

AVALANCHE TRANSCEIVERS COULD SAVE YOUR LIFE

You only have minutes to live if you are buried in an avalanche. If you are wearing a transceiver you have a significantly higher chance of being found quickly. So, whether you are recreating or working in avalanche-prone terrain, you should always wear an avalanche transceiver and carry a shovel and a probe.

TYPES OF AVALANCHE TRANSCEIVERS

Several models of transceivers are imported into New Zealand. All 457 kHz models are compatible with each other but some models are better at finding different types of transceivers than others. Some models are better at searching for multiple burials than others.

Each type has its own way of working. Some require you to make volume adjustments, while others do it for you. Some change the sound they make depending on how close you are, while others have lights or arrows pointing in the direction of the buried person. Some can give you instructions on what to do next and some return to transmit mode after a set amount of time.

Digital transceivers convert the signal from the buried set into visual and audible signals that aid the searcher. Analogue transceivers do not apply any enhancement to the signal; the beep you hear is the actual unprocessed signal from the transmitting set. There is a change in volume when the searching analogue set receives a stronger signal.

It is important to know how to use these features on your transceiver. It is also important to know how to use the generic search techniques described in this pamphlet that will work with all 457 kHz models.

Older transceivers with a frequency other than 457 kHz, or that feature more than one frequency, are either incompatible or are technically insufficient and should be destroyed. If you are uncertain whether your transceiver complies with the EN* standards, contact the NZ agent of the manufacturer.
*European Norm

USING YOUR TRANSCEIVER

- Put your transceiver on as soon as you make your first step onto the snow. Wear it close to your body under layers of clothing and leave it switched on at all times.
- Check everyone's transceiver is transmitting properly. Repeat this check two or three times during the day. Get one person to listen while the others file past one at a time. The last person then checks the first person's transceiver before the party sets out.

Ensure that transceivers are more than 30cm from any cell phone or radio as these devices might interfere with the transceiver's ability to operate effectively.

- Check and change your transceiver batteries according to the manufacturer's instructions. Never use rechargeable batteries as the range and working life of these batteries is significantly shorter. It is recommended the batteries are removed for the summer and replaced with new batteries for winter.

IF YOUR PARTY IS INVOLVED IN AN AVALANCHE ACCIDENT

Research reveals most parties do not have time to send for help, so backcountry travellers need to take care of themselves.

The first steps in a response are:

- Assign someone to take control.
- Assess the site for further avalanche danger.

If there is further hazard but you could escape in time, work out escape routes and post a lookout in a safe position, then proceed with the search. If the risk is too great, abandon the search and send for help.

- Start the transceiver search. Survival of the buried people depends on **YOU**. **You may have less than 15 minutes to find and dig out the buried people.**

PHASE 1: INITIAL SEARCH

You are trying to find the buried person's signal.

This search phase is largely the same for all types of transceiver. The only variable here is range. Be wary of the advertised maximum range as this is the maximum range in optimal conditions. In practice this is much shorter, so it is best to stick with 20 metre search strip widths in order to pick up the buried person's signal.

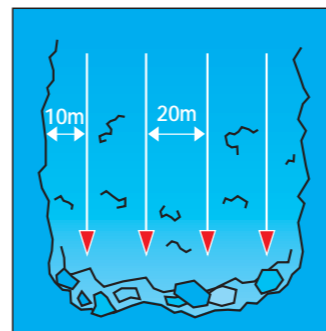
- All searchers should turn their sets to receive. However, everyone must be ready to turn their sets back to transmit in case of a second avalanche.

Rescuers coming onto the site while the transceiver search is underway must also turn their sets to receive so they do not interfere with the search. All electronic devices such as cell phones or radios should be turned off to avoid interference.

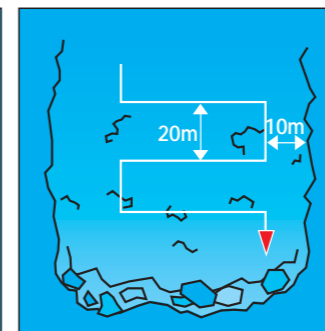
- Look at the avalanche path for visual clues as you search.
- Start searching with your transceiver on the maximum volume position. If the debris is large and there are no clues (like last seen

area) or there is an unknown number of burials, use one of the initial search patterns shown below.

- If someone has noticed where the buried person/s were last seen, start from there and work downhill. If you are below, work up towards that point.
- Swivelling your transceiver right and left and tilting it up and down helps you orientate it with the field lines being transmitted from the buried set, and so assists your search.
- When you hear a signal: STOP, MARK THE PLACE and inform the rest of the searchers. If there are other people buried, the initial search should continue while one rescuer follows through to the next phase (fine search).



Multiple Searchers



Single Searcher



PHASE 2: FINE SEARCH

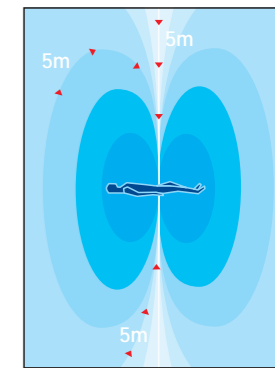
You have heard the signal and are trying to narrow the likely burial spot down to a small area.

It is best for one person to do a fine search. This person should not be disturbed while conducting the search. Others should be getting ready to help dig out the buried person the moment they are found.

FIELD LINE OR FLUX LINE SEARCH

- Hold the set at arm's length in front of you with the long axis of the set in line with your arm.
- Identify the strongest signal (by sound, number or colour of lights showing, or by shortest range) by altering the direction your arm is pointing. Do this as a slow sweeping motion; this is essential as fast movement can be confusing for digital sets.
- Move five to eight metres in the direction of strongest signal (that is where the set's long axis is pointing). If the signal gets weaker, go back to the strongest signal in the direction you came from.

- When you have found the strongest signal, STOP. If your set has a volume control turn it down a level.
- Find the strongest signal again by altering the direction the set is pointing. Move three to five metres in that direction and repeat the process. As you get closer to the signal, reduce the distance you travel between stops.
- When you can hear the signal with your set on minimum volume, begin the pin-pointing phase.



Possible approaches when doing fine search



PRACTISE! PRACTISE! PRACTISE!

PHASE 3: PINPOINTING

You have identified a small area and are looking for the place to dig

- When you can hear the signal with your transceiver on the lowest setting, you are within two to three metres of the buried person. Mark this point.
- Get down on your hands and knees and with your transceiver close to the snow, move it along the surface in a straight line. The signal should initially get stronger before weakening. Keep going until you only just have a signal (on low setting). Then go back to the area of the strongest signal.
- Keeping your set oriented the same way, move it at right angles to your first line until the signal fades away, and then move back in the opposite direction until you find the strongest signal again. Repeat to the other side of the strongest signal.

You may need to repeat the above process several times so you can identify a central area from which the signal decreases in every direction. The buried set is below this area.

If the person is deeply buried, there may be an area up to several metres across that can have up to six loud points, depending on the orientation of the buried set. If this happens, put your set in a vertical orientation and repeat the pattern. Only two loud points should remain with the buried person being between those points.

- Use your probe to find the buried person and their depth of burial. Leave the probe in to act as a marker.
- If you don't have a probe, start digging and use further pinpointing with the transceiver from within the hole to find the victim.

PHASE 4: DIGGING THE PERSON OUT

- Do this quickly as they may have stopped breathing.
- Dig at an angle to the buried person, as it will be easier to clear the snow and it reduces the chances of blocking a remaining airway while you dig.
- Gently, clear their face and airway as fast as possible (note if they had a clear airway as medics will want to know this), then dig around their chest.
- Turn the person's transceiver off as soon as you can if searching is underway for other buried people.

SEARCHING FOR MULTIPLE BURIALS

The majority of avalanche rescues involve multiple burials. With analogue sets you can hear multiple signals. The searcher's ear still remains one of the best instruments for doing multiple person searches. With some practice you can learn to differentiate between sets that are at different distances from you.

Digital sets use a variety of different methods including extra lights that come on. The newer generation of sets can identify how many buried sets are within range.

When buried people are spread out but still within range of the searching set, you can isolate the signals by turning the volume down until only the closest set is picked up. At this point, continue the search as if for a single buried person.

If the buried sets are so close that searching is confusing, the following technique can help:

- Get onto your hands and knees with your transceiver set on low volume. Keep the transceiver close to the snow surface and hold it in the same orientation for the search.
- Then use the single searcher 'initial search' pattern with a 2.5m search strip width, through the area that has multiple buried sets.

- When you pick up a signal from a buried set, change to the pinpointing method to locate the burial site. If multiple sets are identified while pinpointing do not try and be exact with your pinpointing, instead use a probe to find the buried people.

When everyone is accounted for, switch all transceivers back to transmit.

IF YOU WANT TO KNOW MORE ABOUT AVALANCHE SAFETY:

- Attend an Avalanche Awareness course.
- Check out www.avalanche.net.nz for information on snow conditions and avalanche danger.
- Ask a ski patroller, a mountain guide or a local enthusiast for recent observations and advice.
- Check out publications available from MSC.

WHERE TO GO FOR TRAINING

Details of Avalanche Awareness courses are published on www.avalanche.net.nz.

WHERE TO GO FOR TRANSCEIVERS

Transceivers and safety equipment are available for purchase or hire through leading ski and snowboarding shops and outdoor equipment suppliers.

Contacts for transceiver hire:

- MSC branches: Taumaranui (07 895 4445), Canterbury (03 351 0942), Southland (03 221 7212), Wakatipu (03 441 4099)
- Wellington Avalanche Transceiver Trust www.avotrust.org.nz
- James Gordon Trust www.snowtime.co.nz

Photos courtesy of Tarn Pilkington

YOU CAN AVOID AVALANCHE ACCIDENTS USING YOUR TRANSCEIVER IS A LAST RESORT

THINK...

- Am I in potentially dangerous avalanche terrain?
- Could the nature of the layers in the snowpack be unstable?
- Will conditions improve or get worse?
- What are the consequences of my choices and are there safer options?

RESOURCES

MANUALS

Avalanche Terrain
The Avalanche Handbook
Backcountry Avalanche Awareness
Alpine Skills
and more...

VIDEOS

Staying Alive

PAMPHLETS

Avalanche Safety
Avalanche Awareness Training Programme

Using Avalanche Transceivers



For resources and further information contact:

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