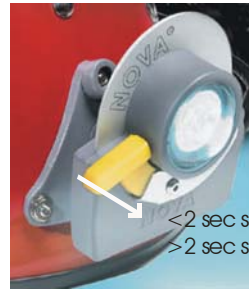


NOVA Instructions (3 Light Level Model NV002)

NOVA Quick Start

1. Charge battery (see battery instructions) or place alkaline cell(s) in battery holder.
2. Connect Headpiece to battery **observing polarity** (Speleo Technics plugs and batteries are difficult to connect wrongly – if the plug is difficult to fit you have got it wrong)
3. Give the switch arm (the red coloured plastic arm) a quick “flick” (push out with your thumb and let your thumb slide off the end) **away** from the front of the headpiece. The light will switch on.
4. Give the switch arm another quick “flick”. The brightness level will
5. change. Repeat until you have seen the whole sequence (3 light levels)
5. Hold the switch arm out for 2 seconds or more. The light will turn off.



As simple as that!

SOME DO's and DONT's

DO

1. Observe polarity
2. Use lens cover when lens may scratch (e.g. caving)
3. Use cable protector on short cables when caving
4. Remove plug from battery when light is not in use
5. Carry a backup light source when used for a potentially hazardous activity

DON'T

1. Connect to anything other than a Speleo Technics battery or battery box
2. Connect to an FX5 or any battery over 5 Volts other than 4 x AA alkaline cells
3. Expect to use the full 5 Watt output on a few alkaline cells for very long – the cells will not cope. Use lower light level only.
4. Leave connected to battery when in a rucksack or other container. The Nova could overheat if it is accidentally switched on.
5. Obstruct the aluminium heatsink
6. Allow mud to accumulate behind the switch arm – the magnetic switch will not work
7. Use any adaptor cable other than those made by Speleo Technics

IMPORTANT– PLEASE READ

Your NOVA light is a completely new concept. A bright, solid-state, waterproof, tough and controllable LED head torch.

Previous head torches (of any worthwhile power) have involved filament bulbs and reflectors. Provision always had to be made for replacing filament bulbs because of their short service life.

The NOVA's powerful 5 Watt LED will not require replacement so is sealed. Heat still has to be removed (it is a fallacy that LED's do not produce heat – those which produce very little also produce very little light!) which is why your NOVA has an aluminium heat sink. This should be unobstructed in use. If packing in a rucksack or other container it is recommended that the plug should be removed from the battery as damage to the NOVA or rucksack contents could occur if the NOVA accidentally switches on.

This powerful LED is driven by a state-of-the-art microprocessor controlled step-up inverter. The brightness control (3 levels) allows maximum duration to be obtained from a battery and allows a wide range of power sources to be used.

The NOVA can be retro-fitted to suitable Speleo Technics batteries. These are in two plug-compatible groups:-

1. FX2 (with slightly reduced performance), FX3/Anglers Light (long cable)
2. Headlite, LX1, Nova Nickel and FX-ion. (short cable – same as NOVA Flexi)

The two types of cable are not interchangeable between battery groups

Your NOVA may also be run from alkaline cells but intelligently! Few alkaline cells can supply a 5 Watt load for very long (popular flat 4.5 V batteries can only give about 2 Watts continuously) so the lower two light levels should be chosen. Your NOVA is in no way inferior to lower powered lights in this respect. They simply do not have the high power capability of the NOVA.

Your NOVA headpiece is waterproof to minus 50 metres. For (freshwater only) diving the only batteries recommended are the Speleo Technics FX2 or FX3/Anglers Light.

Part of this waterproofing system is the magnetic switch. This can be seen as the red plastic arm on the front. It has no physical connection with the light interior but its magnet operates a device inside. This device instructs the microprocessor to control the inverter which provides power to the LED. Microprocessors are all about timing and so is your NOVA switch. When the NOVA is switched off a short “flick” of the switch arm away (and allowed to return) of about 1 second will turn it on. Another quick “flick” will increment the brightness level by one. There are 3 levels which are cycled by the switch from high to low to high again. Holding the switch away for 2 seconds or more switches the NOVA off. Switched off, a tiny current still flows so for long term storage it is recommended that the plug be removed from the battery. The light level at which the NOVA turns on will be that at which it last turned off. This may not apply if disconnected from a battery for a long time.

The LED light is focused by a collimator lens (which looks like a reflector) which is sealed into the NOVA. To protect it from scratching (as in caving) the transparent cover with which it is supplied should be left in place. This is easily and cheaply replaceable which the collimator is not. This cover is no part of the waterproofing system. For replacement, or draining any water which has entered, the cover can be removed by inserting a thumb nail or if in difficulty a (carefully used) screwdriver at the rim. For diving, where there is no risk of scratching the cover may be left off.

BATTERY INSTRUCTIONS

A flashing output from the NOVA indicates that battery voltage is dangerously low and the NOVA is about to turn off. This does not apply to the FX-ion cell when the voltage management circuit may turn off before flashing occurs.

FX2, FX3, Anglers Light, Headlite and LX1 Batteries (all Nickel-Cadmium)

Your battery will normally have been supplied in a fully discharged condition and will require a 16 hour charge on an appropriate Speleo Technics charger. After use a 16 hour (overnight) charge will be necessary. Modern NiCd cells are very robust and no timing of the charge is necessary (in normal consumer use) but they should not be left on permanent charge. Please ignore anything you may have read about “memory” effect.

Intelli-Pulse chargers are being introduced for these batteries. Please see the Intelli-Pulse instructions below.

DO NOT charge the battery below freezing without prior consultation with Speleo Technics.

OBSERVE POLARITY - DO NOT SHORT-CIRCUIT

Nova Nickel Battery (Nickel/Metal-Hydride)

Your battery will normally have been supplied in a fully discharged condition and will require charging on the Speleo Technics Intelli-Pulse charger. After use charge again. See Intelli-Pulse charger instructions below

DO NOT charge the battery below freezing without prior consultation with Speleo Technics.

OBSERVE POLARITY - DO NOT SHORT-CIRCUIT

FX-ion Battery (Lithium-Ion)

CHARGING

The “smart” FX-ion charger will charge the cell automatically. It should be switched off or disconnected from both the mains and cell for 10 seconds before charging to re-set its logic circuits. Connect to the mains and the green LED will illuminate. When the cell is fully charged the red LED will illuminate.

Charging will take approximately 6 hours

DO NOT charge the battery below freezing without prior consultation with Speleo Technics.

IN USE

Lithium-Ion cells must operate within a strict voltage “window” and your battery has an under/over voltage protection circuit incorporated. **As the battery nears full discharge it will switch off suddenly.** Please be aware of this and have a backup light source available if engaged in any potentially hazardous activity.

Itelli-Pulse Chargers

These “smart” chargers are the only ones available for the Nova Nickel (NiMh) battery and are being progressively introduced for the FX2, FX3, Headlite and LX1 batteries. These are specific to the battery type so please see the charger label.

Itelli-Pulse Chargers are full-maintenance 24/7 plug-in-and-forget “smart” chargers.

The red LED gives steady illumination to indicate that the charger has power. It flashes rapidly when the battery is connected, indicating the connection and that the timed main charge is occurring. When this has timed out (approx. 16 hours) it will start to flash slowly to indicate that the battery is fully charged and that the pulsed maintenance charge is taking place. The battery may be used at this point or may be left on pulse charge until it is required.

HEALTH & SAFETY INFORMATION (all Batteries)

- Use the appropriate charger for the battery. All Speleo Technics chargers have rating plates which detail their compatibility. Use of an incorrect charger could cause damage/injury.
- This equipment is not approved for flammable atmospheres
- Do not short-circuit the output contacts or charge with reversed polarity
- Use only accessories manufactured by Speleo Technics for use with this product
- Dispose of carefully. Do not cut open, puncture or incinerate

ATTACHMENT OF HEAD MOUNTED BATTERIES

Headlite, LX1, FX-ion and NOVA Flexi

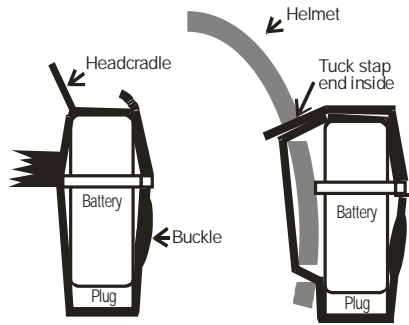


Fig 1

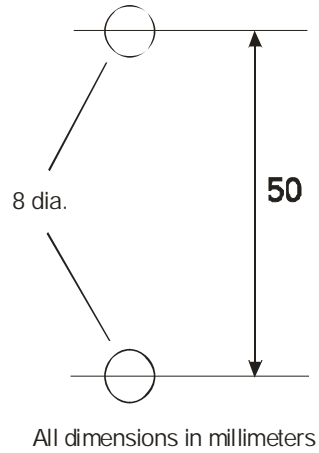


Fig. 2

Figure 1 illustrates how these batteries are retained on either the elastic headcradle or a helmet. The retaining strap, in each case, passes around the battery and plug which retains the plug on the battery. It should be passed through the moulded loop on the battery top moulding so that a slightly slack strap will not result in the loss of the battery.

Figure 2 illustrates the drilling dimensions for holes on the back of the helmet for the retaining strap. **Very great care should be taken that none of the internal fastenings nor the helmet structure are damaged.**

Approximate Duration Times

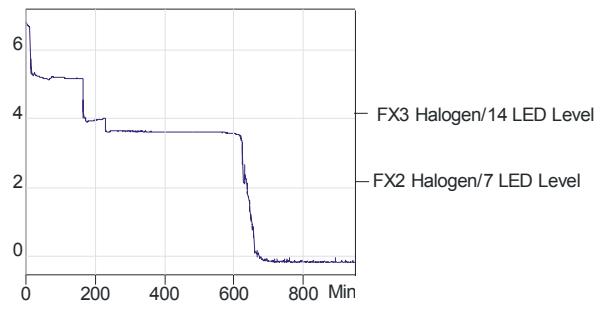
Full Power Duration

FX3 - 5 hours
 FX-ion- 3.5 hours
 Headlite/
 LX1 - 2 Hours

Increase in duration

Level 3 (full power) X1
 Level 2 X2
 Level 1 (low power) X6 (7 LED equiv.)

The situation with the FX2 is slightly different as its lowering voltage causes the inverter to progressively switch to lower levels - automatically doing what a careful user would do manually on the other batteries. Its discharge curve is below:-



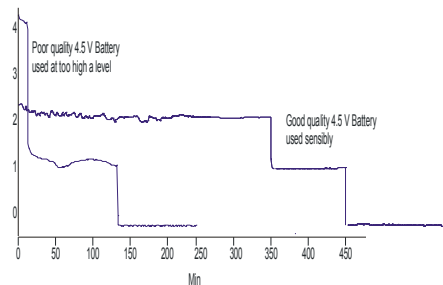
Use with Alkaline cells

Alkaline cells vary widely in quality and capacity. Good quality ones are essential to getting worthwhile performance from your NOVA.

On (new) 4 x AA cells the voltage off-load is over the 5 V limit of the inverter so it will not switch the light off completely (only a small current will flow - around 20 mA). This will not harm the Nova.

When the Nova is turned on the voltage falls (due to the impedance of the cells) and is then controlled by the inverter.

Please do **not** attempt to use other (nominally) 6 Volt cells which **could** damage the Nova.



These figures are only approximate. If duration time is vital to your safety you need to test your NOVA on the cell(s) concerned.

OLDER NOVA's

The first NOVA's to be introduced had 5 light levels (model NV001) please refer to those instructions if necessary

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