replace. Check spark plug leads. Check for correct spark plug gap and condition. Fill Prime and check carburetor adjustment. Check choke position. Check fuel pump operation. Check lines. Clean lines and filter. Follow **owner's manual** for procedure. **Score** _____
Tap starter housing while keeping small amount of tension on rope. **Score** _____
Use emergency start provisions. **Score** _____
Clean carburetor. Follow procedure for "improper or no ignition" above under "engine won't start." Increase idle speed setting. **Score** _____
Follow procedure above. Remove foreign material. **Score** _____
Replace drive belt. Adjust or replace drive chain. Tilt machine on side and remove blockage. **Score** _____
Replace drive belt. Realign. Follow same procedure as "improper or no ignition" under "engine won't start". Readjust. Remove. **Score** _____
Check and tighten. Clean. Repair or replace. Replace bulb. Replace fuse. **Score** _____
TOTAL SCORE _____

or with guards or components removed.

4

Objectives: Snowmobilers should be able to:

- ***Describe or demonstrate the proper fueling procedure.***
- ***List steps in the pre-start safety check.***
- ***Describe procedure for starting the machine.***
- ***Describe or demonstrate driving positions.***

PREPARATION

Now that your snowmobile is ready to go, you are probably ready to get on it and drive. No book can tell you as much as your own practice driving. This chapter will give you some important pointers before you get on your machine: a pre-start checklist, starting the machine, and driving positions.

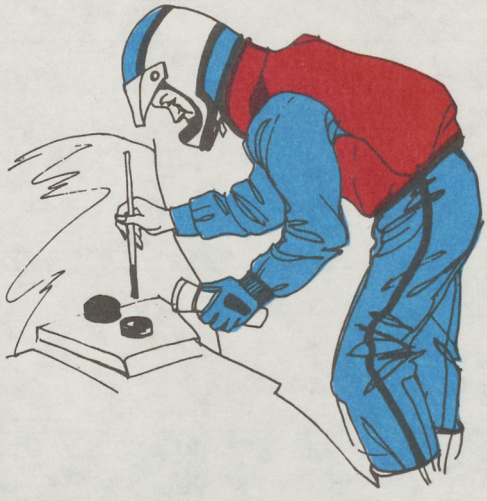
After you read these pointers, you must practice them. Your experience plus constant attention will help you become a skillful, safe driver.

Everyone must go through the "beginner stage." But even seasoned drivers do not know it all. It is a good idea to review these driving points every now and then.

Fueling

Always check the fuel level before driving. Don't forget the return trip — do you have enough fuel for the hours of driving you have in mind?

1. Some snowmobiles run on a gas/oil blend which the owner mixes. This is called the fuel mixture ratio. Other snowmobiles do not require the owner to do the mixing. The engine does it by itself. These vehicles



These vehicles run on an oil-injection system. Find out which type engine is in your snowmobile. If your vehicle does require a fuel mixture, follow the manufacturer's instructions for the right amounts. Refer to your **owner's manual.**

2. Always use a separate clean container for mixing fuel.

3. When pouring fuel into vehicle gas tank, use a clean funnel equipped with a fine screen. Make sure snowmobile is off before fueling.

4. Do not pour lubricant or gasoline separately into the vehicle gas tank. Whenever it is necessary to mix fuel and lubricant at temperatures below 32 degrees F., the lubricant should be pre-diluted with gasoline so that it will mix better. Some oils are already prediluted.

5. Never check fuel level with a match. The explosion could be fatal. Avoid overfilling. Wipe up spills.

Pre-start Checklist

Before every trip, do a pre-start safety check.

- ☐ **P Point your snowmobile in a safe direction.**
- ☐ **S Check the steering system. Does it move easily?**
- ☐ **T Check the throttle. Does it move easily? (Press in and release. Make sure it is not frozen in the "on" position.)**
- ☐ **B Check the brakes. Do they stick or bind?**
- ☐ **Headlights and taillights: Do they both work?**
- ☐ **Fuel level: Is it enough for the return trip?**
- ☐ **Oil injection: Oil well full?**
- ☐ **Emergency stop switch: Does it work?**
- ☐ **Track: Is it clear of snow and ice?**

Before starting the machine, you should check these important things.

- ☐ **Clothing: are you dressed properly? (Refer to Chapter 7.)**
- ☐ **Always tell someone where you are going and approximately when you expect to be back.**
- ☐ **Never go alone. The most important thing to take with you is a friend. Always use the buddy system. Your life may depend on it.**
- ☐ **Bring extra food.**

Starting

Many accidents occur because the driver was not ready to take control of the machine. Remember that if you start the machine, you are responsible for controlling it.

If you have made a careful pre-start check, and your machine is ready to go, then follow these steps to start the snowmobile;

1. Be in a position so that you can control the machine immediately. Usually a sitting or kneeling position is best.
2. Always depress the throttle at least once to make sure it is not frozen. It should return quickly to the idle position.
3. Be sure the key and safety switch are in the "on" position.
4. If the machine is cold then choke or prime it (or both), depending on the machine.
5. If the machine starts electrically, turn the key to the start position. Release the choke as soon as the engine starts.
6. If the machine starts manually, pull the recoil starter slowly until you feel resistance. Then pull vigorously, but do not let the handle snap back.
7. If the engine does not start when the choke is used, but seems ready to start, release the choke so that you do not flood the engine. If you do flood the engine, wait awhile before starting again.
8. Be sure the snowmobile is not in reverse gear when put in motion. This is a new feature on many machines.

For most snowmobiles, the manufacturer will recommend that the machine be operated at low speeds during the first tank of fuel or the first three to four hours of operation. This will allow the moving parts inside the machine to mesh, or seat themselves. This helps guarantee a longer life for your machine.

Driving a snowmobile is similar to driving a bicycle or motorbike. Balance is kept by shifting your body weight. The throttle and brake also help you to control the machine. It is best to keep as much of the track as possible in contact with the snow. Losing contact cuts down on the stability of the machine. When part of the track is raised off the snow, it is easier to lose control of the machine.

Be prepared to shift your weight quickly to counteract the bumps and dips of the land. You must learn to adapt to differing snow conditions, changes in the terrain, and varying weather.

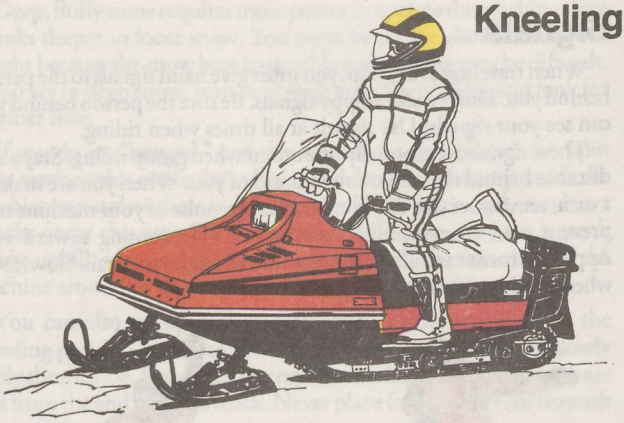
Driving Positions

Sitting, the most common riding position, is also the safest in most cases. Feet should be flat on the running board so they will act like a spring to cushion bumps. Sitting is good because it keeps your weight low and easy to shift. If riding double, use lower speed so that your passenger does not get hurt by the changing terrain. **Never take your feet off the running board to use them for turning or stopping.** (Very common error.)

Sitting

Kneeling, a good alternate position to rest the body, is not good for high speeds. It has the disadvantage of raising you up so it is harder to balance, and you are less protected by the windshield. The advantage is that you can lean into a hill or steep grade when you come to one.

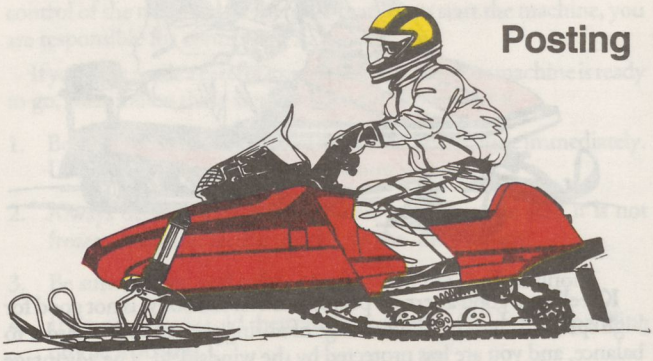
Kneeling



Standing is a position that should only be used when you need to see better. This is a good position when traveling through trees. Knees should be flexed to act as a spring, and speed should be low. This position is seldom used during regular trail riding because it does not allow you to gain quick control in an emergency situation.

Standing

Posting is a semi-sitting position with the body off the seat and the feet under the body in a sort of squatting posture, thus allowing the legs to absorb the shocks when traveling over uneven terrain.



Signals

When traveling as a group, you must give hand signals to the person behind you. Don't make sloppy signals. Be sure the person behind you can see your signals. Use signals at all times when riding.

These signals are especially important when group riding. Stay a safe distance behind the snowmobile ahead of you. When you are making a turn, remember that at a blind corner the noise of your machine may prevent your from hearing another machine coming toward you. Approach turns carefully. Always stay to the right on a trail. Slow down when passing skiers or snowshoers.

Turn Left
For a left turn, point your left hand out straight from your shoulder.

Stop or Slow
For stop or slow, raise your left hand straight up, reaching high.

Snowmobile Coming
Snowmobiles coming — move over to extreme right hand side of trail.
• Hold up number of fingers showing how many sleds are coming.

Turn Right
For a right turn, bend your left arm at the elbow so your elbow makes a corner, and your hand points up.

Objectives: Snowmobilers should be able to:

- ***Describe maneuvers for varying terrain and conditions.***
- ***List several safety tips.***
- ***Identify potential hazards.***
- ***Describe procedure for transporting a snowmobile.***

ON THE SNOW

Driving to Snow Conditions and Terrain

Learn to read and anticipate the snow conditions and terrain ahead.

Deep, fluffy snow requires more power to operate the machine since it sinks deeper in loose snow. You must be on the alert to shift your weight because the snow base is unstable and steering may be difficult. If you are in deep snow, turn in as wide an arc as possible and look for a firmer base.

If you do get "bogged," and this happens to everyone, do not spin your track as this make the vehicle sink deeper. Never try to lift the machine out unless there is no other way. Back strain and even heart attacks occur this way. Turn the engine off. If the machine is stuck facing uphill, turn the skis to the side and pull the front end of the machine around to a downhill position, and then drive out.

You can also tramp a clear path ahead of the machine. In the standing position, gently rock the machine as you steadily and slowly apply the throttle. Place your feet on the running board at the opposite end from the end which is stuck. Never place foreign material beneath the track for support.

If you have tried all this and your vehicle is still stuck, ask someone to help you pick the rear of the vehicle up and move it out of the hole. Drop the vehicle several times to remove snow packed in the suspension. This will also pack the snow under the track for a firmer base.

Hard-packed snow has a more stable base, but can be tricky in drifted areas where the packed snow is not uniform. Unplanned jumps, bumps, or dips are more likely to cause back injury, especially at higher speeds because of the hard base.

Ice

Ice is as hard and unyielding as concrete. Use extreme care on ice. Beginners should use a great deal of caution and low speeds. The machine is hard to control and spins are quite common. Fast stops are impossible on ice. To stop, let up on the throttle easily, allowing the machine to coast to a stop. Control is best when you are seated.

Avoid icy slopes. Even on flat land, the track does not grab ice. Going up or downhill can be treacherous on ice. Freezing rain can turn a hard-packed surface into a dangerous area.

If you are alone and break through the ice, keep calm. Extend your hands and arms forward on the unbroken surface. Then kick to a nearly

level position and work forward onto the ice. If the ice breaks, stay in this position and slide forward again. When you reach firm ice, do not attempt to stand. Instead, roll away from the break area. This distributes your weight over as broad an area as possible on the weak ice.

Do not venture out onto lakes or rivers without knowing ice conditions. Test the thickness to be sure it is safe. There should be at least eight inches of clear ice. Do not go onto ice at points where streams flow in or out as ice may be thin. A large number of deaths take place every year due to snowmobilers breaking through weak ice.

Lake and river ice cracks during extremely cold weather, water seeps up through the cracks and makes slush as it mixes with the snow. The snow on top insulates the slush and keeps it from freezing. Never travel across ice until you have checked for slush. If dark spots appear on your tracks, get off the ice immediately.

The best rule is to avoid waterways. If you must travel on ice, check thoroughly that it is safe, and wear a personal flotation device.

Surface Slope

Uphill — Lean forward on the machine, preferably in a kneeling position. Provide enough speed to reach the top. In heavy or deep snow, more speed is required. Prepare for any hazards which may be at the top. Do not stop when you are pointed uphill, as you may become stuck when you try to start again.

Going Uphill

Downhill — Loss of control could be the most serious hazard. Always keep the machine under control and be prepared to stop if necessary. Avoid locking the track up which could cause you to slide

Going Downhill

sideways and roll. Use the sitting position. Stop the vehicle by "pumping" the brake. This is done by applying the brake for a few seconds and then releasing it. Repeat several times until you have slowed down to a safe speed. Keep the clutches engaged. When the clutch is not engaged the vehicle is *free wheeling*. It is much harder to stop the vehicle in this condition.

Crossing a Sidehill

Sidehill—This position can be very difficult on hard-packed snow. The kneeling position is best. Lean toward the hill, placing pressure on the uphill side of the track.

Carrying a Passenger or Towing

Make sure any passenger you carry knows the correct way to ride on a snowmobile. Tell the passenger to keep both feet on the running boards at all times and hands on the grips. Never ride more than one passenger on your snowmobile. Some machines are not built to carry a passenger at all.

Warn the passenger to lean into the turns with you. Go more slowly because a bump can throw the passenger. If you carry a very small child, (this is not recommended), the child should sit in front of the driver

Practice

Here are some ways to practice driving skills.

- ☐ Practice at slow speeds. Skills are acquired through practice.
- ☐ Practice doing figure 8s on level ground.
- ☐ Practice uphill, downhill, and sidehill driving.
- ☐ Practice stopping under various speed, snow and terrain conditions.
- ☐ Be alert for obstacles that you can see and those that may be hidden.
- ☐ Watch experienced drivers and learn from them.
- ☐ Practice at reduced speeds until you know just how your machine runs and works.

and the driver should go very slowly.

You may want to tow children in a snowmobile sled. Use a rigid tow bar, never a rope or wire, so that the sled will not crash if you stop quickly. Sleds should be loaded with the lowest possible center of gravity. All passengers should stay seated, with hands and feet inside the sled. Passengers should get out and walk when crossing roads. Every towed vehicle should have reflectors on the sides and rear, and a safety flag.

Safety Tips and Hazards

Night riding is popular for many reasons. It is a good time for people to get together during the week. By the time students are home from school, parents are home from work, and supper is over, it is usually dark out. Also, night riding is different from daytime riding. The stillness of dark trees, especially when the moon is out, is enchanting.

However, many accidents occur after dark. There is a great danger of hitting things at night which you might see easily during the day. Here are some tips.

1. Make sure your lights are working well and taillights are free of snow.

2. Don't overdrive the machine's headlights. Snowmobile headlights are adequate for reduced speed only.

3. Don't travel on unfamiliar ground at night.

4. Carry a flashlight or flare for emergency signalling.

5. Never ride alone. In case of an accident, another snowmobiler can save your life.

6. Never blaze a new trail at night.

7. Use extreme caution when operating in freezing rain, because goggles may freeze over.

Accident reports show that many accidents happen as a result of colliding with fixed objects such as trees, fences, stumps, rocks, logs, and culverts. Often these objects are partially or completely hidden by snow. If you are not alert, you might hit one of these before you even see it.

Many snowmobile trails are parts of existing road rights-of-way, lanes between fields, or trails in the woods. In all cases other persons might change the terrain in some way without knowing that they are making it dangerous for snowmobiles. Snowfall and drifting can cover culverts, fallen tree limbs, fences, and rocks quickly. If you don't know the area, be smart and take it slowly.

Always be on the lookout for hidden wires, especially in areas that may have been farmed at one time or another. Too many accidents have been caused by running into wires in fields, guy wires next to poles and roads, barbed wire, and chains used as road closures. Particularly in unfamiliar areas, you must drive at a speed which will allow you to stop quickly.

Snowmobiler Activity: Quiz on Hand Signals

Identify each hand signal.

1. _____

2. _____

3. _____

4. _____

Winterize Your Vehicle

Be sure to winterize your vehicle. You should carry the following:

- ☐ chains
- ☐ snowtires
- ☐ de-icer for your locks
- ☐ windshield fluid
- ☐ road hazard kit, including flares, extra clothing and sleeping bags
- ☐ ice scraper and other tools for removing snow and ice from all windows
- ☐ extra weight for traction

Transporting a Snowmobile

It is best to use a trailer manufactured for transporting snowmobiles. It should have a *tilt bed* for ease in loading and unloading. **The trailer must meet the safety requirements of your state pertaining to lights, hitch, coupling, and safety chains.** The towing vehicle should have a heavy duty flasher, and rearview mirrors inside and outside.

A winch is desirable for safe loading, especially for large or heavy machines. If no winch is available, use plenty of help to pull the vehicle onto the trailer. Or drive the snowmobile onto the tilt bed. New styles of trailers provide for ramps loading and off loading in front. Be careful not to drive "up and over". This could damage the snowmobile, trailer, car, and possibly seriously injure a person.

Once the snowmobile is loaded, make sure it is fastened tightly to prevent it from moving in any direction. Use a chain, bar, or metal clamp to secure the front end. A chain used with a load tightener is the best way to fasten the rear end. Avoid using rope or rubber tie downs, since they are easily frayed by sharp metal edges and may stretch too far, allowing movement in transit.

Make sure the trailer bed is securely latched after loading. Check it a few times during a long trip. The snowmobiles should be placed on the trailer so there is proper weight on the *tongue*. Place about 60% of the load weight in front of the trailer axle. This helps to prevent fishtailing, and ensures a smooth trailer ride. When you are unloading, release all tie downs and keep them in a safe place. Tilt the bed and pull the snowmobile off backwards.

If you use a truck, it must be fitted with a ramp. A winch should be attached to the front of the truck box. Load, unload, and secure the machine just as if a trailer were used.

Do not overload trailers. Check the trailer weight capacity rating. The snowmobile should not extend beyond the sides or over the back of the truck or trailer bed. **Check your state regulations.**

Some small, light machines will even fit into the back of a station wagon.

The simplest precautions, if observed, will make trailering a snowmobile a pleasant and relaxing experience. The first emphasis would be to make sure that the car is capable of towing the trailer safely.

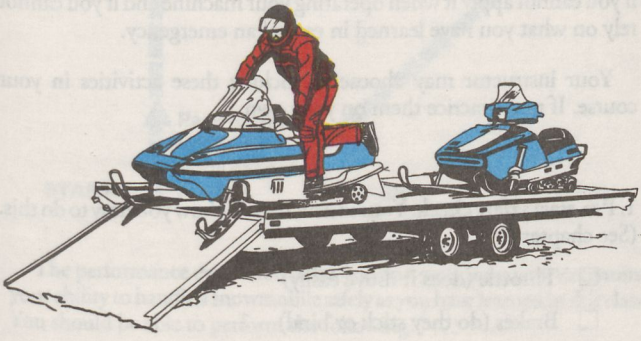
Avoid sudden stops. Always allow extra following distance.

If you are passed, air turbulence from a large vehicle will push the trailer over. *Don't brake!* This gust will immediately move along the trailer and will tend to correct the sway. If you are not traveling at the average speed of traffic on the highway, pull over at the first safe chance to allow others that may be following to pass.

When passing, remember that the trailer adds weight and will reduce acceleration. With this in mind, more room is needed for overtaking. Always change lanes smoothly to avoid whipping the trailer.

Trailer wheels and car wheels do not follow in the same path. You must steer wider on corners so the trailer will stay clear of the curb or other vehicles. On curves, stay well on your side of the center line. Practice backing maneuvers in an open area. When backing, do not rush. Remember that the trailer will turn in the opposite direction of the car. *Avoid oversteering!* It is a good idea to have someone outside of the car help by giving guidance.

If a car engine should ever overheat, do not remove the radiator cap. Idle the engine rapidly to increase air flow. Remember to shut off your air conditioner until the idling temperature returns to normal. Cold water should not be poured over, or into a hot engine. Transmission coolers are recommended for towing heavy loads, for long distances, or during hot periods.



Trailer Pre-Start Checklist

- ☐ A solid ball with lock washer and nut is proper legal in all states.
- ☐ Make sure the ball hitch lever is properly latched.
- ☐ Safety chains are to be crossed under the tongue and latched to the towing vehicle frame.
- ☐ Tilt bed properly latched.
- ☐ Check wheel bearings for proper lubrication.
- ☐ Check tire pressure (proper PSI).
- ☐ Check lug nuts. (Are they tight or are some missing?)
- ☐ Is there a spare trailer tire?
- ☐ Some trailers have brakes (electric or hydraulic). Do they work?
- ☐ Lights are required by law; left and right turn, brake and taillights, and license plate. Do they work?
- ☐ Make sure the snowmobiles are secured to the trailer: metal clamps or ski rods in the front, chain with load tightener in the rear.

Objectives: Snowmobilers should be able to:

- ***Perform practical maneuvers on a snowmobile.***
- ***Demonstrate smooth operating skills.***

FIELD PRACTICE

Instruction in Snowmobile Handling

The material you have learned in preceding chapters is of no value if you cannot apply it when operating your machine and if you cannot rely on what you have learned in case of an emergency.

Your instructor may choose to include these activities in your course. If not, practice them on your own.

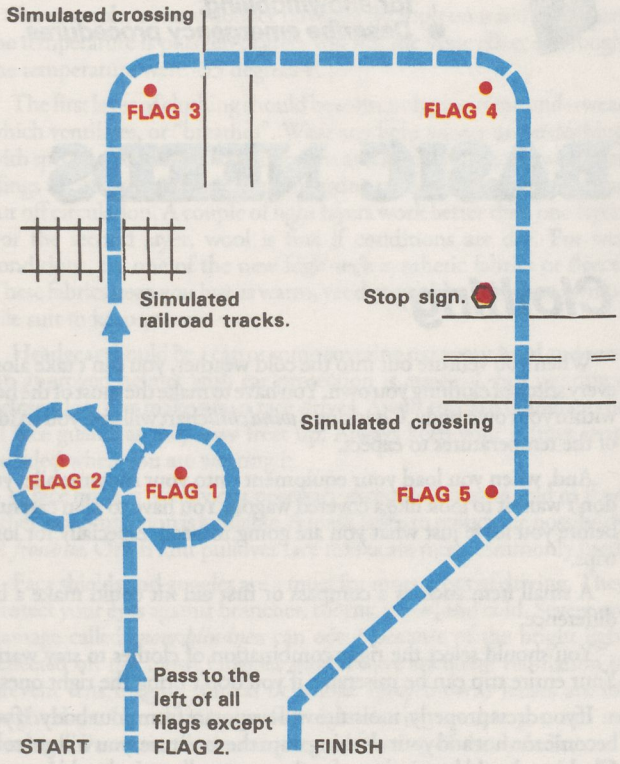
1. **Pre-start safety check.** Your instructor will show you how to do this. (See chapter 4)

- ☐ Throttle (does it move easily)
- ☐ Brakes (do they stick or bind)
- ☐ Steering (does it move easily)
- ☐ Lights (headlight, taillight—do they work)
- ☐ Fuel and oil level (is it sufficient)
- ☐ Track (is it clear of ice and snow)
- ☐ Emergency stop switch (does it work)

2. **Trail ride to show:**

- ☐ Riding positions and hand signals
- ☐ Turning
- ☐ Approaching road crossings
- ☐ Night conditions
- ☐ Stopping
- ☐ Leaving the machine

Snowmobiler Activity: Performance Evaluation



The performance evaluation helps you and your instructor determine your ability to handle a snowmobile safely as you have learned in this class. You should be able to perform the following.

Activity	Pass or Fail
1. Follow pre-start safety check.	____
2. Show proper method of starting.	____
3. Show sitting position.	____
4. Show kneeling position.	____
5. Show standing position.	____
6. Show posting position.	____
7. Signal left turn.	____
8. Signal right turn.	____
9. Signal slowing or stopping.	____
10. Circle around Flag 1.	____
11. Circle around Flag 2.	____
12. Cross railroad tracks.	____
13. Turn right at Flag 3.	____
14. Cross road.	____
15. Turn right at Flag 4.	____
16. Stop at stop sign.	____
17. Cross highway.	____
18. Turn right at Flag 5.	____
19. Controlled speed on course.	____
20. Remove key and leave machine.	____

Total number passed _____

7

Objectives: Snowmobilers should be able to:

- ***Identify the proper clothing for snowmobiling.***
- ***Describe the equipment necessary for snowmobiling.***
- ***Describe emergency procedures.***

BASIC NEEDS

Clothing

When you venture out into the cold weather, you can't take along every stitch of clothing you own. You have to make the most of the heat within your own body. Checking a *wind chill* chart will give you an idea of the temperatures to expect.

And, when you load your equipment onto your snowmobile, you don't want it to look like a covered wagon. You have to plan carefully before you leave just what you are going to need, especially for long trips.

A small item such as a compass or first aid kit could make a big difference.

You should select the right combination of clothes to stay warm. Your entire trip can be miserable if you don't bring the right ones.

If you dress properly, moisture will evaporate from your body. If you become too hot and your clothing traps the moisture, you will get cold. Clothing should be windproof and water repellent. It should be snug, so that it does not catch in the machine, but it should be just loose enough to permit freedom of movement and to keep your blood circulating.

Snowmobile suits or high thickness suits *insulate* by keeping warm air next to your body.

Wind Chill Index

Estimated Wind Speed in MPH	Actual Thermometer Reading (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Temperature (°F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-21	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-36	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-124
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-49	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds greater than 40 mph have little additional effect.)	LITTLE DANGER* (For properly clothed person)				INCREASING DANGER*			GREAT DANGER*				
	*DANGER FROM FREEZING OF EXPOSED FLESH											

Look over the wind chill chart. Read across the top of the chart to find the temperature which you read on the thermometer. Read down the row on the left to find the wind speed, or the highest speed at which you might be traveling. Where these two rows intersect, you'll find the temperature that you will feel when you go outdoors.

For example, a snowmobiler traveling 30 mph on a still day when the temperature is plus ten degrees will feel the same effect as though the temperature were -33 degrees F.

The first layer of clothing should be some polypropelene underwear which ventilates, or "breathes". Wear any light winter underclothing with special attention to covering arms and legs. Avoid underwear that clings to the body. Beware of tight-fitting cuffs and elastic bands that cut off circulation. A couple of light layers work better than one layer. For the second layer, wool is fine if conditions are dry. For wet conditions, try one of the new high-tech synthetic fabrics or fleece. These fabrics keep you just as warm, yet dry quickly. Wear a snowmobile suit to keep warm.

Headgear should be a cap or some covering over your head and ears. An approved helmet with ear protection is essential, but wearing a helmet does not make you a race driver. Avoid the fixed bubble type of face guards as they may frost up. Always keep your helmet strap buckled when you are wearing it.

A face mask is usually not necessary except in extreme cold or if no other face protection is available. A mask helps to reduce the possibility of *frostbite*. Orlon knit pullover face masks are most commonly used.

Face shields and goggles are a must for most types of driving. They protect your eyes against branches, thorns, snow, and cold. Severe eye damage called *snow blindness* can occur because of the bright light reflected off the snow. Goggles should have adequate ventilation to prevent lens fogging. Green or smoke (grey/brown) lenses are for bright days. Use clear lenses for night driving so that you can see shadows. Protective lenses can prevent freezing of the eyeballs.

A scarf is not recommended for use while on a snowmobile, because it can get caught in the machinery. If you do use one, be sure to tuck it in underneath your clothing so no ends are flying loose. It is better to use a dicky or turtle neck sweater for neck warmth.

Some Thoughts For Your Pocket

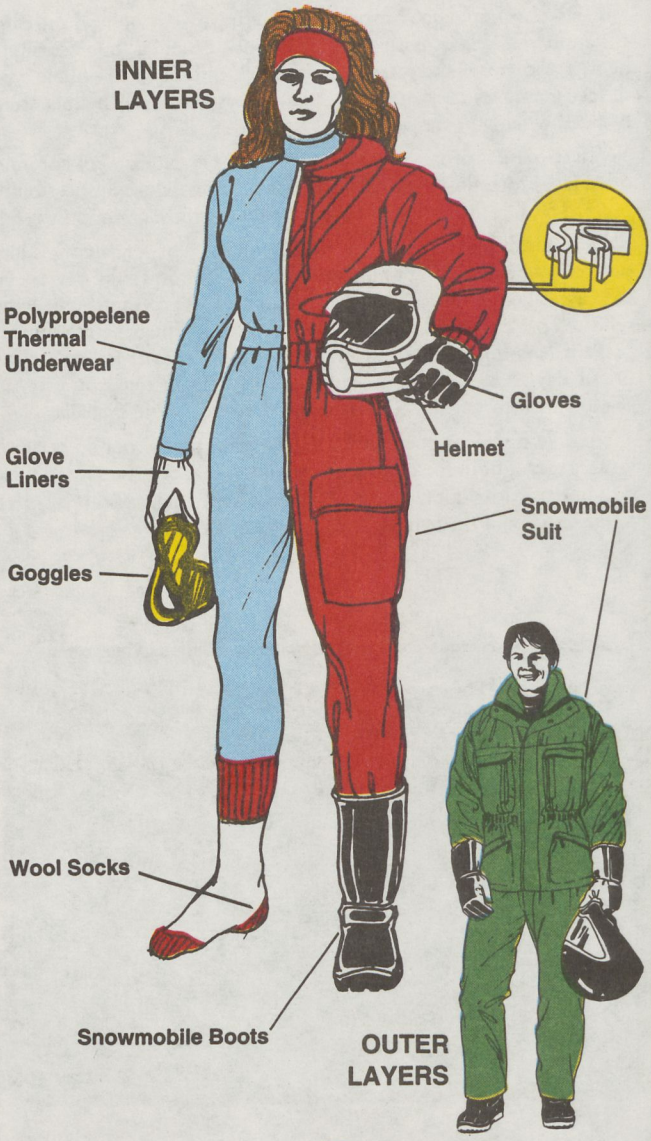
When you are out on your snowmobile, it is always a good idea to carry the following items:

1. Identification.
2. Any necessary medical information about yourself.
3. Money for a telephone call.
4. Matches.
5. Knife.
6. Compass.
7. Flashlight.
8. Paper and something to write with.
9. Snowmobile registration card.

Because clothing traps air, snowmobile suits help to keep you afloat in case your vehicle breaks through the ice. Just remember not to struggle. Some suits are lined with flotation material. Others have a flotation device inside that you can inflate with a few quick puffs of air. Yet the suit allows you to move freely when the device is not inflated. This type of suit is a good safety precaution.

For handwarmers, mittens are the warmest. They should not fit tightly or have a shell that gets stiff when cold. Insulated ski gloves are preferred by some and are fine if you find them comfortable. Some gloves have extra insulation across the knuckles. You should always carry an extra pair of mittens. A light inner glove or liner prevents freezing of skin if you must remove outer mittens to handle small items.

Cold Weather Clothing



Your feet need some high-bulk socks worn in a good boot. It is always a good idea to have an extra pair on any trip where you are not near home. Be sure your socks do not make your boots too tight because you will cut off the circulation. This is a common cause of cold feet. Boots must be capable of keeping your feet warm and dry even though you do little walking. Be sure they are not too tight. Most popular are snowmobile boots with nylon tops, rubber bottoms, and felt liners. Moon boots are also popular.

Equipment

Safety equipment is dependent on where and how long the ride will be. The following basic tools, however, should be carried in the snowmobile at all times:

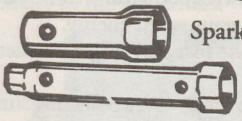
One or two screw drivers and locking pliers

Rags and a litter bag

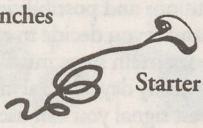
Adjustable wrench

Open end wrenches

Black electrical tape



Spark plug wrenches



Starter cord

For more on the extra parts you should carry, review Chapter 2.

Be Sure to Carry:

- ☐ Spare Spark plugs
- ☐ Spare drive belt
- ☐ Fuel
- ☐ Extra ignition key
- ☐ Emergency rations
- ☐ A knife or small axe
- ☐ Waterproof matches
- ☐ Compass
- ☐ First aid kit
- ☐ Tow rope
- ☐ Tool kit
- ☐ Flashlight
- ☐ Spare clothing — mittens, socks
- ☐ Flares
- ☐ Map
- ☐ Siphon hose

Emergencies

If your snowmobile breaks down and you are unable to fix it or walk out, it is extremely important to remember that you must conserve energy in order to survive. Seek shelter from the wind and restrict your body movements to reduce sweating. Your machine can be used as a windbreak or as part of a lean-to. Seek shelter in a protected area. An overhanging rock shelf, or a clearing at the base of a tree make ideal shelters.

In a timbered area, you can make a lean-to by placing one horizontal bar between two trees or crotches in upright poles. Lean small branches against the horizontal bar. Interweave branches to thatch the shelter.

Snow banks and deep drifts offer protection possibilities. Dig a snow cave facing away from the wind, slightly larger than your body size. Line with any extra material you may have such as the seat of the snowmobile. A ski from the snowmobile may be used as a digging tool. Place a six-inch diameter ventilating hole in the top of the cave.

Good planning, systematic maintenance of the machine, and traveling with a companion will eliminate most emergencies. To be better prepared, learn and follow these steps in case of an emergency.

1. Prepare a checklist and consult it prior to your departure.
2. Let someone know where you will be and when you will be back.
3. If a fire is needed, choose a protected spot that is not under overhanging branches with snow on them. Pick small dead branches to get a fire going. Dead brush works well also. Larger dead wood is added after small branches have a good start. Collect enough fuel before dark if you have to spend the night.
4. Do not travel on foot in strange areas at night. Conserve your energy, because it will help keep you warm. Moderate exercise can help circulation to cold limbs, but don't overdo it. Good judgment and common sense are always necessary to make the best of an emergency. If you become unsure of your location during a heavy snowstorm or blizzard, find shelter and keep warm.
5. If your machine is broken down and needs towing, remove the drive belt for easier towing. Tie the machine to be towed up close. (Ski of towed machine to back bumper of towing machine.) Avoid towing with a slack rope.
6. In all cases, attend to injuries first, then sit down and calmly think out solutions and possibilities. Panic is your worst enemy.

When and if you decide to remain in one place and allow rescuers to find you, certain steps must be taken.

On a sunny day, a signal mirror or anything with a reflecting surface is the best signal you can use. Signal with it as often as possible.

Remember to Notify Someone of:

- ☐ Your trip
- ☐ Your planned route of travel
- ☐ Your estimated time of return

When Someone is Overdue:

Keep calm and contact:

- ☐ Sheriff or other law officers
- ☐ USDA Forest Service

Let search or rescue agency make other contacts. One search under one search coordinator. Not a lot of individuals adding risk, and covering clues.

Ground to Air Rescue Signals

Cut out these signals. Fold and keep them in your survival kit or wallet. Stamp out a signal in the snow. Make it as large as possible. It should be at least 18 feet high and three feet wide so it can be easily seen from the air. Place branches, logs, or rocks along the marking of the signal. This will help increase the shadows, making the signal more visible.

Require Assistance

Require Medical Assistance

No or Negative

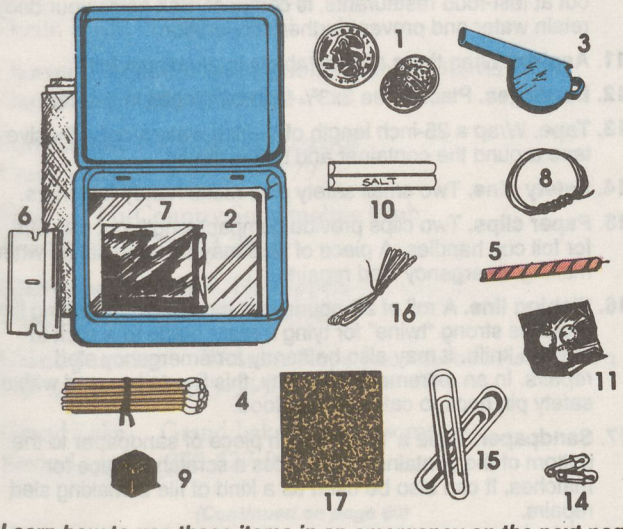
Yes or Affirmative

Proceeding in this direction

Survival Kit

A survival kit is an absolute necessity when planning any trips with your snowmobile. Whether with a friend or a group, a survival kit should be included with your supplies at all times.

This kit easily fits into a small container, like a can. Local conditions may modify certain items, but the list shown on this and the next page applies to terrains, whether you are snowmobiling or out on another activity in the wilderness.



Learn how to use these items in an emergency on the next page.

Survival Kit in a Can

1. **Two dimes and two quarters.** Tape them on the inside of the lid with waterproof adhesive tape. Some times just having the right change at a highway phone booth can save hours of waiting in the bitter cold. The edge of a dime can also be a useful emergency screwdriver.
2. **Pocket mirror.** Place a $2\frac{5}{8} \times 2\frac{1}{4}$-inch mirror in the container first. It lies flat to save space. The mirror can be used to reflect sunlight and signal your location to a rescue party.
3. **Plastic whistle.** Put in a small, flat whistle to direct a search party to your location without yelling yourself hoarse. A plastic whistle is better than a metal one because freezing-cold metal can harm your lips. A flat whistle stores compactly.
4. **Kitchen matches.** Coat 12 wooden matches with nail polish for waterproofing and wrap them in aluminum foil.
5. **Short candle.** Put a birthday candle in the can to provide a little light and to help start a fire with a minimum of matches.
6. **Razor blade.** A single-edge razor blade comes in handy should you lose your pocket knife. Use it to shave wood chips from a branch for tinder. Use it as a saw to cut pine boughs for a fast fire. (Pine needles make good tinder and pine cones burn easily.)
7. **Aluminum foil.** Fold two 12x12 inch sheets of aluminum foil into flat packages that fit into the container and lie on top of the mirror. These sheets can be shaped into a cup for drinking and a small pot for melting snow to make hot water. Never eat cold snow or drink cold fluids in a survival situation. Cold food and drink tend to lower your body temperature and bring on hypothermia, a subnormal body temperature that leads to death.
8. **Wire.** A 20-inch length of wire can be used to make a form for the foil cup and a handle for the foil pot. Wire may be used in emergency snowmobile repairs, too.
9. **Bouillon cube.** A beef bouillon cube placed in hot water in the aluminum foil pot will give you a nourishing soup.
10. **Salt.** A small package of salt, like the kind handed out at fast-food restaurants, is compact. Salt helps your body retain water and prevent further dehydration.
11. **Aspirin.** Wrap three aspirin tablets in aluminum foil.
12. **Bandages.** Place three $3 \times 3\frac{3}{4}$-inch bandages in the can.
13. **Tape.** Wrap a 25-inch length of $\frac{1}{2}$-inch waterproof adhesive tape around the container and below the lid.
14. **Safety pins.** Two small safety pins make handy fasteners.
15. **Paper clips.** Two clips provide compact lengths of stiff wire for foil cup handles. A piece of wire may come in handy when making emergency sled repairs.
16. **Fishing line.** A roll of 25-pound test monofilament fishing line provides strong "twine" for tying a razor blade to a stick to make a knife. It may also be handy for emergency sled repairs. In an extreme emergency, this line to be used with a safety pin hook to catch fish for food.
17. **Sandpaper.** Tape a $1\frac{1}{2} \times 1\frac{3}{4}$-inch piece of sandpaper to the bottom of the container. It provides a scratch surface for matches. It can also be used as a kind of file in making sled repairs.

Snowmobile Areas and Trails

Local clubs mark and maintain the trails. Over 3,000 miles of snowmobile trails have been inventoried and marked. Maps are available for most areas. Consider joining a Colorado Snowmobile Association (CSA) local club. They are listed below in alphabetical order by city.

**Denotes marked and maintained riding areas.*

Avon Holy Cross Powder Hounds Snowmobile Club
Randy Guerriero: 970-476-2417

Basalt Midvalley Snowmobile Club
Dave Mikulyuk: 970-963-1196

Bayfield San Juan Sledders
Roger Pennington: 970-884-2101

* **Buena Vista** Buena Vista Snowmobile Club
Terry Peavler: 719-395-6700

* **Carbondale** Mt. Sopris Rec Riders, Inc.
Cathy God-Snedson: 970-963-2421

Cedaredge Delta Snokrusers, Inc.
Steve Foster: 970-856-3642

* **Clark** Steamboat Lake Snow Club
Ken Brink: 970-879-3922

Colorado Springs S&W Adventure Riders, LLC
Jack Sheets: 719-593-0711

Cortez Four Corners Trail Club
Ed Cabel: 970-565-7649

* **Craig** Northwest Colorado Snowmobile Club, Inc.
Joe Tonso: 970-824-5821

* **Creede** Snow Country Explorers of the Upper Rio Grand
Robert Kukuk: 719-658-2221

Delta Delta Snno Krussrers
Duain Bush: 970-874-3163

Denver Mile-Hi Snowmobile Club of Denver, Inc.
Nan Givens: 303-670-6172

Fort Collins Colorado Blizzards
Craig Mueller: 970-493-7779

* **Frisco** Hi-Country Snowmobile Club
Brian Holt: 970-453-7830

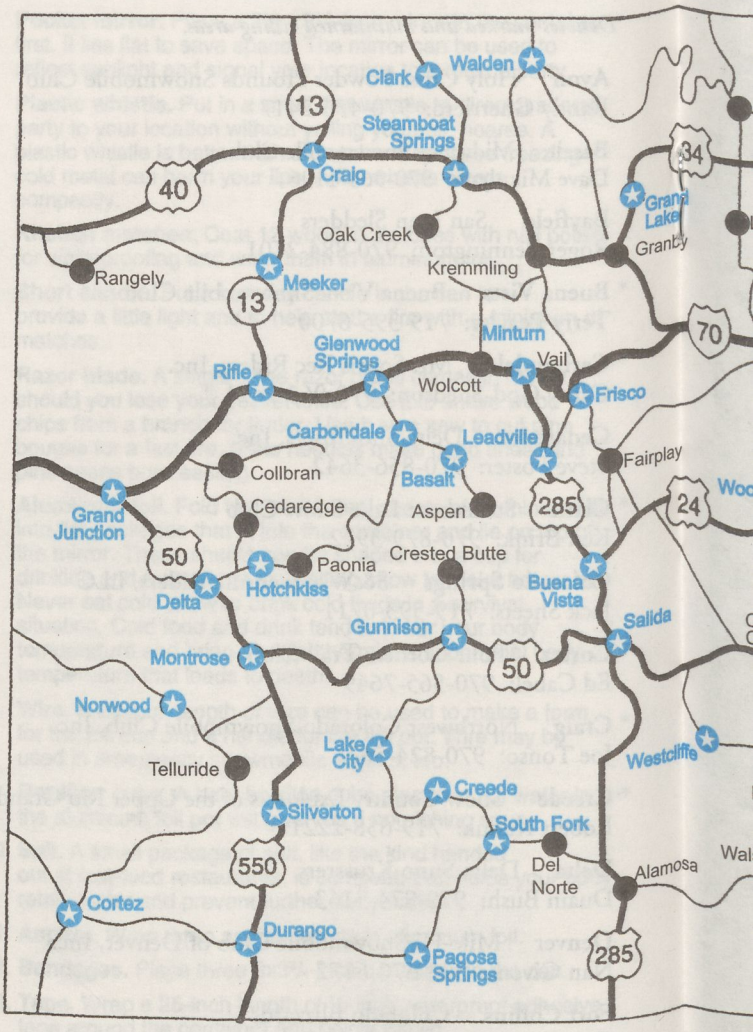
* **Glenwood Springs** Flattoppers
Tom Zancanella: 970-945-5700

* **Grand Junction** Western Slope Snowmobile Association
Phil Smith: 970-243-5456

* **Grand Lake** Grand Lake Trail Groomers
Kevin Leppke: 970-627-0433

(Continued on page 50)

Colorado Snown



Colorado Snowmobile Asso

The Colorado Snowmobile Association has
information on snowmobiling in Colorado for bo

www.sledcit

TO JOIN CSA, PLEASE SEE

owmobile Areas

Association (CSA) Snowline

iation has its own web site. The site contains
rado for both residents and visitors to the state.

sledcity.com

ASE SEE FORM ON PAGE 94.

(Continued from page 47)

Grand Lake Grand Lake Trailblazers
Mike Ingle: 970-627-3038

Greeley Colorado Blizzards
Craig Mueller: 970-207-5452

* **Gunnison** Gunnison Sno-Trackers
Phil Chamberland: 970-209-3715

* **Hotchkiss** North Fork Snowmobile Club
Steve Hicks: 970-872-3654

* **Lake City** Lake City Continental Divide Snowmobile Club
Billy Martin: 970-944-0144

* **Leadville** High Riders Snowmobile Club, Inc.
Brad MaCalister: 719-486-8935

* **Meeker** White River Snowmobile Club, Inc.
Brue Nothingham: 970-878-0902

* **Montrose** Uncompahgre Valley Trail Riders
Karen Ball: 970-240-4036

* **Norwood** West End Sledders
Mike Grafmyer: 970-327-4254

* **Pagosa Springs** Wolf Creek Trailblazers
Charlie Rogers: 970-264-4109

* **Poncha Springs** Heart of the Rockies Snowmobile Club
Ron Jones: 719-539-2771

Pueblo Pueblo Snowmobile Club
Stan Hensley: 719-564-6476

* **Rifle** Rifle Snowmobile Club
Carelton Hoffmeister: 970-625-0134

Silverton Silverton Snowmobile Club
Jim Huffman: 970-387-0283

* **South Fork** Silver Thread Outdoor Recreation Club of the San Luis Valley
Dennis "D.C." Shepherd: 719-873-5977

* **South Fork** South Fork Powder Busters
Curtis Miller: 719-873-0208

* **Steamboat Springs** Routt Powder Riders
Mark Satre: 970-879-7514

Sterling Lowlanders Snowmobile Club
Rick Jackson: 970-522-0672

* **Walden** North Park Snow Snakes
Randy Miller: 970-723-3725

* **Westcliff** Sangre Snowrunners Snowmobile Club
Dale Hoag: 719-783-2729

Woodland Park Pikes Peak High Riders
Bill Hohman: 719-686-8870

8

Objectives: Snowmobilers should be able to:

- ***Describe the first aid for several major hazards of snowmobiling.***
- ***Demonstrate the use of map and compass.***
- ***Describe procedure for avoiding and coping with avalanches.***

FACING THE UNEXPECTED

First Aid

Most snowmobile accidents include some personal injury. The most dangerous situation occurs when a person is injured and alone, miles from help. But any injury can be dangerous if you handle it unwisely. You may need to care for your own injuries or someone else's when you least expect it.

In any emergency, be calm, firm, and reassuring to the injured person. Do as much as you can for the injured person, and send others for help. For your own and others' protection, you should learn basic first aid. Your local Red Cross can give you information about first aid classes.

You can easily make up this first aid kit:

six bandaids

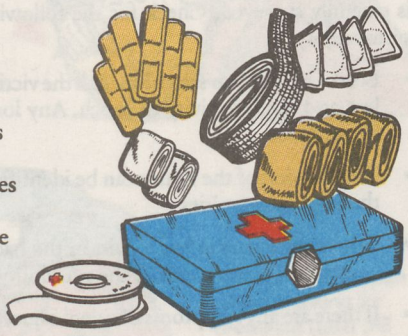
two 2-inch compresses

four 4-inch compresses

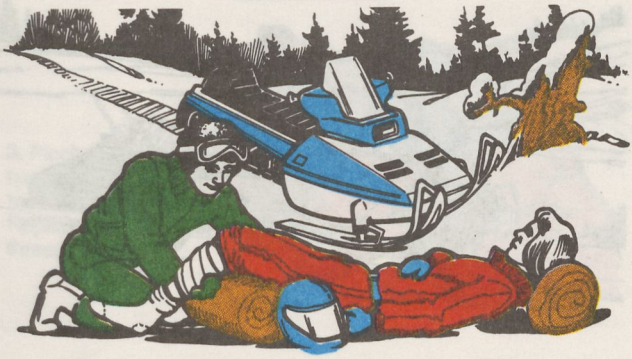
four triangular bandages

one roll of 2-inch gauze

one roll of 1-inch adhesive tape



Be sure the container is waterproof. Store it under your seat or in the rear compartment. Don't include any liquids that will freeze.



Injuries

If a person is slumped over on the snowmobile or lying on the ground, always check for breathing first, then bleeding, then look for other signs of injury. Cuts, frostbite, broken bones, and even heart attacks are possible injuries. Care for shock with any injury.

If a cut is serious, put a compress directly over the wound and bandage it tightly enough to stop the bleeding. If bleeding continues, raise the wounded part so the blood flows away from the wound. If bleeding continues, use the pressure point technique by applying pressure to the brachial (upper arm) or femoral (upper leg) arteries. Learn more about this technique so you can pinpoint the specific areas. Tourniquets should only be used when direct pressure, elevation, and pressure points do not control severe bleeding. Only think of using one if a person might die without it.

To prevent and identify frostbite, frequent checks of each other's exposed skin is necessary. Frostbite turns the skin white. Warm the affected area as soon as possible, but warm it slowly. Do not rub the frostbitten part with snow or your hand. Warm pressure against the part is best. Place warm clothing or a blanket over the part, but do not try to warm it too quickly near a fire or heater. Get the victim indoors as soon as possible.

Broken bones can be recognized by the odd positions of the limb or by the victim feeling pain. Immobilize the limb by splinting it with two straight sticks, one on each side of the limb. Tie one bandage above the break and one below it. Also tie down each end of the splint. Never tie directly over the break. If possible, bring the victim in by sled. Move any injured part very carefully, trying not to disturb the break.

Never move a person with possible spinal injury until the situation is carefully surveyed. Check for the following signs which indicate spinal injury.

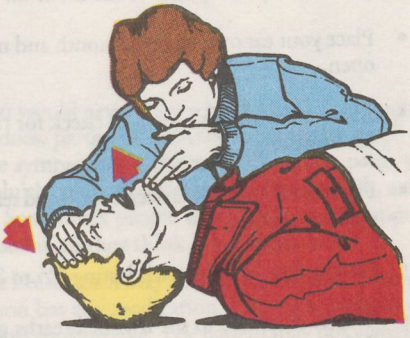
- Loss of mobility or sensation. Ask the victim to move toes, feet, and legs and test sensitivity to touch. Any loss indicates injury to the spinal cord.
- The location of the injury can be identified with similar checks to the upper extremities.
- Whenever a person has a pain in the back or neck, following an accident of force, consider the possibility of spinal injury.
- If there are any symptoms of spinal injury, do not move the victim.
- Check breathing, stop bleeding, make victim warm, go for help.

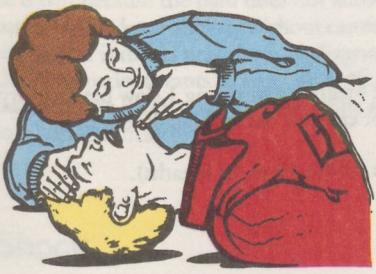
It has been said that a little knowledge is a dangerous thing. Do not think that you know enough about first aid just by reading this chapter. A first aid course is essential to any person involved in sports. This chapter is meant to give you an idea of what is possible in the field. The four very important areas which follow can truly lead to death. Learn the technique for artificial respiration, and know about *hypothermia,* heart attack, and *shock.*

Artificial Respiration (Rescue Breathing)

If a person is in an accident, and stops breathing, that does not mean the person is dead. You can restore breathing if you have practiced artificial respiration or rescue breathing. Here are the steps.

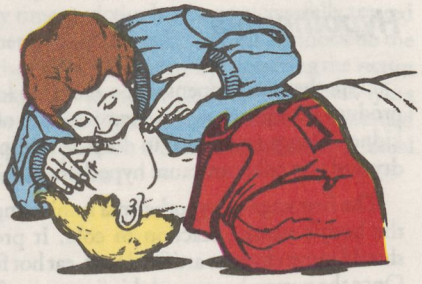
1. Remove any debris or liquid from the victim's mouth by hooking it with a finger or using a cloth covering your fingers.





2. Keep airway open while checking for breathing (take 3-5 seconds).

3. Pinch the victim's nose shut and give two slow breaths. Repeat steps two and three.



- If head or neck injury is suspected, move only if absolutely necessary. Improper moving may cause paralysis if neck injury exists.
- Tap or gently shake victim's shoulder. Shout near victim's ear, "Are you OK?"
- Roll person onto their back as a unit. Straighten victim's legs and move victim's arm closest to you above victim's head. Place one hand on victim's shoulder and other hand on victim's hip. Roll victim toward you. Move your hand from victim's shoulder to support back of head and neck. Place victim's arms alongside victim's body.
- Place hand nearest victim's head on victim's forehead and apply backward pressure to tilt head back.
- Place fingers of other hand under bony part of jaw near chin and lift. Avoid pressing on soft tissues under jaw.
- Tilt head backward without closing victim's mouth.
- Do *not* use your thumb to lift the chin.
- Place your ear over victim's mouth and nose while keeping airway open.
- *Look* at the victim's chest to check for rise and fall; *listen* and *feel* for breathing.
- Pinch nose shut, take a deep breath and seal your lips tightly around victim's mouth.
- Give 2 slow breaths, each lasting 1½ to 2 seconds.
- Watch chest rise to see if your breaths go in and allow for chest deflation after each breath.
- Check for pulse.
- If needed, begin rescue breathing by giving 1 slow breath every 5 to 6 seconds. Watch for chest to rise and fall; listen for air.
- Continue for 1 minute (about 10 to 12 breaths).

Hypothermia

Hypothermia happens when the body loses heat faster than it can produce it. This causes the temperature of the main organs (heart, kidneys, lungs and brain) to drop. It is important to know that both dry and wet cold can cause hypothermia.

The first stage of hypothermia is shivering of the body. Shivering is the body's natural reaction to cold. It produces heat. The person should move closer to artificial heat, eat hot food or add more clothing. Once the person has passed this first stage, the cold will begin to affect

the brain. From this point on, the person will be able to recover only with the help of others.

This more dangerous level of hypothermia is when the shivering stops. The person may look pale or blue. Movement will be slow. The body is reacting to the heat loss by conserving all warmth for the main organs. Hence, less blood is being pumped to hands, arms, feet, legs, and skin. The brain's reasoning power is affected, and main organs begin to slow down as temperature lowers. At this point the person should be removed from the cold.

Wet clothing, if any, should be removed. Wet clothing loses about 90 percent of its insulating value. Towel dry the person and wrap in blankets, sleeping bags or dry clothes. Carry out body-to-body contact methods naked with two people front to back. If the person is conscious, give warm liquids slowly. Take the person to a medical facility.

The length of time a person may be exposed to cold without injury depends on the temperature and wind chill factor. Certainly, a person who is in good health, has rested, has eaten recently, and wears proper clothing will be all that more prepared to face the possibility of hypothermia.

Heart Attack

Even if you think you would never have a heart attack, you might be with someone who does, particularly if they foolishly try to lift a snowmobile alone. The symptoms are shortness of breath, pains in chest and upper arms, bluish color of lips and around finger nails, and swelling of the ankles. Sometimes people have a pain in the upper abdomen, and feel nauseous, so they think it is indigestion.

The person who has a heart attack may be under treatment already. Check to see if the person has any medication. The most important thing is to keep the patient comfortable. The patient may not want to lie down because the pain does not allow it, but try to persuade the patient to lie down anyway without causing panic. The worst part for the patient is to feel near death. A diagnosis of heart attack is the last thing the patient wants to hear. Be tactful and soothing. If you must transport the patient, try to be as gentle as possible. Take the patient to a hospital immediately.

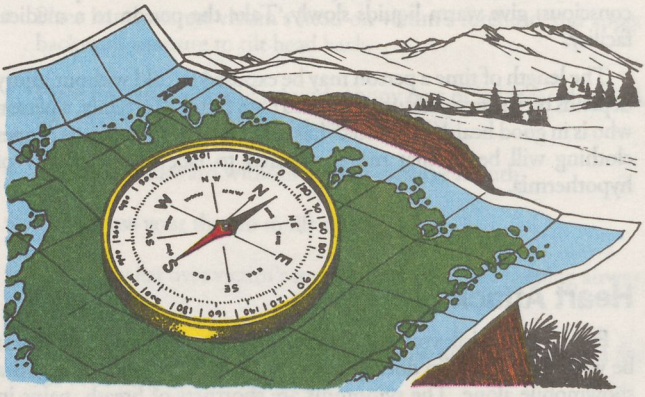
Shock

Shock is a condition of poor blood circulation often caused by serious injury. Too many times a victim has been successfully treated for an injury but subsequently dies of shock. To treat for shock do the following: (1) maintain the body temperature by protecting the victim from wind and cold as much as possible; (2) keep the person lying down, so that blood flows to the head and chest where it is needed most. Lying flat is also the best position if there is an injury to internal organs, to the head, or for fractures.

Map and Compass

Getting lost may not seem very serious if it only means you return home a little later than expected. But if you become lost so that you are stranded and cold, or if there is an injury which needs immediate help, getting lost can be a tragedy.

When you go out on a snowmobile, it is essential to carry a compass and a good map of the area. Keep your eyes open for blaze marks, cabins, rivers, and other landmarks as you travel. But when darkness or fog covers landmarks it is impossible to know which way to go without a map and compass.



Topographic maps are best because they show the land in three dimensions: north-south, east-west, and elevation. They can warn you of steep areas, valleys, and ridges. A topographic map also tells you the number of degrees between magnetic north (where the compass arrow points) and true north (where the North Pole is). This number of degrees, called the *angle of declination,* varies everywhere in the world, so you must know it for your particular area.

To use a compass and map:

1. Place map and compass on a flat surface away from any metal objects.

2. Place the compass on the map so that the north-south line on the compass dial is parallel with the map north arrow or the vertical lines on the map.

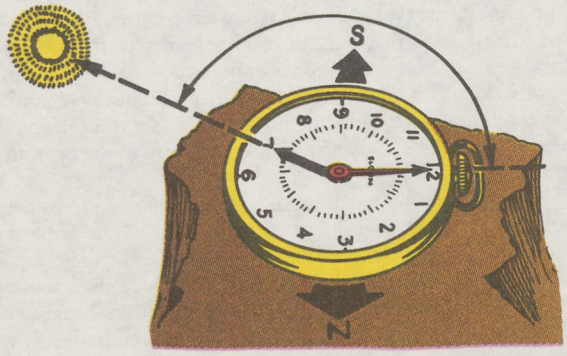
3. Turn the map and compass as a unit, until the arrow moves away from north on the compass at the proper angle of declination noted on the map of your area. Now the map and compass are oriented.

4. If you know your location on the map, you can line up a visible landmark with its map symbol, once the map and compass are oriented.

5. If you do not know your position on a map, but you know you are somewhere along a certain line, such as a ridge, or river, or trail, you can figure out where you are along that line. Orient the map to north

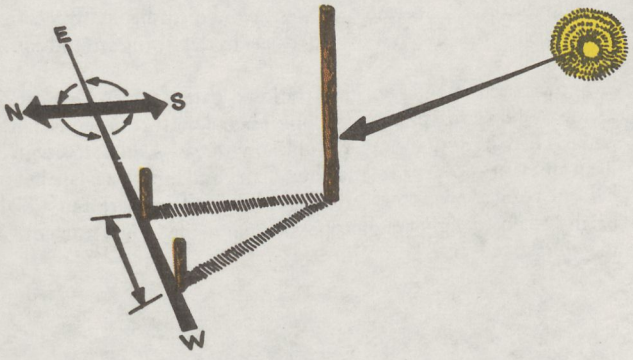
using the compass (steps 2 and 3.) Take a bearing on some landmark which you can positively identify, such as a mountain peak.

The line of this bearing will intersect the trail or ridge where you are located. The point of intersection is your location on the map. As you move along in the right direction of travel, continue to take readings to recheck your position.



To find direction using a watch, lay the watch flat with the hour hand pointing toward the sun. Find the point on the watch face which is halfway between the hour hand and the 12. That point will be south.

To find direction with a shadow stick, use a stick that is straight and about three feet long. Place it upright in a clear area. With a peg, mark the end of the shadow. Wait 30 minutes. Then place another peg at the end of the new shadow. The line between these two pegs is the east-west line.



If you are in a blizzard or thick fog, and you have no idea where you are, do not wander around, particularly at night. You will waste energy. As calmly as possible, take the steps necessary for survival. Build a shelter, and a fire if you can find the materials. If you must choose between wandering and staying where you are, stay put and keep yourself warm.

Hazardous Conditions

Frozen Surfaces

Frozen surfaces of lakes, rivers, or streams should never be considered as safe areas of travel. Although another snowmobile may have traversed the area ahead of you, this is no assurance that the surface is safe.

You must keep in mind any changing temperatures that may cause thaws. Areas which thaw and then refreeze may contain air pockets within the ice, or have frozen ridges and obstructions. Ice may shift and change in level. This can leave a "shelf" which is higher by several inches over the adjoining ice. Snowmobiles which strike these unlevel areas can be damaged or cause serious physical injury to the operator and passenger.

If you must travel upon a frozen body of water you must consider the risks. Ascertain the thickness of the ice, and stay away from areas where moving water enters lakes or ponds. Ice in these areas can contain thinner ice which you could break through. Snow which covers a frozen surface can hide obstructions or thin ice areas.

The best decision in all cases is to **stay off frozen bodies of water.** There is never a guarantee for safety in these areas.

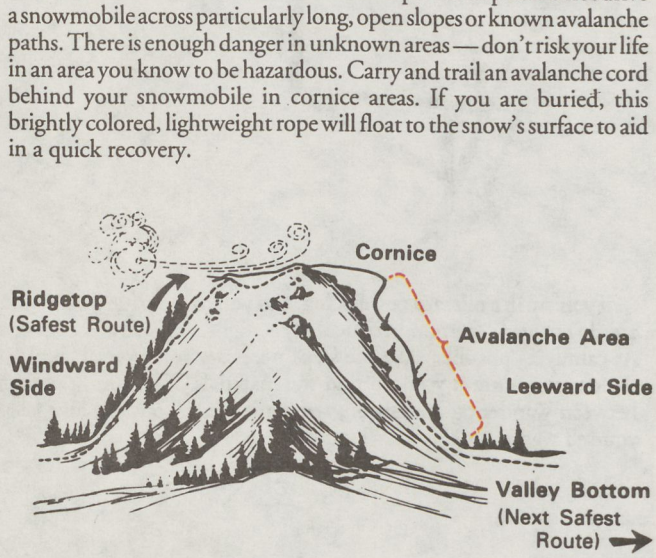
Avalanche

In some areas of the country, snowmobilers will be driving in mountainous areas. Since one footstep is enough to start an avalanche, or "snowslide", a snowmobile is certainly capable of starting one.

The first way to avoid an avalanche is to stay out of areas which are avalanche hazards. Most accidents occur in slab avalanches, where a large area of snow breaks away and slides.

The safest routes are on ridgetops and slightly on the windward side, away from *cornices.* Windward slopes are usually safer than leeward slopes. If you cannot travel on ridges, the next safest route is out in the valley, far from the bottom of slopes. Avoid disturbing cornices from below or above. Drive to the top of ridges by detouring around cornice areas.

Snowmobiles should not cross the lower part of slopes. Do not drive a snowmobile across particularly long, open slopes or known avalanche paths. There is enough danger in unknown areas — don't risk your life in an area you know to be hazardous. Carry and trail an avalanche cord behind your snowmobile in cornice areas. If you are buried, this brightly colored, lightweight rope will float to the snow's surface to aid in a quick recovery.

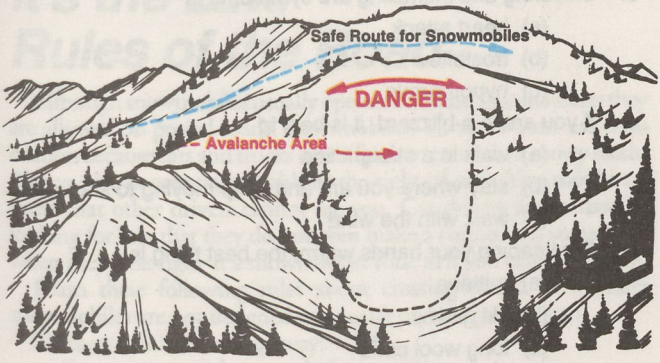


Watch for Avalanches

Danger! Avalanches may occur at any time on many of the trails marked on this map. Advice on avalanche conditions is available at local Forest Service offices, or by calling the CSA Snowline at 1-800-235-4480. The "Hotlines" of the Colorado Avalanche Information Center are as follows:

Denver: 303-275-5360
Ft. Collins: 970-482-0457
Colorado Springs: 719-520-0020
Summit County: 970-668-0600
Vail Area: 970-827-5687
Aspen Area: 970-920-1664
Durango: 970-247-8187

Because of erratic weather patterns in our mountains, snow conditions in Colorado can fluctuate rapidly over short distances and short time spans. Although most avalanche victims trigger the slide that buries them, changes in snow stability can occur spontaneously on slopes well above unsuspecting travelers. Know the terrain around you. Avoid traveling on steep slopes or within gullies and do not stop while traveling underneath them. In addition, avalanche debris or snow drifts over the trails and roads may ice over, often making access to the snowline hazardous. To ensure a safe, pleasurable trip, phone a local Forest Service office before you depart.



If you are caught in an avalanche, discard all equipment, and get away from your snowmobile. Make swimming motions, trying to stay on top and trying to get to the side of the avalanche. Before coming to a stop, get your hands in front of your face and try to make an air space in the snow as your are coming to a stop.

If you are the survivor, mark the place where you last saw the victim. Search downslope of that point. Poke the snow with a sectional probe or stick. You are the victim's best hope for survival. Don't desert the victim and go for help, unless there is someone else to continue looking, or the help is only a few minutes away. After 30 minutes, the buried victim has only a 50 percent chance of survival. If one person does go for help, mark the route for return.

Notice: It is recommended that you carry a shovel, probe poles and a transceiver when snowmobiling in areas where there is risk of an avalanche.

Whiteout Conditions

Whiteout occurs when the ground is covered with snow, and the sky is overcast. This white-against-white situation makes it difficult to judge distances and changes in the terrain, particularly when traveling on a rapidly moving vehicle.

If possible, avoid traveling during these times. If you must, use extreme caution. Go at slower speeds, keeping a sharp eye out for abrupt drop-offs or other changes in terrain. Do not travel over unfamiliar territory, or uncharted territory. Remember, experience cannot prevent you from getting lost during a whiteout.

Snowmobiler Activity: Survival Quiz

Circle the letter which best completes the sentence.

1. The most important feature of the first layer of clothing is that it
   (a) ventilates
   (b) stays tight around wrists and ankles
   (c) is thick
2. If a person is injured and not breathing you should
   (a) go for help
   (b) wait and see what happens
   (c) give artificial respiration
3. Shivering and stumbling are symptoms of
   (a) heart attack
   (b) frostbite
   (c) hypothermia
4. If you are in a blizzard, it is best to
   (a) walk in a straight line
   (b) stay where you are and keep moving to stay warm
   (c) walk with the wind
5. For keeping your hands warm, the best thing is
   (a) mittens
   (b) ski gloves
   (c) long wool cuffs
6. On a trip the most essential thing to take with you is a
   (a) tent
   (b) friend on another snowmobile
   (c) compass and map
7. If the temperature is 10 degrees F., and the wind is blowing 20 mph, you should
   (a) not go out
   (b) not worry about frostbite
   (c) check frequently for frostbite
8. For bright days, wear
   (a) dark lenses
   (b) yellow lenses
   (c) clear lenses
9. If someone cannot move the toes after an injury you should
   (a) exercise the toes and legs for the victim to keep the body warm
   (b) consider spinal injury
   (c) consider spinal injury and not move the victim
10. If a person has a heart attack, you should
    (a) force the patient to lie down
    (b) try to impress the patient with the serious condition
    (c) suggest the patient lie down and say everything will be all right

9

Objectives: Snowmobilers should be able to:

- ***Identify state laws which apply to snowmobiling.***
- ***Identify the meaning of snowmobile trail signs.***
- ***Complete a typical accident form.***
- ***Complete a typical registration form.***

RIDING IN COLORADO

It's the Law/ Rules of the Road

Although snowmobiles usually operate on trails, in some states they are allowed on posted roads. Snowmobilers on roads must use extra caution because cars and trucks are difficult to control on snowy roads. Always give conventional vehicles the right-of-way. You should assume that other drivers cannot see you. Car drivers are so used to looking for cars that they do not even make a connection sometimes when they look right at a snowmobile. Ride as if you cannot be seen.

Learn these following rules about crossing roads. (Remember snowmobiles are not designed to operate on bare pavement.)

To cross a railroad or highway:

- Come to a complete stop before crossing.
- Yield the right-of-way to all motor vehicle traffic.
- Cross at a right angle (90°) to the roadway at the place where no obstruction prevents a quick, safe crossing.

You may operate on the roadways of streets and highways:

- During special snowmobile events and on snowmobile routes authorized by local subdivisions (note that roads on the state highway system may not be used in this manner).
- On streets and highways not maintained for winter motor vehicle traffic.
- When crossing railroad tracks, bridges or culverts.
- During any emergency condition declared by the Governor or his designated authority.

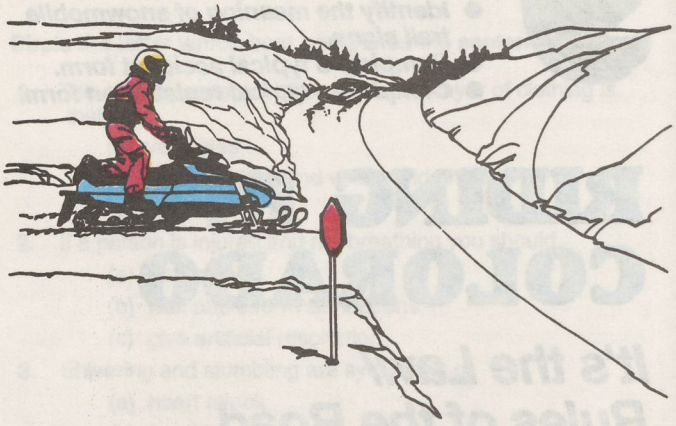
You may operate on the right-of-way of streets and highways:

- If you are as far as possible from the roadway, and
- If you are moving in the same direction as the nearest lane of traffic during hours of darkness.

Some safety rules apply to all types of machines or vehicles on roads and highways. You will hear these rules again when you take driver education.

1. Defensive driving: Be prepared for emergencies involving pedestrians, intersections, approaching vehicles and bad weather conditions especially at night.
2. It is against the law to ride while under the influence of alcohol or drugs. Alcohol reduces your body warmth eventually, dims your reflexes, causes drowsiness, and decreases alertness.
3. Obey posted speed laws. Traffic signals apply to all vehicles. At an intersection, know who has the right-of-way. Be sure to signal.

Crossing Roads



A Summary of Colorado's Snowmobile Regulations

The Definition of a Snowmobile:

Any self-propelled vehicle capable of traveling over snow or ice, which utilizes as its means of propulsion an endless belt tread, or cleats, or any combination of these. It is steered wholly or in part by skis or sled-type runners, and which is not otherwise registered as, or subject to the motor vehicle excise tax.

Registration:

All snowmobiles, including those on trailers in parking lots and at trailheads, must be registered with the Colorado Division of Parks and Outdoor Recreation (DPOR), or if from another state have a valid non-resident permit unless:

- Used exclusively for sanctioned snowmobile races (including out-of-state machines brought to Colorado only for racing), or
- Government owned

The current year validation decal must be permanently affixed to each side of the upper half of the cowling of the machine. (Dealers, renters and manufacturers should contact the DPOR Registration Unit for details regarding registration fees and display of decals on their machines.)

Snowmobile dealers are required to sell a registration to anyone buying from their inventory. Colorado residents may use their dated snowmobile bill of sale as a temporary registration for the first 30 days of ownership.

The fine for operating a snowmobile without a valid registration is $35.00 and/or a summons into court.

Snowmobile registrations are valid from October 1 through September 30. The registration fee is $20.25. All funds from the sale of snowmobile registrations are earmarked for the Snowmobile Recreation Fund. Registrations may be purchased at:

- DPOR Regional Offices in Colorado Springs, Fort Collins and Clifton.
- Some snowmobile dealers.
- The DPOR Registration Unit at 13787 S. Hwy. 85, Littleton, CO 80125.

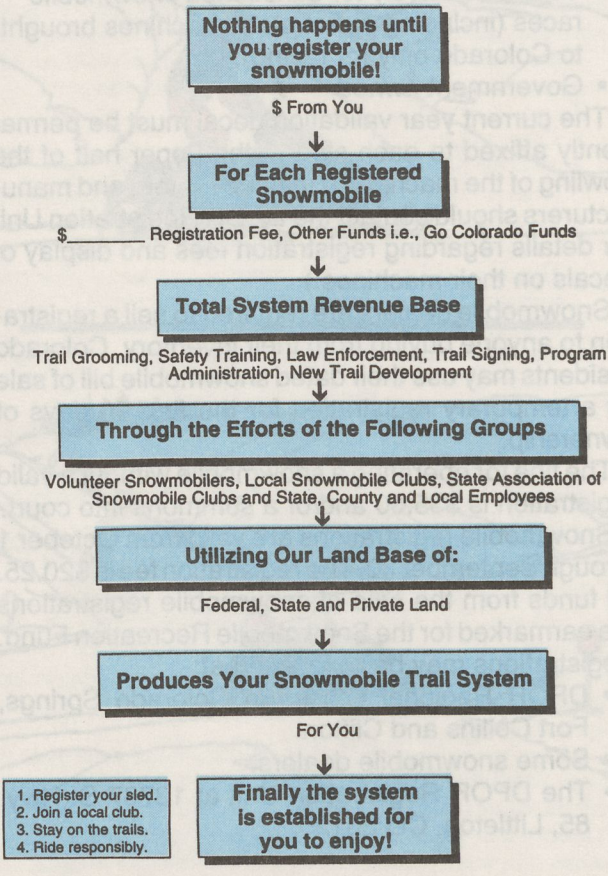
- Nonresidents of Colorado must purchase an annual registration if the machine is not registered in the state in which they reside.

Snowmobile operators must carry their snowmobile registration certificate and show it to any peace officer upon request.

Your Registration Dollars at Work:

All funds from registered snowmobiles are placed in the snowmobile account and used solely for snowmobilers in Colorado for:

- Trail grooming
- Enforcement
- Equipment purchases
- Safety education and training
- Program administration
- Signing
- Avalanche warning program



1 CO SSY PG

Safety Certification Courses:

The Colorado Division of Parks and Outdoor Recreation (DPOR) recommends safety training for everyone who operates a snowmobile. The free course consists of six hours of classroom instruction and an additional hour of performance testing on a snowmobile. You do not have to own a machine in order to take the course.

Anyone between the ages of 10 and 16 who wishes to operate a snowmobile on public lands must be certified or supervised by someone who is. Adults are encouraged to take snowmobile safety training. In fact, over 800 adult employees of Colorado ski areas are certified each year!

Certificates in snowmobile safety are awarded upon successful completion of a DPOR-approved training course. Such courses are available throughout Colorado from local snowmobile clubs, the Colorado Snowmobile Association and DPOR.

Vegetation:

It is an infraction for any person to operate a snowmobile:

- In any area or in such a manner so as to expose the underlying soil or vegetation, or to injure, damage, or destroy trees or growing crops.

Wildlife:

No person shall operate a snowmobile in such a way as to run down or harass wildlife or domestic animals. No person shall carry any loaded weapon on, or hunt from, a snowmobile.

Accident Reports:

The operator of any snowmobile involved in any accident resulting in injury requiring hospitalization or death of any person, or property damage in the amount of $1,500.00 or more shall report the accident to the local authorities. An accident report shall be submitted to the DPOR within 48 hours.

Snowmobile Trail Signs

When riding your snowmobile, you will encounter trail signs. They are designed to communicate information about the trail to you. Below are some of the most common trail signs for you to learn.

REGULATORY

STOP SIGN

PURPOSE: To be used along trails prior to a road crossing.

SIZE: 12"x12"

BACKGROUND COLOR: Red

BORDER AND LEGEND: Silver

STOP AHEAD SIGN

PURPOSE: To indicate the snowmobiler must stop ahead.

BACKGROUND COLOR AND LEGEND: Yellow with black lettering

TRAILHEAD MARKER

PURPOSE: To indicate snowmobile trailheads and other areas permitting snowmobiling.

BACKGROUND COLOR AND LEGEND: Brown with white border and white snowmobile symbol

RESTRICTIVE

PURPOSE: To indicate areas where snowmobiling is not permitted.

BACKGROUND COLOR AND LEGEND: Brown with white border and white snowmobile symbol with red diagonal stripe

WARNING

TRAIL INTERSECTION

PURPOSE: To indicate an intersection in the trail.

SIZE: 12"x12"

BACKGROUND COLOR: Yellow

LEGEND: Black 2"x11" vertical and 2"x5½" diagonal

DANGER

PURPOSE: To indicate an area of danger on the snowmobile trail.

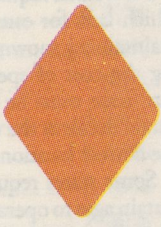
SIZE: 12"x12"

BACKGROUND COLOR: Yellow

LEGEND: Black

INFORMATION

TRAIL BLAZER



PURPOSE: Shows snowmobiler is still on the trail.

SIZE: 5"x7"

BACKGROUND COLOR: Orange with reflective border.

DIRECTIONAL BLAZER

PURPOSE: To indicate changes in trail direction.

SIZE: 9¼"x12"

BACKGROUND COLOR: Orange with black border.

LEGEND: Black 5¼" directional arrow

Ski areas are for skiers. Snowmobile traffic ruins cross-country ski tracks. Respect areas marked with ski signs or blue diamonds. These are cross-country ski trails.

Accident Reporting

Accident reports are helpful in identifying why the accident occurred. The accident may be due to a local environment condition, hazardous trail condition, or a manufacturing error. Once the cause of the problem is known a solution can be found.

Whenever any snowmobile is involved in an accident causing death or requiring hospitalization or $1,500 or more in property damage, Colorado requires that the accident be reported. File the report with Colorado State Parks. You are required to file the report within 48 hours. Witnesses may also be asked to complete an accident report.

Registration

Laws provide an understanding between snowmobilers and police on the proper way to act while on the trail. These laws protect people, property, and the sport of snowmobiling. You can encourage other snowmobilers to follow the laws by practicing them yourself. In this way snowmobilers can "self-police" all users on the trail.

In most states where there are snowmobilers, there is an agency in the government which is in charge of snowmobile laws. In Colorado, the Colorado Division of Parks and Outdoor Recreation administers the snowmobile program. This agency will be able to give you information on laws, maps, trails, snowmobile clubs, and safety training courses. Call 303-791-1920.

Most states require that you register your snowmobile. You pay a fee which lasts for one season. These fees help pay for developing and maintaining snowmobile trails and facilities on public lands, including the cost of special signs for snowmobile safety. A registration certificate must be carried on the machine at all times. You will be issued decals at the time of registration; make sure you place them on the correct location on the snowmobile.

Some states require a snowmobile safety certificate for people of certain ages to operate a snowmobile on public lands. Check your laws carefully.

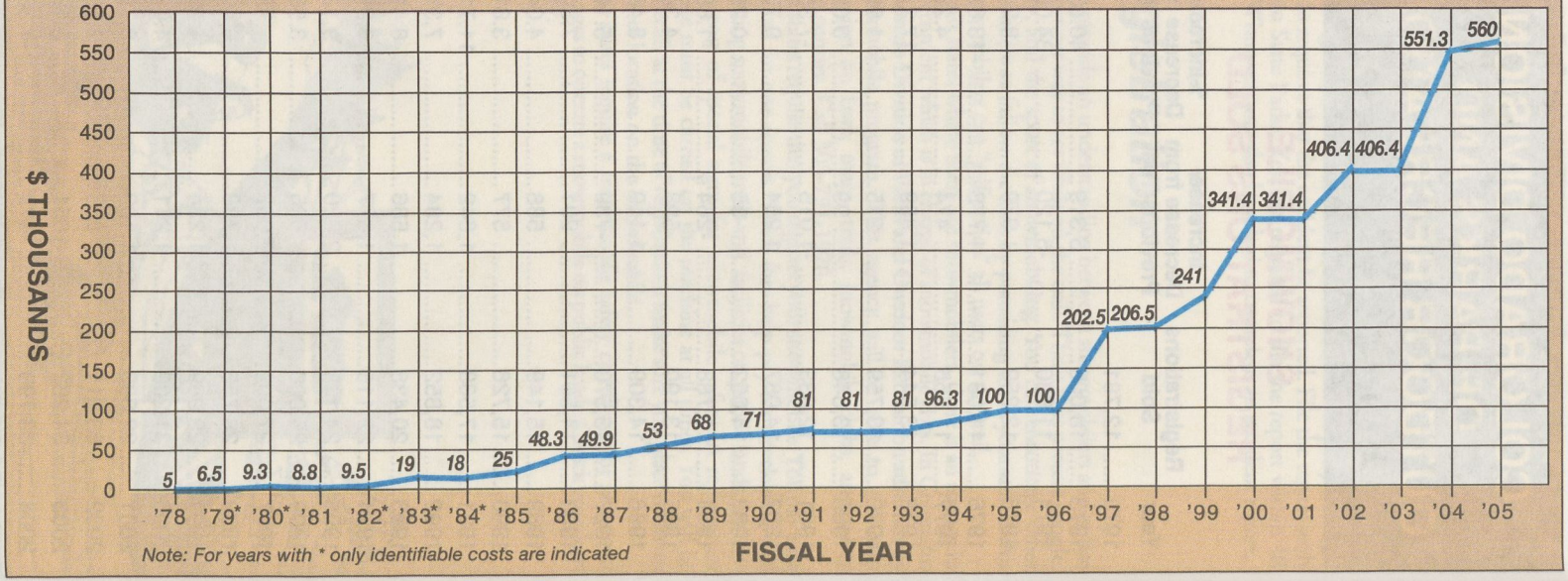
COLORADO DIVISION OF PARKS AND OUTDOOR RECREATION

Registration Unit

SNOWMOBILE REGISTRATIONS SOLD

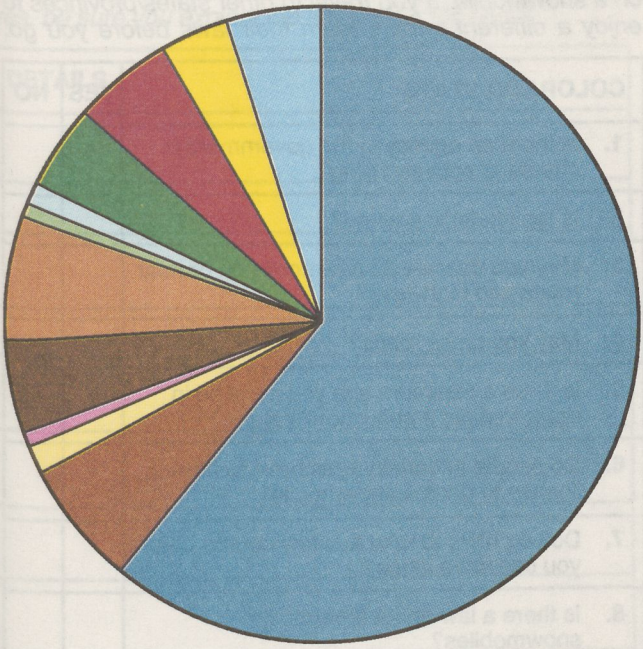
Year	Registrations Sold	Increase/ Decrease from Previous Year	%Increase/ Decrease from Previous Year
1972	12,781		
1973	18,000	5,319	40.83%
1974	11,880	-6,120	-34.00%
1975	12,859	979	8.24%
1976	11,081	-1,778	-13.83%
1977	11,555	474	4.28%
1978	13,544	1,989	17.21%
1979	13,759	215	1.59%
1980	13,848	99	0.65%
1981	12,833	-1,015	-7.33%
1982	14,087	1,254	9.77%
1983	14,052	-35	0.25%
1984	13,788	-264	-1.88%
1985	13,190	-598	-4.34%
1986	14,309	1,119	8.48%
1987	13,570	-739	-5.16%
1988	14,561	991	7.30%
1989	15,149	588	4.04%
1990	15,726	577	3.81%
1991	17,568	1,842	11.71%
1992	18,852	1,284	7.31%
1993	20,438	1,586	8.41%
1994	22,115	1,677	8.21%
1995	24,135	2,020	9.13%
1996	25,000	865	3.58%
1997	27,002	2,002	8%
1998	28,755	1,753	6.49%
1999	29,989	1,234	4.29%
2000	31,200	1,211	4.03%
2001	32,383	1,183	3.79%
2002	33,211	828	2.55%
2003	34,262	1051	3.16%
2004	33,790	-472	-1.38%

COLORADO SNOWMOBILE PROGRAM BUDGET HISTORY — TRAIL GROOMING



*Note: For years with * only identifiable costs are indicated*

Fiscal Year 2004
Snowmobile Program Budget



Trail Contracts	60%
Personal Services	8%
Contingency	2%
Avalanche Program	1%
Safety Education	4%
Trail Signing	6%
Regulations Brochure	1%
Travel	1%
DPOR Field Operations	5%
Registration Operations	5%
Overhead	3%
Capital Equipment	5%

*Note: For years with * only identifiable costs are indicated*

Snowmobiler Activity:

The chart which follows asks questions about the laws in Colorado. Your instructor will help you find the laws to fill in the chart. Make sure you know these laws before you go out on a snowmobile. If you travel to other states/provinces to enjoy a different terrain, learn their laws before you go.

COLORADO STATE	YES	NO
1. Is there an agency in the government in charge of snowmobiling?		
2. Is registration required?		
3. May you operate a snowmobile on or near roads and highways?		
4. May you cross roads?		
5. Is there a minimum age you must be in order to drive a snowmobile alone?		
6. Do people of certain ages have to have a license to drive a snowmobile?		
7. Do you have to take a safety course before you can drive alone?		
8. Is there a law about firearms on snowmobiles?		
9. Is there a law about chasing animals?		
10. Is there a law about lights?		
11. brakes?		
12. reflectors?		
13. decibels of sound?		
14. speed?		
15. alcohol or drugs?		
16. muffler?		
17. helmet?		
18. safety flag?		
19. riding at night?		
20. private or posted land?		
21. litter?		
22. accident reporting?		
23. Is there a fine or penalty for violating the snowmobile registration law?		

Law Questionnaire

Many will accept a safety certificate issued by another state/ province.

Check the yes or no column for each question. If you check yes, be sure you explain the law under "DETAILS."

DETAILS

10

Objectives: Snowmobilers should be able to:

- ***List several items of the Snowmobiler's Code of Ethics.***
- ***List several items in the basic Snowmobiler's Safety Code.***
- ***Explain why alcohol and snowmobiling do not mix.***

RESPONSIBILITY

Safety, courtesy and protection of the environment are important to all people who use the outdoors. Snowmobilers share the trail with other snowmobilers and non-motorized groups, such as cross country skiers. All users should respect another person's right to the trail. The list of goals below contains good principles to follow when on the trail. Together they form a code of ethics. While they were published by the International Snowmobile Industry Association, they should be practiced by all users of the environment. Try to think why each of these points is necessary.

Code of Ethics

1. I will respect all private and public property and the rights of all winter recreationists to enjoy winter's beauty.

2. I will park considerately without blocking other vehicles or impeding access to trails.

3. I will keep to the right when meeting another winter recreationist and yield the right-of-way to downhill traffic.

4. I will slow down and use caution when approaching or overtaking another.

5. I will respect designated areas, trail use signs and established ski tracks.

6. When stopping, I will not block the trail.

7. I will not disturb wildlife, avoiding all areas posted for their protection or feeding.

8. I will not litter and I will pack out everything I packed in.

9. I realize that my destination and travel speed are determined by my equipment, ability, terrain, weather, and traffic on the trail. In case of emergency, I will volunteer assistance.

10. I will not interfere with or harass others, recognizing that people judge all snowmobilers and skiers by my actions.

Basic Snowmobile Safety Code

What you've learned in prior chapters will help you become a safe snowmobiler. We have talked about your snowmobile, its operation, maintenance and equipment. You have developed the ability to better handle yourself in emergency situations. Know and practice this "Basic Snowmobile Safety Code."

1. Be sure your snowmobile is in top-notch mechanical condition at the beginning of the winter season and throughout the months of use.

2. Familiarize yourself with the snowmobile you are driving by reading in detail the manual accompanying the snowmobile.

3. Wear sensible, protective clothing designed for snowmobiling.

4. Use a full size helmet, goggles or face shield to prevent injuries from twigs, stones, ice chips and flying debris.

5. Avoid wearing long scarves. They may get caught in moving parts of the snowmobile.

6. Know the terrain you are going to ride. If unfamiliar to you, ask someone who has traveled over it before.

7. Know the weather forecast and especially the ice and snow conditions in the area.

8. Always use the buddy system. Never ride off alone or unaccompanied.

9. Do not pursue domestic or wild animals. No true sportsperson would stoop to such conduct. If you see a violation of this rule, report it to the nearest law enforcement officer. Be prepared to identify the rider and the sled.

10. At all times, be sure you have a properly operating lighting system on the snowmobile.

11. Drowning is one cause of snowmobile fatalities. When not familiar with the thickness of the ice or water currents, avoid these areas.

12. Don't remove the factory-installed air box or muffler to install one that makes more noise. This could lessen the performance of your vehicle. The manufacturer is trying hard, for the betterment of the environment, to develop a quieter machine.

Excessive Speed/Alcohol

Drinking and riding can be fatal. Drinking has contributed to the majority of fatal snowmobile accidents throughout the nation. Alcohol and snowmobiles do not mix.

Losing Control

Alcohol sneaks up on you. Unlike other beverages and foods, alcohol doesn't have to be digested. Within minutes, it's absorbed into your bloodstream and passed to your brain. It quickly slows down your physical and mental reactions. Though you may perform more poorly, the alcohol makes you feel as if you're riding better. In fact, small quantities of alcohol impair your ability to:

- ☐ Ride and scan the trail for hazards at the same time.
- ☐ Perceive moving objects.
- ☐ See clearly at night.
- ☐ React quickly.
- ☐ Coordinate eye, hand and foot movements.
- ☐ Maintain balance while maneuvering.
- ☐ Make good decisions.

Alcohol affects all the skills you need to ride safely (see chart). The amount of alcohol in your body is described as the "Blood Alcohol Content" or BAC. Many states consider people intoxicated at a BAC of .10 percent. Physical and mental reactions usually become impaired at a BAC of .05 percent.

The American Medical Association (AMA) cites studies showing that at .05 to .06 (a beer or two), negotiating skills begin to deteriorate for most people. According to the AMA, the risk of having an accident rises significantly at .05. How much alcohol it takes to make you impaired or intoxicated depends on several factors:

- ☐ How many ounces of alcohol you've consumed.
- ☐ How quickly you drink it.
- ☐ Your tolerance to alcohol.
- ☐ How much you weigh.
- ☐ Other food consumed.

A glass of wine, a mug of beer, or a shot of hard liquor is burned up and eliminated by the body in about an hour. When you drink at a rate greater than one drink an hour, alcohol starts to build up in your bloodstream. People who weigh between 140 and 180 pounds usually become legally intoxicated with four drinks in their systems. Those who weigh less than 120 pounds need only three drinks to become intoxicated. So if you're of average build, just a few drinks in an hour may put you at risk.

Unfortunately, there is nothing you can do to counteract the effects of alcohol. Neither coffee, showers, nor exercise can make you sober. All you can do is wait for your body to eliminate the alcohol. That takes time.

Blood Alcohol Content Chart

Body Weight in Pounds	Number of Drinks in a Two Hour Period 12 oz. beer = 5 oz. wine = 1 oz. 80 proof liquor								
100	1	2	3	4	5	6	7	8	9
120	1	2	3	4	5	6	7	8	9
140	1	2	3	4	5	6	7	8	9
160	1	2	3	4	5	6	7	8	9
180	1	2	3	4	5	6	7	8	9
200	1	2	3	4	5	6	7	8	9
220	1	2	3	4	5	6	7	8	9
240	1	2	3	4	5	6	7	8	9

BAC to .05%	**Be Careful** — Loss of judgment and coordination
BAC .05% to .07%	**Abilities Impaired** — Chance of accident increased
BAC .08% and over	**Do Not Operate a Snowmobile** — High risk of accident

As stated before, a large number of snowmobile accidents involving injuries and fatalities are associated with alcohol use. In addition to the risk of injury and the resulting medical bills, repairs to the snowmobile are expensive. In some states you can get a ticket for "riding under the influence" on public lands, which can lead to stiff fines and lawyer fees, not to mention possible jail time.

Taking Control

There are many things you can do to ensure that you and your friends won't have an alcohol-related accident. First of all, try to control your drinking.

☐ Don't drink before you ride. If you are going to ride somewhere, it's safest not to drink at all.

☐ If you must drink, wait until you stop for a lunch or a dinner break, and have your drink with your meal. Figure out how long your break will be and how many drinks you should limit yourself to so that the alcohol in your system will be down to a safe level by the time you will ride again. Or, better yet, save the alcohol until your riding is over.

☐ Help your buddies limit their drinking. Riding while intoxicated not only raises the chance of personal injury and injury to others, but also projects an image of recklessness and irresponsibility that could help to eliminate your riding areas.

It may be hard for many people to control their drinking and riding when they're part of a group. That's why it's so important for friends to step in and help each other stay sober to ride safely.

GLOSSARY

Alignment — The proper positioning or adjustment of parts. When the skis are parallel, they are in alignment.
Angle of Declination — The number of degrees between magnetic north and the North Pole, differing according to your location.
Bogie Wheels — Wheels which press down on the track and keep the track in contact with the snow. They are part of the suspension system.
Braking Distance — The distance required for a vehicle to come to a complete stop, varying according to the speed at which the vehicle is traveling.
Carburetor — The part of the engine where fuel and air mix.
Caution signs — Signs that give information about a specific trail condition, or that advise to proceed with caution at a reduced speed.
Choke — A valve which cuts down on the air intake of the engine, making the fuel/air mixture richer. It is used when the engine is cold.
Cleats — Pieces which project from the track to make it grip.
Compaction — Packed firmly together. The amount of packing or consolidation.
Compass — An instrument for determining direction.
Compression — When the piston is pushed down by the force of the exploding gas mixture caused by the spark plug.
Conserve — To keep from loss or from being used up; to preserve.
Cornice — An overhang of snow formed by wind.
Decibel — The unit of measure for sound.
Directional Arrow — A sign showing that the trail runs in a certain direction.
Drive Belt — The part of the drive system that passes movement from the primary clutch to the secondary clutch.
Drive Chain — The chain which links the secondary drive with the wheel of a sprocket that turns the track.
Drive Clutch — The second clutch turned by the drive belt in the drive system.
Energy — Ability to do work.
Environment — Surrounding things, conditions, or influences.
Exhaust Manifold — A pipe which leads exhaust fumes from the engine to the muffler.
Frostbite — A frozen or partially frozen condition of some part of the body.
Fuel Mixture Ratio — The proportion of gas to oil which is proper for your engine.
Habitat — The place where an animal or plant naturally lives or grows.
Hifax — Slide rails.
Hypothermia — Extremely low body temperature brought about by excessive exposure to cold.
Idle — The state of the engine when it is running but the machine is not moving.
Ignition — The means by which engine fuel is lighted in a cylinder.
Informational Signs — Signs which indicate major changes in direction, rest areas, stops, or hazard areas.
Insulate — To keep warm by trapping a layer of warm air next to the body.
Lubrication — The applying of oil, grease, or other substance to make the parts of the machine work smoothly.
Oil-Injection — The type of engine which adds oil automatically to the fuel/oil mixture by the piston.
Piston — The part of the engine which is pushed down by the gases ignited by the spark from the spark plug.
Pollution — Man-caused impacts to the land, water, air, sound or light environments.
Pressure — Force per unit of area.

Primary Drive Clutch — The first clutch turned by the power from the engine. It is also called the drive clutch.
Regulatory Signs — Signs that give specific information about what to do on a trail at that particular point. Examples are stop or yield signs.
Running Board — The footrest which runs along the bottom of both sides of the chassis.
Safari — A trip where a group of snowmobilers travels together.
Shock — A condition of poor circulation brought on by an injury.
Snow Blindness — Temporary blindness caused by exposure to sunlight reflected off snow.
Sprocket — A round wheel with metal or plastic teeth which turns the drive chain or track.
Terrain — The shape of the land.
Throttle — The control which increases or decreases speed. It is found on the right handlebar.
Tilt-Bed Trailer — A trailer which tilts down for easy loading and unloading.
Tongue — A rigid bar which extends between the trailer and the towing vehicle or the snowmobile and cargo sled.
Topographic Map — A map which shows the shape of the land, including the variations in elevation.
Track Tension — The amount of free play, or tightness, of the track.
Trail Markers — Small diamond shaped signs that indicate changes in trail direction or that the snowmobiler is still on the trail.
Wear Rods — Hard metal pieces attached to the bottom of snowmobile skis to aid in steering on hard-packed or icy surfaces.
Winch — A crank with a rope or cable wrapped around a drum for pulling a vehicle onto a trailer.
Wind Chill Factor — The drop in temperature which your body feels because of the wind and the speed at which you are traveling.

Word Search

All except ten of the glossary words are hidden below. They can be found vertically, horizontally, diagonally or backwards. Can you find which ten words are *not* below?

A I L Y M U R O T C A F L L I H C D N I W
N H N I G R E U O O K C O H S H A R O T O
G I C F R R T S N R R E P R O N R I I O R
L F O T O T E M G N E M O K P I B V S P R
E A I I U R S N U I I L E O R A U E N O A
O X E N T L M N E C R N B C E R R C E G L
F C H C S A C A G E O N G E S R E H T R A
D R O A N U R E T I H M O B S E T A K A N
E S O M V A L E V I S Y P I O T O I C P O
C T A S P S T A R I O Y P R T A R N A H I
L A L F T A T S T U R N R O E U R E R I T
I E M A A B C M I E T D A O T S L D T C C
N L Q U M R I T A D S X Y L T H S L S M E
A C T I P B I T I N G D I R S A E I O A R
T H R O T T L E E O I N O M A I L R O P I
I G N I T I O N T M N F I R L M G U M N D
O N O I T C E J N I L I O K R E I N G I A
N E N V I R O N M E N T R L A A V R S E B
A L I G N M E N T H C N I W D R E F P A R
L D T E K C O R P S E N D N I L B W O N S
T I L T B E D T R A I L E R T A T I B A H

SNOWMOBILE EXAM

Instructions

Turn to page 88, 90 or 92 and remove one of the Exam Keys. Be sure to fill in your name at the bottom.

Do not mark on the following questions. That way each family member can complete their exam independently. They may be mailed in one envelope.

Multiple Choice

Instructions: The first part of this exam consists of 18 multiple choice questions. On the exam key, fill in the letter that best completes each statement. Only one answer box should be filled in for each question. Each question is worth two (2) points.

1. The goal of the snowmobile safety training program is to

   (a) provide you with a safety certificate so you can cross roads.
   (b) make you a better race driver.
   (c) make you a safe and responsible snowmobiler.

2. One of the major causes of snowmobile accidents is

   (a) riding at night.
   (b) excessive use of speed and alcohol.
   (c) riding off trails

3. Once you have received your safety certificate

   (a) you will need to review the manual every now and then.
   (b) you will know all you need to know about snowmobiling.
   (c) you will be able to drive faster and safer all the time.

4. Before every trip and pre-start safety check you should first

   (a) be sure the stop switch is in the "on" position.
   (b) be in position on the snowmobile.
   (c) point the machine in a safe direction.

5. Which statement is false?

   (a) snowmobile fuel is a mixture of gas and oil.
   (b) an improper gas/oil mixture can foul a spark plug.
   (c) you should pour oil into the snowmobile gas tank and then pour in the gas.

6. Night time snowmobiling can be especially dangerous because

   (a) there is a tendency to "overdrive" the machine's headlights.
   (b) familiar terrain looks different at night.
   (c) fixed objects such as stumps and ice chunks are more difficult to see.
   (d) all of the above.

7. Snowmobile brakes are designed to stop the machine

   (a) as quickly as a car can stop.
   (b) in 3 feet for every mile per hour of speed.
   (c) at varied distances depending on conditions.
   (d) all of the above.

8. If you come to a snow drift

   (a) avoid it since it may be covering an object.
   (b) plow through it if it looks like soft snow.
   (c) jump the machine over it.

9. A properly fitted helmet

   (a) should be worn only if required by law.
   (b) is required in all states and provinces.
   (c) is a good idea even if it is not the law.

10. On a trip the most essential thing to take with you is

    (a) a tent.
    (b) a friend.
    (c) a compass and map.

11. Extra care should be used when crossing any street or highway because

    (a) poor traction may slow your crossing.
    (b) snowmobile engine noise limits your ability to hear oncoming traffic.
    (c) a helmet or face mask reduces side vision.
    (d) all of the above.

12. The most important feature of the clothing closest to your skin is that it

    (a) ventilates.
    (b) stays tight around wrists and ankles.
    (c) is thick.

13. Shivering and stumbling are symptons of

    (a) heart attack.
    (b) frostbite.
    (c) hypothermia

14. The first stage of hypothermia is

    (a) change of skin color.
    (b) loss of consciousness.
    (c) shivering of the body.

15. The penalty for operating a snowmobile without a valid registration is

    (a) $35.00 and/or court summons.
    (b) $25.00 and/or court summons.
    (c) $15.25 and/or court summons.

16. If someone cannot move their toes after an injury you should

    (a) exercise the toes and legs for the victim to keep the body warm.
    (b) immobilize the legs with wooden splints.
    (c) consider spinal injury and not move the victim.

17. A snowmobile operator involved in an accident is required to make out an accident report when the accident results in

    (a) injury requiring hospitalization.
    (b) the death of any person.
    (c) total damage of $1,500 or more.
    (d) any of the above.

18. The hand signal for "stop" or "slow" is

(a)  (b)  (c) 

Safety Features

Questions 19 to 28: Fill in the box to match each safety feature with its purpose. There are 20 points possible.

(a) throttle
(b) brake
(c) lights and reflectors
(d) pulley and belt guards
(e) windshield
(f) stop switch
(g) running board
(h) passenger grips
(i) snow flap
(j) muffler

19. ____ Protects the operator from hearing loss.

20. ____ Helps the snowmobiler see and be seen.

21. ____ Helps protect the face and eyes from wind, snow and debris.

22. ____ When released, it should return quickly to the idle position.

23. ____ Allows for easy shut-off of the engine in an emergency.

24. ____ Pressure slows down the snowmobile.

25. ____ Protects the operator from moving parts during operation.

26. ____ A foot rest which supports and rests the feet.

27. ____ Prevents stones, ice and other objects from shooting back behind.

28. ____ Gives the passenger something to hold on to.

Signs

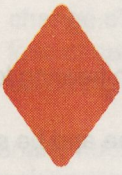
Questions 29 to 34: Identify these trail signs by filling in the box under the letter showing the correct meaning. There are 12 points possible.

A

D

B

E



C

F

29. ____ Brake to a complete stop.

30. ____ Warns of an area needing caution.

31. ____ You are on the trail.

32. ____ No snowmobiles allowed beyond this point.

33. ____ Trail intersects another trail.

34. ____ Trail turns right.

Fill in the Blank

Questions 35 to 38: Write in the correct answer on the Exam Key. Each question is worth 2 points.

35. When crossing a highway or road, you should cross at an angle of approximately _____ degrees.
36. Persons _____ years of age or older may take the snowmobile certification course.
37. Persons _____ years of age or under are not allowed to cross highways or public roadways unless supervised by an adult or certified through the snowmobile safety certification course.
38. It is illegal to operate a snowmobile while under the influence of _____ and drugs.

True – False

Questions 39 to 50: The following statements are either true or false. Fill in either the T (True) box or F (False) box to indicate the correct answer. Each question is worth 2 points.

T - F 39. You can legally operate an unregistered snowmobile on public property.

T - F 40. A large number of snowmobilers die each year from breaking through thin ice on lakes and rivers.

T - F 41. It is legal to operate your snowmobile without a registration certificate as long as a valid state decal is displayed.

T - F 42. You can legally operate a snowmobile on the roadway if the snow in the right-of-way is too deep.

T - F 43. Never check fuel levels with a match or lighter.

T - F 44. If your muffler falls off, it should not be replaced with a piece of flexible tubing.

T - F 45. A loaded firearm may be transported on a snowmobile if it is contained in a case.

T - F 46. Snowmobiles may operate anywhere in a state park.

T - F 47. You may not use a snowmobile to chase, drive or run over any wild animal.

T - F 48. All road and railroad crossings should be made as straight across as possible.

T - F 49. At night you should travel on the right hand side of the right of way and in the same direction as the vehicle traffic in the lane nearest you.

T - F 50. A long scarf is recommended to keep your neck and face warm while snowmobiling.

INFORMATION SHEET

Instructions

Remove this page and answer the exam questions on the back. Mail to:

Colorado State Parks
13787 So. Hwy. 85
Littleton, CO 80125

I certify that I am 10 years of age or older and that I completed the exam without help.

☐ **CERTIFICATE OF COMPLETION**

☐ Please notify the CSA that my family wishes to qualify for 25% off an annual membership.

_____

Signature

Name _____
(please print)

Address _____

City _____

State _____ Zip _____

Phone (_____) _____

Date of Birth _____/_____/_____

Exam Key #1

Instructions

Read the exam questions on pages 80 through 85 and use a pencil to fill in the space with the best answer to each question. If you change an answer, be sure to completely erase the first mark. Fill out the information sheet on the other side and mail to address shown.

	A	B	C	D
1.	☐	☐	☐	☐
2.	☐	☐	☐	☐
3.	☐	☐	☐	☐
4.	☐	☐	☐	☐
5.	☐	☐	☐	☐
6.	☐	☐	☐	☐
7.	☐	☐	☐	☐
8.	☐	☐	☐	☐
9.	☐	☐	☐	☐

	A	B	C	D
10.	☐	☐	☐	☐
11.	☐	☐	☐	☐
12.	☐	☐	☐	☐
13.	☐	☐	☐	☐
14.	☐	☐	☐	☐
15.	☐	☐	☐	☐
16.	☐	☐	☐	☐
17.	☐	☐	☐	☐
18.	☐	☐	☐	☐

	A	B	C	D	E	F	G	H	I	J
19.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
20.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
21.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
22.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
23.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
24.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
25.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
26.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
27.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
28.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
29.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
30.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
31.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
32.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
33.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
34.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

35. _____ 37. _____

36. _____ 38. _____

	T	F
39.	☐	☐
40.	☐	☐
41.	☐	☐
42.	☐	☐

	T	F
43.	☐	☐
44.	☐	☐
45.	☐	☐
46.	☐	☐

	T	F
47.	☐	☐
48.	☐	☐
49.	☐	☐
50.	☐	☐

Name *(please print)* _____

Be sure to fill out the information on the other side and mail today. More than one Exam Key may be mailed in one envelope.

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☐ **CERTIFICATE OF COMPLETION**

☐ Please notify the CSA that my family wishes to qualify for 25% off an annual membership.

_____

Signature

Name _____
(please print)

Address _____

City _____

State _____ Zip _____

Phone (_____) _____

Date of Birth _____/_____/_____

Exam Key #2

Instructions

Read the exam questions on pages 80 through 85 and use a pencil to fill in the space with the best answer to each question. If you change an answer, be sure to completely erase the first mark. Fill out the information sheet on the other side and mail to address shown.

	A	B	C	D
1.	☐	☐	☐	☐
2.	☐	☐	☐	☐
3.	☐	☐	☐	☐
4.	☐	☐	☐	☐
5.	☐	☐	☐	☐
6.	☐	☐	☐	☐
7.	☐	☐	☐	☐
8.	☐	☐	☐	☐
9.	☐	☐	☐	☐

	A	B	C	D
10.	☐	☐	☐	☐
11.	☐	☐	☐	☐
12.	☐	☐	☐	☐
13.	☐	☐	☐	☐
14.	☐	☐	☐	☐
15.	☐	☐	☐	☐
16.	☐	☐	☐	☐
17.	☐	☐	☐	☐
18.	☐	☐	☐	☐

	A	B	C	D	E	F	G	H	I	J
19.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
20.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
21.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
22.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
23.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
24.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
25.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
26.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
27.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
28.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
29.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
30.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
31.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
32.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
33.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
34.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

35. _____ 37. _____

36. _____ 38. _____

	T	F
39.	☐	☐
40.	☐	☐
41.	☐	☐
42.	☐	☐

	T	F
43.	☐	☐
44.	☐	☐
45.	☐	☐
46.	☐	☐

	T	F
47.	☐	☐
48.	☐	☐
49.	☐	☐
50.	☐	☐

Name *(please print)* _____

Be sure to fill out the information on the other side and mail today. More than one Exam Key may be mailed in one envelope.

INFORMATION SHEET

Instructions

Remove this page and answer the exam questions on the back. Mail to:

Colorado State Parks
13787 So. Hwy. 85
Littleton, CO 80125

I certify that I am 10 years of age or older and that I completed the exam without help.

☐ **CERTIFICATE OF COMPLETION**

☐ Please notify the CSA that my family wishes to qualify for 25% off an annual membership.

_____
Signature

Name _____
(please print)

Address _____

City _____

State _____ Zip _____

Phone (_____) _____

Date of Birth _____/_____/_____

Exam Key #3

Instructions

Read the exam questions on pages 80 through 85 and use a pencil to fill in the space with the best answer to each question. If you change an answer, be sure to completely erase the first mark. Fill out the information sheet on the other side and mail to address shown.

	A	B	C	D
1.	☐	☐	☐	☐
2.	☐	☐	☐	☐
3.	☐	☐	☐	☐
4.	☐	☐	☐	☐
5.	☐	☐	☐	☐
6.	☐	☐	☐	☐
7.	☐	☐	☐	☐
8.	☐	☐	☐	☐
9.	☐	☐	☐	☐

	A	B	C	D
10.	☐	☐	☐	☐
11.	☐	☐	☐	☐
12.	☐	☐	☐	☐
13.	☐	☐	☐	☐
14.	☐	☐	☐	☐
15.	☐	☐	☐	☐
16.	☐	☐	☐	☐
17.	☐	☐	☐	☐
18.	☐	☐	☐	☐

	A	B	C	D	E	F	G	H	I	J
19.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
20.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
21.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
22.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
23.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
24.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
25.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
26.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
27.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
28.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
29.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
30.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
31.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
32.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
33.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
34.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

35. _____ 37. _____

36. _____ 38. _____

	T	F
39.	☐	☐
40.	☐	☐
41.	☐	☐
42.	☐	☐

	T	F
43.	☐	☐
44.	☐	☐
45.	☐	☐
46.	☐	☐

	T	F
47.	☐	☐
48.	☐	☐
49.	☐	☐
50.	☐	☐

Name *(please print)* _____

Be sure to fill out the information on the other side and mail today. More than one Exam Key may be mailed in one envelope.

COLORADO SNOWMOBILE ASSOCIATION

What Does C.S.A. Do?

- **Coordinates snowmobile trails with Colorado Division of Parks, Forest Service and Bureau of Land Management.**

- **Provides the state newspaper *Snow Scoop***, thus keeping you aware of special events from local clubs, information on latest legislative action, accommodations through advertising in paper, addresses of District Representatives and local clubs, reports on new areas to ride, etc.

- **Sponsors fund-raising events for charity each year.**

- **Conducts snowmobile safety courses.**

- **Monitors legislation to benefit snowmobiling.**

- **Encourages the safe, courteous, lawful and responsible use of snowmobiles.**

Colorado Snowmobile Association

Membership Application

Date _____

☐ Family $17 ☐ Individual $17 ☐ Business $30

☐ New member ☐ Renewal

Last name _____ First name _____
please print

Spouse _____

Total in household _____ # of snowmobiles owned _____

Address _____

City _____ State ____ Zip _____

Phone (h) _____ (w) _____

Fax _____ E-mail _____

Business name _____

Contact person _____

Mailing address _____

Physical address _____

City _____ State ____ Zip _____

Phone _____ E-mail _____

Fax _____ Type of business _____

If snowmobile dealer, what brand(s)? _____

If you are interested in purchasing CSA patches, plus decals, caps and shirts, please check out **www.sledcity.com** for details.

FOR OFFICE USE ONLY

PLEASE REMIT TO: CSA, PO BOX 1204, EASTLAKE, CO 80614-1204

Amt Received $ _____ Check # _____

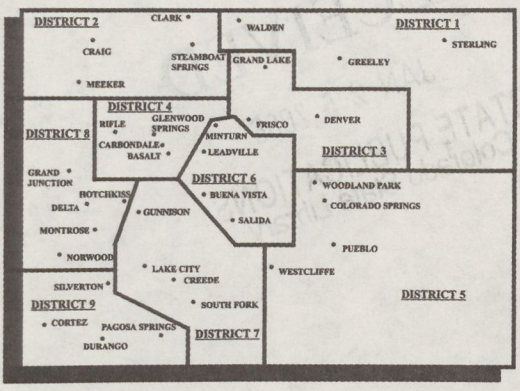
Date Received _____ Shipped _____

CC Authorization # _____

IMPORTANT PHONE NUMBERS

COLORADO SNOWMOBILE ASSOCIATION

CSA GEOGRAPHICAL DISTRICTS AND DISTRICT REPRESENTATIVES



Charlie Cox - President
140 Oak Run Road
Carbondale, CO 81623
Phone: 970-379-0362
Fax: 970-945-2420
Email: carpets@sopris.net

Roger Pennington - Vice President
164 Sandia Circle CR 520
Bayfield, CO 81122
Phone: 970-884-2101
Email: rogerap@msn.com

Phil Chamberland - Secretary
P.O. Box 855
Gunnison, CO 81230
Phone: 970-349-5398
Fax: 970-349-5398
Email: pchamberland@direcway.com

John Pettit - Treasurer
0704 Canyon Creek Road
Glenwood Springs, CO 81601
Phone: 970-928-8687
Fax: 970-945-8597
Email: jmpettit@earthlink.net

Randy Miller - District 1 Rep
P.O. Box 61
Walden, CO 80480-0061
Phone: 970-723-3725
Email: randy@npeng.com

Ron Spencer - District 2 Rep
1085 Harris Drive
Craig, CO 81625
Phone: 970-824-375
Email: SSpe263865@aol.com

Brian Mahony - District 3 Rep
376 County Road 452
Grand Lake, CO 80447
Phone: 970-627-8783
Email: mahony@rkymtnhi.com

Peter Hayes - District 4 Rep
P.O. Box 2544
Glenwood Springs, CO 81602
Phone: 970-945-2645
Email: hayes@sopris.net

Les Lewis - District 5 Rep
2125 Chautard Drive
Pueblo, CO 81005
Phone: 719-564-7174
Fax: 719-585-3179
Email: lcgroomer@yahoo.com

Mike Johnson - District 6 Rep
P.O. Box 638
Leadville, CO 80461
Phone: 719-486-2731
Email: highmark800@aol.com

Mac Hadaway - District 7 Rep
697 Aspen Road
South Fork, CO 81154
Phone: 719-873-5082
Email: mach@amigo.net

Steve Foster - District 8 Rep
295 NW 10th Street
Cedaredge, CO 81413
Phone: 970-856-3642
Email: snomoman@aol.com

VACANT AT THIS TIME - District 9 Rep

Colorado State Parks

13787 S. Hwy. 85
Littleton, CO 80125
(303) 791-1954