

HELI - AVALHEX



HELI - AVALHEX is a preventative avalanche triggering device designed to operate under a helicopter. Its design is based on the AVALHEX autonomous exploder; it operates under the patent developed in co-operation with the CEA and the CEMAGREF.

It is intended to complement the line of preventative avalanche triggering device currently available on the market. Controlled remotely by the helicopter pilot, co-pilot or the helicopter's engineer, it operates on a "hydrogen/air" gas mixture. It is intended to replace manual heli-bombing method.

The AVALHEX System complies with the ESP (equipment under pressure) standards and regulation, characterized by:

- A spherical overpressure blast wave which acts on a circular surface radius of more than 40 meters ;
- An efficiency similar to an explosive load exploding at approximately 3 meters above the snow;

The HELI - AVALHEX can carry out 17 detonations.

Equipped with three compressed hydrogen bottles, its carrying load is less than 500 kg allowing the preventative avalanche triggering operations to an altitude of up to 4000 meters with a LAMA helicopter.



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Each detonation involves "ammunition" which is essentially a cylinder containing a bio - degradable inflatable chamber, which is spread and inflated above the device.

The sequence of operation of the HELI-AVALHEX is carried out by "an on demand request by the helicopter pilot" which automatically injects hydrogen/air mixture in the flexible structure. This is followed by the detonation of the gas mixture generating an explosive charge equivalent to approximately 3 kg of TNT.

During the entire operation sequence, status reports inform the pilot that the detonation sequence is working properly and also shows the quantity of hydrogen remaining in the bottles.



Short shot (3 m³ of mix)

TECHNICAL SPECIFICATIONS

1 – Ergonomics

1.1 Material Presentation

The system must quickly be placed in working conditions, day or night, by trained personnel.

1.2 Working method and visualization

The AVALHEX is designed to work remotely from a portable remote control unit. The remote control has:

- A safety key allowing initialization;
- A visual operating condition monitor;
- A way to show the status report during the detonating sequence;
- A request for detonation which activates the detonation sequence and requires a double action.

2 - Climatic Conditions

2.1 Climatic Environment

The climatic environment conditions for the unit are defined by the European standard NF P 95-310. These conditions can be summarized as follows:

- Operation: -25° C to +10° C
- Storage: -30° C to +50° C
- Depression: 63240 Pa
- Rain: 140 mm/h, 32 mn
- Wind: wind pressure of 110 Pa
- Rime (ice): rime formation layer density of 0,5 and 25 mm thickness

2.2 Mechanical environment

The climatic environment conditions are defined by the European standard NF P 95-310

Shocks and vibrations transported generated by the helicopter. Absence of any deterioration at the time of the explosion of ammunition above the exploder

2.3 Reliability

Criteria of reliability are defined by the European standard NF P 95-310

2.4 Electromagnetic compatibility - emission

Comply with the European standard INTO 50081-2

2.5 Electromagnetic Radiations

Comply with the European standard NF P 95-310:

2.6 Electrostatic environment

Comply with the European recommendations: INTO 60801-2 normalized level 4.

(Specifications are subject to changes and/or modifications without notice for the purpose of improving the capacity and performances of the AVALHEX system)

