

## Snowmobile rescue (ground and air)



Snowmobiling in the back county is satisfying and great "therapy" from one's daily life at work and home.

Like so many outdoor sports is the fun factor could reduced from an accident due to risks out there. You need to be aware of the risks while enjoying a perfect, sunny day with nice snow playing around in the trees



Mountain riders use the trails only to get to the off-trail areas to play in. Riding off-trail is the fun of breaking through new and untracked snow and exploring where few have gone. Shown here are riders looking for a path to do just that.





Some of the "fun" is see how far up you can go without getting stuck. Occasionally, it will happen. That's either from a hill climb, going a little too slow or just unfamiliar with the physics of snow travel. When this happens it could be a simple matter of you and your buddies pulling the sled around back down hill for another try at it. Sometimes a serious injury will need be addressed as in the left image. Another example is needing to cross a creek where this is a lack of snow for a short distance. In most cases is only an inconvenience to get unstuck.

In the event your sled has a mechanical failure would ruin your day, but with some help you can get a tow back home.



The front and rear bumper - "handles" are bad to put any significant pull on. They are mounted with minimal screws or rivets and will rip out by pulling on them too hard. They are mainly intended for someone to grab a hold while others are lifting or pulling a stuck sled in the snow.

The recommended way for a ground rescue is tie a strap or rope to the ski's spindles to pull it home with another sled. In some cases two sleds may be necessary to pull a dead sled up a hill. Once on the trail, one tow sled should do the job. A strap or rope will work however, the "bungie" cord is best to avoid the jerking affect from towing a dead sled. The track will cause a lot of drag for a ground rescue therefore, the drive belt should be removed for towing. In the case of the track is locked up (broken chain or drive shaft) a "buddy tow" is the best way. It's a long piece of tough plastic that is secured under the track to provide a very slick point to slide on.



Another method is to lift the rear onto the tow sled rear area, tie it off and tow it backwards. This is a last resort since damage may occur to the tow sled. You may need to tie off the steering of the dead sled. Try pulling it a few feet on the trail to determine what needs to be done.

Keep in mind there are no brakes (way of stopping) except for the tow sled, should the trail be going down hill. There may be situations where you will have to use some creative methods, especially going down a long, steep, icy hill.

So far we have covered mountain sleds which are set up for only one rider. Another popular type is trail sled as shown below. They are equipped for two riders. There are heavy so plan ahead should one need towing.



# Air Rescue

In most cases an air rescue will involve a mountain type sled (single rider) and back-county areas several miles in from any trails, people or other comforts. The causes requiring an air rescue could be exposure to an avalanche or the rider going off an edge / cliff, for example. In some cases both the sled and rider may need rescue. Try to think of a few scenarios ahead of an outing so you can plan logistics of additional help to get the stranded rider home. County SARs (Search and Rescue) may be in place. The challenge is getting to injured person(s) in time to save lives. Carry communication devices such as a 2-way radio (FRS or "Ham \* ") cell phone (if you're lucky near a tower) or even a personal locator device (there's a charge for that). Flares or smoke devices, orange coats, etc. could help as well. Bring fire making and wood cutting tools. Keep a cool head.

Communication and a planing between the rescuers is critical for a successful air rescue. This is no time for hotheads or egos to exist. Be humble but strong and helpful. This is a Team effort.

For air rescue it's most likely will be performed with experienced personal and more than likely a military operation with a helicopter, hoist and operator. They would have their own training and experience to execute professional procedures, and fully aware of aircraft specifications for lifting and other wind and weather hazards. Having said that; this additional information about snowmobiles could help especially, if a sled rescue has not previously been done.

Weight is a consideration. Most of the very old sleds (1970~1980) usually weigh in around 300-350 lbs. Later sleds were the heaviest (1980~2005) around 450-550 lbs., depending on the model and fuel status. A few of the modern sleds (2018-ish) have some weigh reduction (400 ?) however, expect the middle rating as mentioned. Your strapping or rope should be double the test strength of whatever you need to pull or lift, especially for an airlift.

Most fuel tanks are around 11 gallons. Since gasoline weights 6.3 pounds per gallon a full tank could add 70 pounds to the sled from it's "dry" rating. In many cases a tank will be half-empty during a fun day of high gas-consuming hill climbing or long trail rides.

\* "Ham" is a slang word for proper word of amateur radio; an effective communication method requiring a FCC license.

## Anchor points:

Shown here is the "skeleton" of a typical, modern sled. These images of side and front views will illustrate what points may be appropriate for load bearing in the case of an airlift.



In the event an air lift is performed on an inverted sled the spindles and track areas most likely will hold, however it's best to roll over the sled to an upright position prior to the lift. Secure the sled (from sliding down) with any uphill trees while cutting out the trees binding up the sled. Then the sled can be rolled to an upright position. When the lift strapping is in place and being air lifted the tie-off points uphill can be released.



The bottom image shows a complete, assembled sled with the recommended anchor points.

Anchor points for a snowmobile air lift



Even though it's tempting to use the steering post as an anchor point it's NOT designed to hold the sled's entire weight on a flight. It may snap off during transport. For reference however, the center of gravity of modern sleds is at the steering post towards the belly of the sled.

Here's some example of real rescues. Note the left image shows the straps on the ski spindles and the rear part; either the tunnel or track. These areas are strong. The right image is similar however, is not as good since most of the pulling is in the center and rear; not much on the front.

The image below is a good example on a very old (vintage) sled rescue; again on the ski spindle and the rear track areas.



Webbing works better than rope. Either material should be rated at least twice the weight of the sled, because there will be winds involved with an air rescue. 1 1/2" or even 2" strap is a good choice,

especially for the main strap as explained next. The secondary straps can be 1" (or larger).

Place the first (main) strap around the belly. Bring each end above the sled and lay aside for now. Next, secure two secondary straps front and back. This prevents the sled from cartwheeling and slipping out from the main strap. The previous image showed "BAD" points for the front and rear bumpers however, for a secondary stabilization (only) they can be utilized. The main strap will bear most of the sled's weight.

However, if the bumpers were damaged or otherwise in doubt alternate anchor points would be the rear-most part of the track and the ski spindles in front. This alternate does not have the most insurance from a slip however, may be your last

resort. Run the strapping through the track skid area and up front the spindles for best success against slippage. When in doubt use heavy-duty strapping.

Bring all three straps (six ends) to a tie point above the sled around two to five feet (or as instructed by the rescuers) over the steering post area. This should be close to the center of gravity for the sled. Just remember that longer tie points from the sled increases the risk of a cartwheel.

Liftoff with the helicopter couple feet or so off ground to confirm the load is balanced and will not slip out of the harness.

Rotor wash can cause a lifted sled (or person) to spin on the hoist cable. For the latter in most cases the person will be hoisted into the helicopter as in the case of most air rescue operations.

When arriving at the support camp or destination it may help to slow the sled's contact to the ground in the event it's spinning. Also, if the sled was inverted for the rescue allow 24 hour before starting the engine to allow the fluids, especially, the oil to stabilize.

Happy flying back to base !