

# Fitting your complete lighting unit

This is a guide to fitting a complete Bisun lighting unit (mining lamp headset and battery box) onto a helmet.

## Lightweight helmets

While mounting on Petzl Elios helmets is relatively straightforward, it could be that the design of other lightweight helmets makes mounting a light difficult or impossible. Before beginning any work, make sure you are confident that both the headset bracket and battery box could be mounted on your helmet.

## General points

Some helmets have internal structures which limit the choice of locations for drilling mounting holes for either the headset bracket or the battery box, and some, like the Petzl Elios, have a shape of shell which also limits positioning. In the case of the Elios, the stepped nature of the helmet back dictates fairly rigidly where the battery box can be mounted.

Some helmets may require a small amount of foam padding to be cut away to allow the mounting bolts to seat properly against the helmet shell.

If there are internal obstructions to avoid, it may be useful to have a bright light inside the helmet to allow suitable mounting locations to be seen and marked on the outside of the helmet.

When drilling mounting holes into helmets, it is sometimes necessary to have a hand inside the helmet close to the hole being drilled to keep various internal pieces away from being damaged.

Always be very careful when drilling holes, as it is quite common for a drill to apparently make slow progress and then to rapidly go straight through the helmet. If it is necessary to apply a little force, try and do so in a way that doesn't have much 'spring' in it, such as by the gentle leaning of bodyweight on the back of the drill, rather than applying force with arm muscles.

A cordless drill with variable speed is often much easier to control than a mains-powered drill.

Wood-drilling bits with a central spike are much easier to get a properly located hole with than metal-cutting drill bits.

The supplied bolts should always be fitted with the bolt head on the inside of the helmet, and with washers and nuts on the outside. This means that regarding the avoidance of internal structures, holes should be drilled bearing in mind the width of the bolt head.

## **Positioning**

As a general guide, the headset bracket should ideally be mounted on the front of the helmet with the lower edge of the bracket 45mm or more from the helmet rim

The battery box should be mounted centrally on the rear with the lower edge 15mm or more from the helmet rim.

With an Elios, due to the thin shell, the battery box is best located so that the holes are as far from the edge as possible, while being far enough from the step in the shell that the bolt head can lie flat inside the helmet.

Once the battery box is mounted and the headset is fitted into the bracket, any spare cable can be taken up pulling the cable taut from the headset, and fastening a small cable tie around the cable and the foot of the battery box.

## **Headset removal**

Some headsets have a mounting blade which gives a very tight fit on the helmet bracket. Once they are slid into position, it can be very difficult to remove them without using large amounts of force.

In such a situation, to allow easy removal, the best technique is to slide a reasonably wide-bladed screwdriver up behind the headset, and insert the blade between the back of the mounting bracket and the mounting blade of the headset. Turning the screwdriver springs the mounting blade away from the back of the bracket, and should allow easy removal.