

## **“UniStar” Oldham Lamp Conversion.**

### **Description**

The conversion consists of the fitting of a thermodynamic heat conductor system and external heatsinks that enable 1 Cree Q5 XRE, and 1 Cree R5 XPG emitter to run at full power when required. At full power the Q5 is driven at approximately 1050 mA, and the R5 at approximately 2200 mA to produce a light output in the region of 650 lumens.

It is not possible to fit 2 X R5s as the lack of footlight spill from this emitter would make walking dangerous, the Q5 has sufficient spill and is on to some degree at both switch positions. If you look into the front of your lamp the Q5 is identifiable by its smaller reflector, the R5 by its larger one.

The Oldham headset has 2 switch positions; one position will drive the Q5 emitter through a range of settings, low, medium and maximum, you change mode by quickly switching the lamp on and off.

The second switch position will power the R5 emitter at full power, plus the Q5 through the above range of settings.

Please note that this lamp has 2 totally independent wiring systems for reliability, something that most other high performance LED caplamps don't have.

### **HINT.**

**A slight delay turning from one to the other will cause the first emitter to come on at its last setting.**

**HINT 2 Best compromise between high power and batter life is Q5 on low plus R5. The R5 produces much more light for less power consumption.**

The battery pack is a 5 ampere hour Lithium Ion pack that delivers a nominal voltage of 3.7 volts, however off the charger it will deliver just under 4.2 volts. It is reasonable to expect it to power your lamp for 7 to 8 hours on the Q5 emitter medium setting, this is the setting recommended for general use.

### **OTHER EXPECTED BURN TIMES**

On full power a single emitter runs at just over 1 amp, it is therefore reasonable to expect the lamp to burn for just over 9 hours as the driver circuits themselves consume some power.

Although maximum output is sustainable without overheating (but NOT In doors!), your battery would only last for about 4.5 hours.

The battery cell is equipped with internal circuits that allow charging through the headset from any charger of this type that outputs 4.2 to 6 volts. A correct Oldham lead acid caplamp charger will output 5 volts. There is also a temperature sensitive poly fuse in the circuit which provides an extra measure of safety. The battery cell is filled with silicone and sealed to prevent ingress of water.

**DO NOT ATTEMPT ANY DISMANTLING OF THE HEADSET EXCEPT IN EMERGENCY, UNDER NO CIRCUMSTANCES ATTEMPT TO OPEN THE BATTERY CELL OR INTERFERENCE WITH THE CABLE GLAND. THE BATTERY IS NOT DESIGNED TO BE REMOVED FROM THE CABLE.**

IF CARRYING IN A RUCKSACK, SECURE THE SWITCH WITH ELECTRICIANS TAPE AS IF THE LAMP COMES ON IT BECOME DAMAGED DUE TO OVERHEATING. THIS CONSIDERATION APPLIES TO ALL HIGH POWER LED LAMPS.

As can be seen, the pre existing Oldham reflector and bulb assembly have been completely removed and replaced by my LED circuit. The front seal is of neoprene and specially produced to my specification and replaces the original. The headset should be watertight under normal circumstances. If there is any sign of water inside, please unscrew the bezel and allow drying out before turning the lamp back on. It is strongly recommended that in this circumstance you contact me the seller. This simply should not happen.

### **Expected charging performance from Oldham charger.**

This depends on the type of charger. If the charger has an ammeter, this will show a charge rate of approximately one ampere while on charge, when completed the ammeter will drop to zero. There is no trickle charge, the circuits completely disconnect when fully charged.

If the charger has LED indicators, the LEDs may well show a "No battery" indication when the cells are fully charged.

Charging from home made chargers converted from 6 volt car battery chargers or similar is not recommended

### **Expected charging performance from dedicated charger.**

The LED indicator will glow red and the ammeter will initially show a charge rate of approximately one ampere, this will drop to a very small reading before the LED indicator turns green when fully charged.

### **Guarantee.**

All lamps carry a 12 month guarantee, subject to reasonable use. The "UniStar" lamp is based on a modified Oldham headset. These were originally designed for mining use and not for extended periods of full immersion. However, the headset should be considered reasonably water resistant and splash proof. The Li Ion battery pack is suitable for extended full immersion as it is filled with silicone and should therefore be considered fully waterproof, explosion proof and reasonably shockproof.

### **Maintenance**

Basically, none required. However if the lamp is to remain unused for a great length of time, it is highly recommended to store in a partially charged state. The optimum is 40%, so fully charge and then partially discharge by running the lamp on single emitter, full power for about 4 to 5 hours.

The Li Ion batteries have protection circuits that will disconnect them at an 'on charge' voltage of just under 4.2 volts, and an 'on discharge' voltage of 2.7 volts. Obviously, if the lamp is used to the extent that the voltage dropped to near minimum, and then the lamp is put into storage, there is risk of the voltage dropping to below the minimum and thereby causing damage to the cells.