

# gear test

## Cabin lights on test from £14

If you're only getting a dim view of your boat's interior at night, perhaps it's time to update your illumination. **Alex Bell** sheds some light on what's available

**S**ome of the interior lights on my 20-year-old Benéau were falling apart – and they used a lot of current. So I started looking to see what was available on the marine market, with a particular view to providing enough light to read by, and at the same time having them look up-to-date.

**What's available?** There is a wide range of lights available from a number of suppliers, with prices ranging from £14 to well over £100 for those looking to grace a super yacht. Essentially there are four different lighting options: conventional filament bulb (which can be bayonet or festoon fitting), halogen, fluorescent tube and LED (see panel right). If you want ceiling lights, it's a choice of surface mounted or recessed. In my boat, with limited headroom, there isn't the space to fit recessed lights as many of these require an additional gap above the fitting for heat dissipation – usually a minimum of 13mm (½in).

The other choice concerns whether the switch is on the light or mounted elsewhere. A switch on the light itself makes the wiring a lot simpler, but it isn't necessarily so convenient to switch on and off from a berth. For cabin lighting there is also a choice between large diffuser-type lights, which spread light over a wide area, and spot or downlights which aim to concentrate the beam over a smaller area.

Fitting a number of smaller lights in a large main cabin allows flexibility of use and can also cut down on current consumed if the lights can be switched individually or in smaller groups. The number of models available is very wide and I was surprised to see that the latest LED versions were competitively priced. We couldn't test every light that's available on the market so we decided to sample some of the

**How we tested them** The current consumed by the light was measured with a multimeter. To see whether they provided adequate light, we simply held them a metre above a table surface and assessed if it was sufficient to read by without any additional lighting.



ABOUT THE AUTHOR

Alex Bell, a lecturer at Southampton Solent University, has taught engineering since leaving the Merchant Navy. He sails a 9.8m (32ft) Benéau First 305.

### TYPES OF LIGHT



#### INCANDESCENT FILAMENT LAMP

These are the traditional source of light and make use of automotive-type bulbs which are fairly robust, readily available and low cost. The wattage range is also wide and you could choose between 5W for a small application and up to 20W for a larger space. For a given wattage they don't give off as much light as the equivalent halogen bulb, but they are cheaper to buy. The tungsten filament is surrounded by argon and/or nitrogen gas enclosed in a glass sphere or envelope (the bulb). Electricity flows through the filament which offers resistance, this raises the temperature of the filament to about 2,500°C (white hot) which then gives off light (and a lot of heat). The problem is that the heat loss wastes a lot of electricity. They typically produce between 9 to 15 lumens per watt of input power.

#### HALOGEN LAMP

Halogen bulbs are smaller and for the same wattage give off more light so you can reduce a little on current consumed for the same light output.

They last longer than conventional incandescent bulbs but do get very hot. Halogen bulbs also utilise a tungsten filament, but contained within a small quartz envelope filled with halogen gas. With halogen bulbs, burnt tungsten is re-deposited back on the filament rather than the glass, giving them a longer life than conventional light bulbs. The quartz envelope can also take a higher temperature than glass, so emits more light. They typically produce 15 to 20 lumens per watt.



#### FLUORESCENT TUBE

They are the most efficient in terms of lumens per watt, but take up more space and are only available for the leisure market in tube form. They last a lot longer than incandescent bulbs and run cool, but require a sophisticated box of electronics to work them. Costs are comparable to filament lights.

With fluorescent tubes, high-frequency electrical current is used to excite mercury vapour in argon or neon gas. This results in plasma that produces short wave ultraviolet light, which in turn causes phosphor on the tube wall to fluoresce, producing visible light. An electronic lamp ballast, which uses solid state electronics, is required to provide the necessary starting and operating conditions. They are more complicated to manufacture than filament bulbs, can cause radio interference and there are environmental/safety issues with their disposal. They can't be connected to a dimmer and typically produce between 50 and 100 lumens per watt.



#### LED (LIGHT EMITTING DIODES)

LEDs have been in use a long time for instrument indicator lights and now the latest generation are being employed in a variety of lighting situations. They consume a fraction of the current used by incandescent bulbs, run fairly cool and have a long life. However, they require a large number of diodes to give an equivalent amount of light. The navigation replacement 'bulb', for instance, utilises 50 diodes but only consumes 2.5W compared to the 25W of a conventional filament bulb. Some are now being developed to replace halogen bulbs in interior light fittings. Most LEDs used as cabin lights now use what are termed Super Bright LEDs, while another development called Power LEDs give off still more light. They are regarded as the solution to the heavy current consumption of conventional bulbs and are starting to replace filament bulbs in applications such as bicycle lights, car rear-lights and even traffic lights.



### TECHNICAL TALK

**Lumen** (symbol: lm) is the System International (SI) unit of luminous flux, a measure of the perceived power of light

**Watt** The watt is the SI unit of electrical power calculated by multiplying current by voltage: 1 amp (A) x 1 volt (V) = 1 watt (W)

**Amps and milliamps** 1 milliamper (mA) = 0.001 amps (A)



# Lights on test



## Labcraft Tri-light

PRICE: £19.95 TO £27.24

Distributor: EC Smith,

tel: 01582 729721

www.ecs-marine-

equipment.co.uk

■ Available with one, two or three tubes to suit fitting requirement, but tubes cannot be individually switched. Tough cover encloses the whole light which has a recessed rocker switch. Its surface mounted, casts good light and is CE approved. Multiple tube versions will continue to work if a tube fails.

Dimensions: L 380mm x W 76mm x D 25mm

Light source: one to three fluorescent tubes

Current consumption: three tube version 1.2A on initial start-up then a steady 0.86A.

## Lalizas LED Downlighter



PRICE: £18.99

Distributor: Lalizas, tel: 01202 493730, www.lalizas.com

■ Suitable for recessed interior/exterior use: cockpit, locker, chart reading. Made of tough ABS polycarbonate it is available with either white or red light and has four cover options: white, brass, chrome and black. There is no switch on the light fitting. It gives a diffused soft light.

Dimensions: dia 75mm, recess depth 20mm

Light source: 4 LEDs.

Current consumption: 43mA

## LED light Surface Push



PRICE: £13.95

Supplier: Marine Super Store, tel: 02392

219433, www.marine-super-store.com

■ Surface-mounted compact white polycarbonate casing for good corrosion resistance. Switch works by pushing the lens. The lens cover unscrews to reveal three holes for fixing screws, which are provided. Casts a good spread of light, and the aforementioned enclosed switch will not snag.

Dimensions: dia 110mm, depth 42mm. Light source: 16 Super Bright LEDs. Current consumption: 107mA

## Polaris



PRICE: £39.95

Distributor: C-Quip,

tel: 01489 57257

www.cquip.com

■ Surface-mounted plastic base with stainless steel bezel and rubber sealing ring, which unscrews to access halogen bulb. Not switched. Available in gold or satin brushed stainless steel. It casts a well-diffused light.

Dimensions: dia 150mm, depth 27mm

Bulb: single halogen. Current consumption: 1.6A

## Labcraft Nordic Range



PRICE: FROM £14.92

Distributor: EC Smith, tel: 01582 729721

www.ecs-marine-equipment.co.uk

■ An established product with surface mounting

aluminium body. Push-button switch on end, low-profile shade giving a good light.

Dimensions: 8W - L 350mm x W 58mm x D 26mm

13W - L 580mm x W 58mm x D 26mm

Light source: fluorescent tube. Current consumption: 0.8A

## Cabin Spot Downlight 580 series



PRICE: £17.70 TO £22

Distributor: Calibra, tel: 02380 403944

www.calibramarine.com

■ This is a surface-mount compact spotlight which gives concentrated light level and is good for reading. No switch. The bulb is replaced by removing the lens surround.

Dimensions: dia 68mm, depth 25.4mm

Light source: single halogen. Current consumption: 0.87A

## Labcraft Astro



PRICE: £34.19

Distributor: EC Smith, tel: 01582 729721

www.ecs-marine-equipment.co.uk

■ Surface-mounted LED equivalent to the fluorescent tube, utilising 30 LEDs encapsulated in a weatherproof casing. Designed for an awning and gives sufficient light for the galley or heads areas. Requires switch, also available in a version without casing for discrete mounting (Orion). Dimensions: L 592mm x W 43mm x D 30mm. Light Source: 30 Super Bright LEDs. Current consumption: 0.18A

## Tips and trouble-shooting

■ If a light fails, after checking the fuse and bulb check the switch – the contacts may have corroded. Applying WD40 might do the job in restoring it

■ Put a separate fuse on each light circuit – failure of a fuse doesn't then lead to total blackout

■ Always carry clearly labelled spare fuses on board

■ Tin the cable ends with solder before making the connections.

■ Applying Vaseline also prevents moisture getting down inside the cable and corroding copper wire

■ For a softer cabin light, try using a combination of LED and filament bulbs

■ To save on battery drain, consider replacing conventional bulbs with LED equivalents

■ Make sure you connect LED and fluorescent tube lights with the correct polarity

■ Make sure your bulb does not exceed the wattage allowed in the light fitting

■ Always use a clean cloth to handle halogen bulbs, as grease from your fingers may shorten the bulb's life

## Teak Interior Light



PRICE: £21.22

Distributor: EC Smith,

tel: 01582 729721

www.ecs-marine-equipment.co.uk

■ Traditional, surface-mounted, solid teak base with brass bezel, complete with toggle switch. Requires three screws removed to access bulb, throws good spread of light. Also available in LED version. Dimensions: dia 102mm, depth 50mm (larger size also available) Light source: single bayonet incandescent 12V/21W Current consumption: 1.75A

## Labcraft Orbit Series



PRICE: £17.31 TO £19.94

Distributor: EC Smith,

tel: 01582 729721

www.ecs-marine-

equipment.co.uk

■ New range utilising latest LED technology. A neat, modern-looking ultra-slim design injection-moulded from polycarbonate. It can be recessed or surface mounted and is switched on and off by touching the stainless steel ring surrounding the lens. Easy to read by. Dimensions: Mini: dia 84mm, recessed depth 14mm. Orbit: dia 130mm, recessed depth 14mm Light source: single Super Bright white LED. Current consumption: 0.18A

## Waterproof Dome Light



PRICE: £35.25

Distributor: C-Quip, tel: 01489 57257

www.cquip.com

■ A solid, surface-mounted cast stainless steel base (also available in brass) with thick glass diffuser. Has two light options: bright white light from a halogen bulb, or soft red light from a filament bulb, controlled by a three-way waterproofed switch mounted on the rim. Heat-resistant frosted glass diffuser unscrews to give access to bulbs and two fixing holes. The base incorporates a rubber O-ring seal. Casts good, well-diffused light. Dimensions: dia 130mm, depth 48mm Bulbs: white single halogen, red incandescent Current consumption: white halogen 1.65A, red incandescent 0.32A

## Waterproof Dome Light



PRICE: £35.25

Distributor: C-Quip, tel: 01489 57257

www.cquip.com

■ A solid, surface-mounted cast stainless steel base (also available in brass) with thick glass diffuser. Has two light options: bright white light from a halogen bulb, or soft red light from a filament bulb, controlled by a three-way waterproofed switch mounted on the rim. Heat-resistant frosted glass diffuser unscrews to give access to bulbs and two fixing holes. The base incorporates a rubber O-ring seal. Casts good, well-diffused light. Dimensions: dia 130mm, depth 48mm Bulbs: white single halogen, red incandescent Current consumption: white halogen 1.65A, red incandescent 0.32A

## PBO CATCH UP ONLINE

Looking for the low-down on new gear for your yacht?

To buy previous PBO Gear Tests covering everything from

ifferats to EPIRBs, winches and chart plotters visit

www.pbo.co.uk and click on 'Find PBO articles'

See our chandlery advertising section starting on page 108

## PBO Chandlery



## Cantalupi UFO



PRICE: £36.32

Supplier: Aladdin's Cave

Chandlery, tel: 01489 55908

www.aladdincave.co.uk

■ An attractive surface-mounted interior light with opaque lens and toggle switch, ideal for main saloon or cabins. Comes in chrome on brass or white plastic. We tested the light with a halogen bulb which gave a powerful light. Dimensions: dia 50mm, depth 25mm Light source (not provided): halogen G4 12/24V max 20W or LED equivalent Current consumption: 1.65A with 12V/20W halogen bulb

## Outdoor Leisure Dome Light



PRICE: £17.75

Supplier: Toomer and Hayter,

www.toomerandhayter.co.uk

■ Surface-mounted tough white polycarbonate cover that is weatherproof. Requires three-way switch for useful two-light levels: bright, and soft background white. Fixing is three screws through lens. Gave a good spread of light on high setting.

Dimensions: dia 150mm, depth 24mm

Light source: 21 Super Bright LEDs

Current consumption: low setting: 9.9mA, high setting: 86mA

## Interior Lamp



PRICE: £15.41

Distributor: EC Smith,

tel: 01582 729721

www.ecs-marine-equipment.co.uk

■ An old favourite, this light is surface mounted, has a chrome rim and a switch

operated by rotating the lens. Throws a good spread of light.

Dimensions: dia 103mm, depth 30mm

Light source: single festoon 12V/10W. Current consumption: 0.83A

## Conclusions

There is a wide variety of ceiling lights on the market which will enhance the interior appearance of your boat and hopefully throw some light in the right places! At a distance of one metre all the lights tested provided sufficient light to read.

I have little doubt that the normal incandescent and halogen bulbs, with both their high temperature and current consumption, are about to be overtaken by LED technology. The clear advantage of LEDs is low current consumption, lower working temperature, robustness and long life. Their disadvantage is that they still can't compare in light intensity with the old technology – although new developments are leading to brighter lights all the time and I can't wait to see what the future will reveal. Also, expect to see white LEDs mixed with other colours to create a warmer and softer environment.

Fluorescent tubes, though perhaps not so elegant, offer good light with moderate current consumption and are particularly suited to the galley and heads areas.