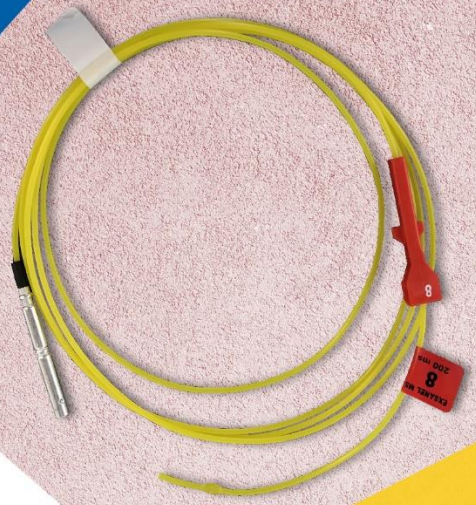
# NON-ELECTRIC DETONATOR EXSANEL MS AND LP



Non-electric initiation system, composed of a delay detonator, a signal transmitter shock tube and a plastic connector to ensure the optimum contact between the shock tube and the detonating cord.

- The function of the delay detonator inside the drill is to start the bait or first of the explosive charge column and delay the designated time.
- The function of the shock tube is to transmit the ignition signal that is initiated on the surface by means of the detonating cord to the detonator in the drill.

- It comprises three delay series according to the intended use:

  - **Long LP Period:** Developed generally for the excavation of tunnels. The delay times between the intervals are generally longer, so that the confined rock is released and properly displaced and forms the free face for the exit of the other drills.

  - **Short MS Period:** Delay system with short time intervals of 25 ms between each interval. Its use is generally intended for surface and underground blasting for blasting wide gaps.

  - **Universal Period:** This series combines the long and short period series, to have more options in the planning of delays in blasting of greater amplitude.

## Properties/Benefits

- A greater quantity of delays necessary for the design of sequence in a blast, it minimizes the vibrations.
- Greater control over the design of rock displacement (fly rock).
- A better delay time range necessary to obtain the required fragmentation.
- The non-electric detonator EXSANEL, provides a high level of security against initiation by static electricity, stray currents and radio frequency transmissions.
- Incorporates high tensile strength and high resistance to abrasion.
- Resistant to impact and shock.
- Minimum percentage of dispersion in the delay times.
- High resistance to breakdown or detachment of the tube and the detonator.
- High tensile strength of the tube.
- High water resistance
- Sensitive to detonating cord and fulminating No. 8.
- The detonator has a strength No. 12, to ensure the reliable initiation of baits and explosives sensitive to detonators.

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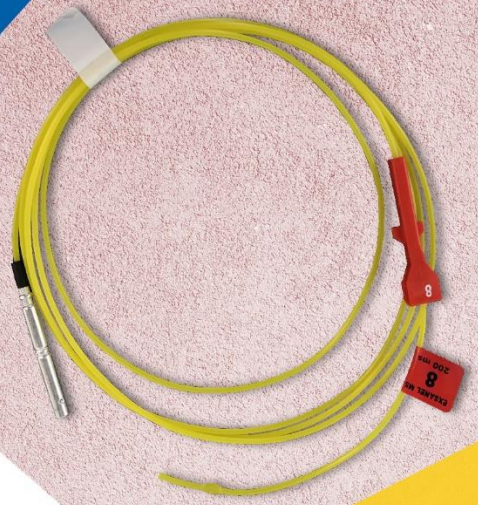

## Technical Characteristics

| Technical Specifications | Units | Minimum | Nominal |
|---|---|---|---|
| Detonator power | Force No. | 10 | 12 |
| Aesop | Mm | 10 | 12 |
| Impact resistance | 2 kg a 1 m | It does not detonate | It does not detonate |
| Resistance to breakdown of tube and connector test (Pull Test) | Kg-f | 9 | 12 |
| Shock wave speed | mm | 1,900 | 2,000 |
| Tensile strength of the tube | Newton | 200 | 220 |

| Non Electric Detonator EXSANEL | Short Period (MS) | Long Period (LP) |
|---|---|---|
| **Serial number** | **Delay time (milliseconds)** | |
| DNE EXSANEL N° 1 | 25 | 100 |
| DNE EXSANEL N° 2 | 50 | 200 |
| DNE EXSANEL N° 3 | 75 | 300 |
| DNE EXSANEL N° 4 | 100 | 400 |
| DNE EXSANEL N° 5 | 125 | 500 |
| DNE EXSANEL N° 6 | 150 | 600 |
| DNE EXSANEL N° 7 | 175 | 800 |
| DNE EXSANEL N° 8 | 200 | 1,000 |
| DNE EXSANEL N° 9 | 250 | 1,200 |
| DNE EXSANEL N° 10 | 300 | 1,400 |
| DNE EXSANEL N° 11 | 350 | 1,800 |
| DNE EXSANEL N° 12 | 400 | 2,400 |
| DNE EXSANEL N° 13 | 450 | 3,000 |
| DNE EXSANEL N° 14 | 500 | 3,800 |
| DNE EXSANEL N° 15 | 600 | 4,600 |
| DNE EXSANEL N° 16 | 700 | 5,500 |
| DNE EXSANEL N° 17 | 800 | 6,400 |
| DNE EXSANEL N° 18 | 900 | 7,400 |
| DNE EXSANEL N° 19 | 1,000 | 8,500 |
| DNE EXSANEL N° 20 | 1,200 | 9,600 |

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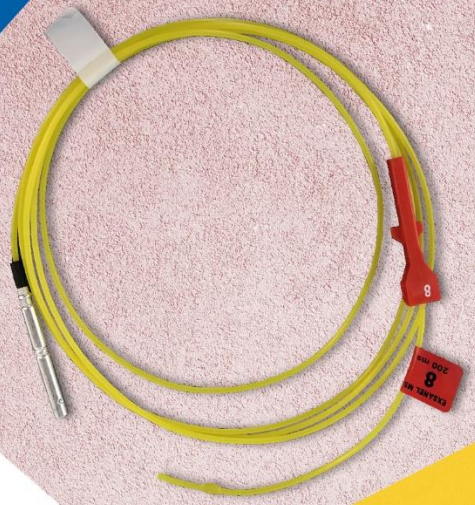

## Presentation and Packaging

These detonators are packed in cardboard boxes and the quantity of pieces depends on the length of the shock tube. For greater ease of use, the short (MS) and long (LP) periods have red and blue plastic connectors respectively.

| Non Electric Detonator Exsanel | Capacity (UN/CI) | Net Weight (kg) | Gross Weight (kg) | Ext. Dimensions (cm) |
|---|---|---|---|---|
| DNE EXSANEL 2.1 M | 200 | 6.0 – 13-0 | 7.0 – 14.0 | |
| DNE EXSANEL 3.0 M | 200 | 6.0 – 13-0 | 7.0 – 14.0 | |
| DNE EXSANEL 4.2 M | 150 | 6.0 – 13-0 | 7.0 – 14.0 | |
| DNE EXSANEL 4.8 M | 150 | 6.0 – 13-0 | 7.0 – 14.0 | |
| DNE EXSANEL 5.4 M | 120 | 6.0 – 13-0 | 7.0 – 14.0 | |
| DNE EXSANEL 6.5 M | 100 | 6.0 – 13-0 | 7.0 – 14.0 | 30.5 x 56.1 x 18.1 |
| DNE EXSANEL 8.0 M | 100 | 6.0 – 13-0 | 7.0 – 14.0 | |
| DNE EXSANEL 10.2 M | 100 | 6.0 – 13-0 | 7.0 – 14.0 | |
| DNE EXSANEL 15.0 M | 80 | 6.0 – 13-0 | 7.0 – 14.0 | |
| DNE EXSANEL 18.0 M | 50 | 6.0 – 13-0 | 7.0 – 14.0 | |
| DNE EXSANEL 21.6 M | 50 | 6.0 – 13-0 | 7.0 – 14.0 | |
| DNE EXSANEL 30.6 M | 40 | 6.0 – 13-0 | 7.0 – 14.0 | |

**For other formats of presentation ask an Exsa*

## Storage

They should never be placed next to heat sources, machine, operation, combustible or flammable materials, electrical acids or in homes, offices or urban areas in a very safe and stable way avoiding heat, shock and impact.

## Transport

CLASS: 1.1 B

N° ONU: 0360