Photo Soft Light

The construction of this soft-light is based on Victor Milt's *Nanolight*, which is described in his DVD *Light it Right.*

Two aspects of his design surprise his fellow professional cinematographers, these being the use of foam-core as the construction material and the use of compact fluorescent globes. Foam-core is a very light weight material and far less durable than the usual aluminium sheet. Durability is an issue when handled roughly by technicians used to not taking a lot of care, but Victor Milt has used his nanolight on many small jobs without problems of it falling apart. The light weight of the unit makes it easy to mount and easy to transport. The use of CFs is controversial because their phosphors are not carefully controlled in manufacture nor formulated for photographic work, which can cause significant problems for the photographer in achieving accurate colour discrimination of the subject illuminated. Photographic fluorescent tubes (e.g. Osram Dulux L 55w/12-950) have a *colour rendition index* (CRI) exceeding 90 (100 would be a perfect match to a daylight or incandescent photo source), while domestic non-incandescents (CFs and LEDs) may have a CRI as low as 50 in rigorous testing. However CFs prove very satisfactory for videography, given care for matching globe colour temperature and testing of different makes of lamps.

Victor Milt designed his light to use materials readily available from *Home Stores* in the USA, which unfortunately don't have their equivalent here. Foam core and lighting egg-crates (as formerly used on office fluorescent fittings) aren't carried by Bunnings, Mitre 10, and similar stores. Foam-core is used in picture framing where 10mm sheet can be purchased in 1210 x 2420mm sheet for $102. Lighting egg-crate can be bought in Victoria from Resiplex Plastics in Geelong.

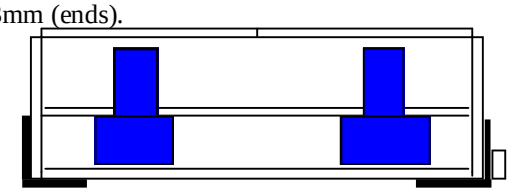
The Nanolight was designed for 6 off 20w CFs in a box 20" x 30". My modified design uses 8 off 20w CFs in a box 1000 x 533mm, this being chosen to more closely match the dimensions of the commercial lighting diffusion filter (21 x 48 inches). The length was determined by having available 2000mm of 50 x 50 x 1.6mm aluminium angle which I used to provide extra strength and durability as well as mounting for the mains socket, control switches and mounting yoke.

The general approach to construction was to cut 3 sheets each 1000 x 533mm from the large sheet using a metal straight edge and Stanley knife (or box cutter).

In one sheet 8 holes were bored to take standard plastic bayonet light fittings (or Edison screw if preferred). These fittings are fastened using a hot glue gun and then wired with appropriate cable (I used 1.5mm 2 core lighting cable) to permit switching as 8/6/4/2 "on" configuration.

The angle aluminium was cut into two 1 metre lengths and one machined to accept the switch block and the mains socket.

The standard lighting sockets protrude by about 28mm so sheet has to be cut for the sides and ends of the box so that the sockets are cleared (without globes) when the "doors" are shut (see sketch of cross-section). These were made 80 x 1000mm (sides) and 90 x 953mm (ends).



Initial assembly begins on the side where the electricals exit. A bottom sheet (1000 x 533) is hot-glued to a side piece. The aluminium angle is glued to this using contact cement (sand inside of angle to provide a good keying surface). Now cut away the core foam where the switches and socket are to be mounted. Take the sheet with the wired up sockets and put in place with the wires protruding through the angle. Connect up the switches and socket, mount them and test the circuits.

Align the sheet carrying the light sockets and hot glue to the edge piece. Turn the assembly on its side ready to glue on the opposite long edge piece. Run hot glue along the length of the edge of the bottom sheet and quickly position the edge piece. Now hot glue the second sheet (by corner fillet of hot glue) and then glue on the second length of aluminium angle (contact cement). Repeat the process in attaching the end pieces.

You still have an untouched 1000 x 533 sheet. Cut 20mm off its width and then cut in half longitudinally. These are the long "doors". Hinges are made with white gaffer tape so that when the doors are fully open they align with the sides of the fixed box. Now cut end doors that will match the open side doors and make gaffer tape hinges.

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Lengths of Velcro re-usable wrap are hot-glued so the doors can be fastened either open or closed.

Cut the plastic lighting egg-crate to fit inside the doors and hot-glue to this the diffusion material. Cut off any extra and fasten Velcro wrap to the egg crate so it can be fastened inside the doors (diffusion material towards the globes).

Now all that is needed is to make the mounting yoke and mounting plates. I used 10mm aluminium sheet Araldited to the centres of the aluminium angle. These were first tapped with 8mm MT to take the mounting axle.

The yoke was made of 8mm dia steel rod, with a 2mm steel plates silver soldered to the ends of the rod. These were drilled with 8mm dia holes to allow the axles to engage the threads. When tightened the light holds its position.

The standard lighting stand is designed for a 16mm fitting and this was machined from brass and silver soldered to the centre of the steel rod.

It's a good idea to cover all cut foam core edges with gaffer tape because they are easily damged by knocks. The tape makes them quite durable.

When completed and folded for transport the unit weighs 5.5 Kg.

Easily lifted

Unit closed and mounted on lighting stand

"Doors partially open, showing light sockets

CFs installed and doors fastened

Diffuser attached (at this stage without egg-crate)

An evenly illuminated large source with 8 globes powered.

Switches and mains connection

Back of unit showing aluminium angle strengthening members and mounting yoke.