

description of the unit



■ Top:

- 1 On/Off strap switch
- 2 Transmit/Receive switch (SOS / Search)
- 3 Directional arrows
- 4 Loudspeaker
- 5 Receiver intensity/sensitivity adjustment (Advanced=analogue mode)

■ LCD screen

- 6 Indicator showing simultaneous detection of multiple victims
- 7 Initial search distance indicator
- 8 Battery status/distance indicator
- 9 Battery status indicator
- 10 Indicator showing use of Advanced (=analogue) mode with sensitivity level (9=max. sensitivity, 1=min. sensitivity)

■ Underside:

- 11 Battery compartment cover
- 12 Reminder: Attachment of straps - Switching on - Switching to receive mode - Simulation of initial search by one or more rescuers ① - Secondary search ② - Final search (last cross) ③

using the arva

The ARVA ADVANCED has two operating modes:

■ **Standard (numerical)**, involving use of the right and left directional arrows. The device automatically locks on to the closest victim. Follow the indications given in the form of figures and the direction shown by the red diode. If pictogram 6 lights up, the device has detected multiple victims.

■ **Advanced (analogue with numerical aids)**, in which receiver sensitivity is adjusted with the ⊕ and ⊖ buttons. In analogue mode, the Advanced symbol is displayed on the screen with a sensitivity level value (1,2,3,4,5,6,7,8 or 9). 9 corresponds to greatest sensitivity (distant search) and 1 to lowest sensitivity (close search). In this mode, the device shows all the signals received. If there are multiple victims, it indicates the estimated distances to each one.

installing batteries

The ARVA ADVANCED operates exclusively with four standard LRO3 alkaline batteries. Open the battery compartment cover ⑪ with a screwdriver or coin. The four batteries should be of the same brand and be replaced at the same time. Insert the batteries carefully in the order shown inside the compartment.

N.B.: Do not store the unit at a temperature of less than 0°C to avoid damaging the batteries. DO NOT USE rechargeable batteries. Remove the batteries if the unit is not used for any length of time.

useful information:

Move forward SLOWLY to avoid going too hastily in the wrong direction. The entire surface of the avalanche must be investigated. When searching for a victim or testing the unit, stay away from electrical equipment (high-voltage power lines, radios, mobile phones, etc.) or impose radio silence (these are just a few examples). This is applicable when using any ARVA-type transmitter-receiver.

The distance indicator indicates progress along a field line and not a distance in metres.

ARVA A.D.vanced

Exclusive features of the ARVA Advanced:

- A powerful 457 kHz ±20 Hz transmitter with transmission level independent of battery power.
- In numerical (standard) mode, the search band width is 40 m.
- Multiple victim indicator and automatic synchronisation on closest victim.
- In Advanced (= analogue) mode, indication of a scale of progress and, in multiple victim situations, indication of estimated distances along field lines.
- Auto-control of frequency adjustment and transmission level every 5 minutes.
- 16 bit processor with extremely fast analysis speed.

switching the unit on

■ Fasten the On/Off strap ①

■ **Auto-control:** the direction diodes ② light up from left to right, and the LCD screen comes on. 3 beeps are emitted if the loudspeaker is in working order.

■ **Check your batteries** using the battery life indicator scale levels ③ ④ 11 levels: 99,90, 80, 70, 60, 50, 40, 30, 20, 10, 0.

■ The LCS screen then goes off and the central diode ⑤ flashes to indicate that the unit is in transmit mode.

■ **Check Transmit/Receive functions before setting out.** The person checking the unit puts his ARVA in transmit mode and all the other members of the group check that their ARVAs detect the signal properly in receive mode. The operation is to be repeated in the opposite direction so that ALL the ARVA units in the group are checked in both transmit and receive modes.

Possible anomalies...

The ARVA ADVANCED performs a self-test every 5 minutes to check the state of the batteries, frequency setting, transmission power, etc.

If the unit detects an anomaly, a 5-second beep is emitted, 3 times, separated by 5 minute intervals. This means one of two things:

- The battery charge has dropped to 20% (the unit can still transmit for 48 hours or search for half an hour). After the 5-second beeps, 20% will stay displayed on the LCD screen to remind you to change the batteries as soon as possible.
- Technical problems connected with transmission or programming: after the 5-second beeps, the LCD screen displays Er (= Error). Do not set out with any unit displaying this message.

information for your own safety

Whenever you leave marked-out ski runs or trails, you are in an area where there are certain risks, particularly of avalanches. When moving around in the mountains, you do so at your own risk:

- Before setting out, check the local weather with a reliable weather station or professional mountain guides and carry the right equipment. In particular, take an ARVA and carry a shovel and a probe. But remember, this equipment will not detect avalanches or provide complete protection and to be fully effective, you need to familiarise yourself with the use of the ARVA beforehand!
- Never go off on your own and do not follow any trail you happen to see: they are no guarantee of safety. If there is any doubt about the stability of a slope you have to cross, YOU MUST leave a good distance between one another or better, cross it one by one. Keep a good eye on one another.
- Finally, it is best to give up if you are not sure! Be careful: snow conditions change, and with them the risk of avalanches. Get to know about avalanches. In France, a free catalogue and documentation can be obtained from ANENA (Association Nationale pour l'Etude de la Neige et des Avalanches, - tel. 04 76 51 39 39 / www.anena.org).

Simply press simultaneously on the **+** and **-** buttons for 3 seconds to flip from **Standard (numerical) mode to Advanced (analogue) mode** (Advanced logo and sensitivity level are displayed on the LCD screen). Repeat this operation to return to **numerical mode** (the logo and sensitivity level disappear from the LCD screen). This can be done at any time, even if rescue workers have begun their search in **Standard (numerical) mode**.

We shall now take a look at the two main modes and study an example of a search in the case of multiple victims. The cases presented are «typical» ones. With training and experience, the user can change from **Standard (numerical) mode to Advanced (analogue) mode** depending on how familiar he is with the device and the situation in which he finds himself.

Case of a single victim

D standard (numerical) mode

■ Primary search (approach phase) (cf D1)

• Pull 2 SEARCH-. The device is automatically in completely automatic numerical mode. The LCD screen displays the arrow diagram continuously until you pick up a signal from the victim.

• Move backwards and forwards across the avalanche as shown in diagram B if you are the only rescuer or diagram C if there are several rescuers.

• Hold the ARVA horizontally, pointing it downwards (cf. photo), and sweep it slowly from left to right and right to left (making an angle up to 180°)

• Continue until you pick up a first clear signal (directional arrows and distance indicator light up)

N.B: If the ARVA has already picked up a signal it will go directly to the secondary search.

■ Secondary search (locating phase) (cf D2). This phase starts when the victim's signal has been picked up.

• The ARVA gives you a distance indication on the LCD screen and one of the directional arrows lights up.

• As soon as one of the directional arrows lights up, point your ARVA in such a way that the central diode lights up and head in that direction.

If the numbers decrease, you are moving closer to the victim. If not, go in

the opposite direction.

• Always try to make sure that the central diode is lit. Sweep the unit gently in the directly in which the arrows light up. This will enable you to cover the shortest possible distance before reaching the victim. Continue moving forward until the distance indicator displays 3.0.

■ Final search (detection phase) (cf D3) At this point, with the arrow lit up, lower the ARVA unit as close as possible to the snow, pointing it in the same direction and keeping it horizontal. The beeps become faster and the distance indicator keeps decreasing. Keep moving forwards as long as the number decreases. If it starts to increase, return to the point where it is smallest and locate the victim using the **cross technique**,

always pointing the ARVA in the same position.

■ Cross technique: The ARVA must be moved as closely as possible to the snow, in parallel straight lines. Determine the point along the line where the distance indicator displays the smallest number and the beeps are emitted very close together or continuously. From that point, move perpendicularly and repeat the operation. The point at which the maximum signal is obtained is vertically above the transmitter. If necessary, repeat the operation once or twice to obtain a more precise position. However, it is not necessary to determine an extremely precise location using the ARVA. In fact, it is usually faster to start searching with a probe as soon as the likely location has been determined to within about 50 cm.

E advanced (analogue) mode

Diagrams E1 and E2.

When the ARVA is switched to advanced mode, its sensitivity is maximum (level 9). However, the Advanced symbol flashes if the sensitivity level is to be reduced. Decrease the sensitivity with the **-** button until the symbol stops flashing. When the symbol stops flashing, you can use the numbers, which give an estimation of the distance that still needs to be covered.

■ Initial search

Moving forward, turn the device in every direction until the first audible signal is heard. If the signal is weak, continue to move in the same direction without changing the position of the device until the sound is clearer and sufficiently distinct to be

of help. The initial search is over when a clear signal is obtained.

■ Secondary search (cross or directional search) There are two possibilities:

• **Cross technique** Diagram E1:

As you move forward, keep the ARVA in the same position. It must be moved parallel to itself. When the first signal is obtained, keep moving in a straight line. The beep becomes louder and the distance indicator decreases. Once the maximum signal has been reached and starts to diminish, return to the approximate point where it was strongest. Reduce the sensitivity to minimum in order to detect the point where the beep will be loudest, and start moving in a line perpendicular to the previous direction. You will soon realise if you are moving in the right direction, as the signal will quickly become louder, or in the wrong direc-

tion, in which case it will diminish. Once again, find the point where the beep is loudest, as previously. Continue until the sensitivity is positioned on one of the two last levels (minimum sensitivity, and therefore minimum search distance).

• **Directional method** Diagram E2:

To determine the direction to follow, sweep the ARVA from left to right over 180°, holding it horizontally. The stronger the signal, the louder the beep will be (and the lower the distance indicator). The right direction is the one in which the beep is the loudest. If the beep gets louder as you move forward, you are going in the right direction. If it gets weaker, you are going in the wrong direction. Turn round, walk back a few metres and check again to find the right direction. As you advance, turn down the sound level with the **-** button (so that it is easier to determine

where the ARVA is emitting the loudest beep). When the sensitivity is down to 2 or 1, the secondary search is finished.

■ Final search

You are very close to the victim when the sensitivity is down to 2 or 1 (the actual level depends on the depth at which the victim is buried). The cross technique should then be used (see opposite). Remember that in this case the distance indication is replaced by the intensity and frequency of the beeps. The closer you get to the buried victim, the louder and faster the beeps are emitted. When the distance between the transmitter and receiver is very small, a single continuous beep is emitted.

Situations with multiple victims

F N.B.: This is one possible method for finding victims. The user may decide to stay in Advanced mode for the entire search and adjust the sensitivity level with the **+** and **-** buttons to isolate signals from different victims

■ Start with the initial search if necessary, in either Standard (numerical) mode or Advanced (analogue) mode.

In the secondary search phase, if indicator **(E)** is lit, this means that the ARVA is picking up several signals around you, mark the area with a ski or pole **(F2)**. In standard mode, the ARVA will automatically lock on to the unit emitting the strongest signal, which is theoretically the victim

closest to you. Once you have found the first victim (F3/v1), locate him using your snow probe and mark the location

■ Return to the point that you marked earlier and switch the ARVA to **Advanced (Analogue) mode (F4)**: the unit will indicate the various signals it has picked up. Several estimated distances are displayed, along with various levels of sound depending on how close they are.

N.B. As soon as you switch to Advanced mode, the unit will automatically revert to sensitivity level 9 (maximum range). Use the **-** button to lower the level and search for the second victim.

■ When you pick up the signal from the second victim, two estimated distances will be displayed on the LCD screen. To obtain a closer estimate, reduce the sensitivity until the victim's signal is barely audible and focus on the higher figure (the lower figure with a strong signal corresponds to the first victim v1 and the weaker signal to the distance of victim v2). Determine the direction to follow by sweeping the ARVA from right to left and attempting to reduce the distance of the higher figure. Once you have found the right direction, move forward, taking the number of steps indicated. One of the figures will increase and the other decrease, while at the same time one of the signals will increase and the other decrease.

When you have taken the number of steps indicated, switch to Standard (numerical) mode (F5). Make a SLOW sweep with the unit. The ARVA will automatically lock on to the closest victim, i.e. the second one. Repeat the standard mode search, as in the case of a single victim. If you return towards the first victim, go back to the starting point (where you obtained the multiple victim signal) and try to find the direction for the second victim in Advanced mode.

N.B. In the case of multiple victims, it is advisable to use an earphone to distinguish the various signals more clearly.