

# Blasting machine for Exel™ detonators

## Exel™ Start DS2



The *Exel™ Start DS2* is a further refined electronic blasting machine for the safe initiation of *Exel™* detonators. It consists of an energy source (battery), a voltage converter, a capacitor for energy accumulation, an electrode and pushbuttons to effect initiation. The electrical energy is converted to a powerful spark, which the electrode emits into the inside of the *Exel™ Lead in Line* tube to initiate the shock-wave reaction.

The *Exel™ Start DS2* is powered by an ordinary 9 V alkaline battery that lasts for at least 1000 initiations. When the "CHARGING"- button is pressed, the capacitor is charged up to 2500 V. Pressing the "FIRING"- button then emits a powerful spark that initiates the *Exel™ Lead in Line*. Note that the "CHARGING"- button must be kept depressed throughout, or else the capacitor will be discharged over an internal resistance. It is easy to change the electrode.

### How to use the *Exel™ Start*

Cut off the sealed end of the *Exel™ Lead in Line* tube using the *Exel™ Start's DS2* built-in tube cutter. Place the end of the tube on the electrode, and push in the tube completely. Press the button marked "CHARGING", and keep it depressed. When the green LED lights, the blasting machine is ready to initiate the round. Keeping the "CHARGING" button depressed, press the button marked "FIRING". This discharges the energy in the capacitor into the electrode, which emits a powerful spark that initiates the *Exel™ Lead in Line* tube.

If, for some reason, the initiation has to be aborted, simply release the "CHARGING" button and pull the *Exel™ Lead in Line* tube off the electrode. The capacitor will discharge automatically.

<i>Exel™ Start DS2</i>	
Capacitance	1 Shock tube / Ignition
Ignition	electric
Voltage	2500 V
Capacitance	0,2 uF
Charging time	<10 seconds
Service life of electrode	Approx. 1000 initiations
Safety device	2-Button operation
Battery type	9 V alkaline (6LR61)
Function range	From -25 °C to +70 °C
Weight	275 g
Dimensions (W x L x H)	65 x 155 x 36 mm
Approval	BAM-ZM-706

### Safety

- Not for mines with a danger of fire damp or coal dust explosion.
- The equipment must be carried by the responsible shottfirer during blast preparation or must be locked away.
- The equipment must be secured against dropping with the dedicated strap.

### Changing the electrode

The electrode should be replaced after every 1000 firings (approx.). To replace the electrode, unscrew the chuck completely. Observe how the old electrode is fitted, and then remove it.

Fit the new electrode, making sure it is inserted correctly. Fit back the chuck and tighten well by hand. The machine is now ready for use.

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### Changing the battery

The battery cover is on the back of the machine. Using a Phillips screwdriver, remove the 4 screws that secure the battery cover.

Remove the old battery and fit a new 9 V alkaline battery type 6LR61, or corresponding type. Take care not to pinch or jam the conductor.

N.B. If the *Exel™ Start DS2* is to be used in very cold weather (down to -40 °C), Orica Mining Service recommends using a type U9VL lithium battery instead.

Fit back the cover and tighten the 4 screws properly.

### Changing the blade in the tube cutter

Unscrew the two screws on the machine's protective arm, and remove the cover that holds the blade in place. Remove the old blade and replace it with a new one. Screw back the cover securely.

### General preventive maintenance

Keep the *Exel™ Start DS2* blasting machine clean and dry. Dirt and moisture on the electrode can cause initiation to fail. Each time a round is fired, traces of carbon black from the tube are deposited on the electrode. Such deposits should be removed regularly using a small, soft brush wetted with methylated spirit, for instance.

### Spare parts

Spare parts such as electrodes and blades for the *Exel™ Start DS2* can be ordered.

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The *Exel™ Lead in Line* tube is connected to the *Exel™* rounds by means of an approx. 4 cm long outer tube that is cut from the transparent tube delivered with the *Exel™ Lead in Line* bobbin.