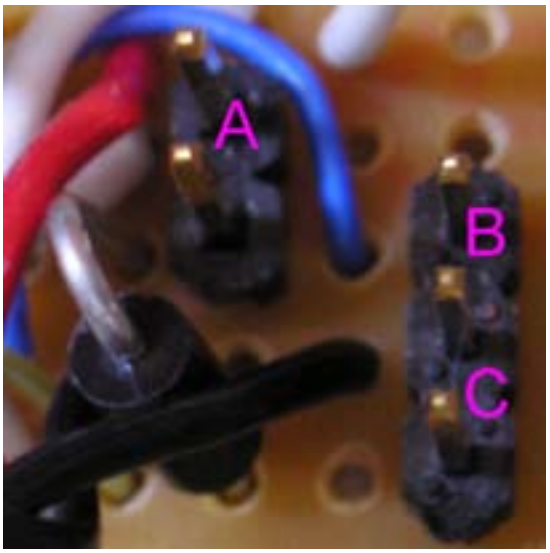
Configuration and Operation of the Bisun Z3 caving light

The rotary switch in the headset containing a Z3 is used to control both 'wide' and 'spot' power settings in the same way as operation with conventional incandescent bulbs.

The control circuits for the two power settings are essentially independent, and each is connected to a different contact on the switch. What actually happens when the switch supplies power to the Z3 depends on how the user has chosen to configure it when the headset was open.

On the Z3 board behind the reflector, there are two sets of metal pins sticking out of the board. One (A) has two-pins, and the other (BC) has three pins. The Z3 is supplied with two jumpers which slide onto these pins to connect adjacent pins together



The wide 'half' of the unit runs at a regulated 1 Watt.
If there is no jumper bridging the two pins at position A, all the power goes to the wide beam. If there is a jumper present at position A, the power goes mainly to the wide beam, but with some fill-in from the spot beam.

On the spot setting, if no jumper is present on B or C, the spot beam is configured for a low power pilot, which is possibly best suited for emergency use.

If a jumper is present on the 'C' pair of pins, the spot beam is configured for a medium/low setting.

If a jumper is present on B, the spot beam is configured to run at a high power setting of 1 Watt.

Warning - The supply for a Z3 should be limited to no more than 5 Volts, which realistically usually means a 3-cell alkaline, NiCd or NiMH battery, a 3.7V Lithium pack, or a 4V Lead-acid battery.
Use on an FX5 battery should not be considered.
The control circuits are protected against reverse voltages that could occur due to an incorrect installation into a headset, or from misconnection of a battery.

Care of your unit.
Whilst the circuitry is potted in resin and painted in sealant, it is still advised to avoid getting water in the headset, primarily because of the potential effect on the reflector silvering .
If the headset does get water inside, it should be opened and allowed to dry thoroughly as soon as possible after exit.
Care should be taken not to touch or otherwise damage the reflector surface, as this may allow water to penetrate the thin lacquer coating and corrode the metal reflective layer underneath, impairing spot-beam performance.
Reflector replacement would be possible if it became necessary.

If the unit is to be fitted to a headset known to have leaked in the past, such as one with internal corrosion, it is best to try and address the waterproofing issues of the headset before fitting the unit. For suggestions on waterproofing, email the address below.

Finally, despite the effort put into making the Z3 maximally reliable, with independent control circuits for each power setting, and as much built-in redundancy as possible, it is recommended to carry backup lights when caving.

For any further information, contact: cavelights@bisun.co.uk