

KOLOONA WORKSHOP

Changing Low Voltage Fluorescent Fittings to LED's in 12 Volt or 24 volt DC systems

Remember, most light fittings are made so that they can be accessed in order to change faulty light globes/tubes or for cleaning purposes. This understood, covers, light diffusers, protective surrounds, etc can usually be removed by, undoing clips, turning front covers/surrounds, inserting a thin object to prise out cover, squeezing plastic, taking out screws, etc. Sometimes, the method used is not immediately obvious, but hang in there and there will be a way.

Above all go slowly and be careful, broken parts can sometimes be difficult, inconvenient and costly to replace.

Following are some examples of how we have replaced standard Low Voltage Fluorescent fittings with some of our LED arrays, We have changed and seen changed many other styles, but in almost ALL circumstances it can be done. The benefits are usually much better lighting, a lot less heat, much longer life, a significantly lower use of available power and for RV applications which leads to an increased available Battery Life expectancy when not attached to 240V AC power.

Plus features for our LED's being used in RV's when only on battery power, are ;

- They will still show excellent illumination down to 8 Volts. Not recommended, but in emergencies ??
- Save many concerns because many more can be left on, using sometimes less than 15% the power of lamps with similar light output. Meaning 4-6 LED lights could equal the power usage of 1 'normal' light.
- External LED lights, using much less power, could be left on for those safer dark night approaches home.

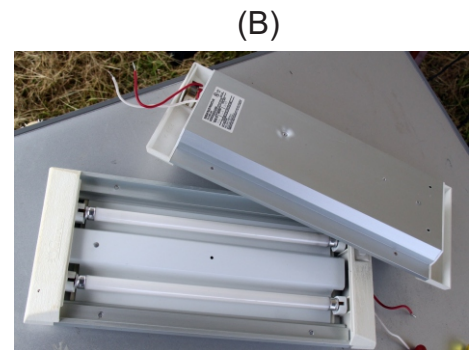
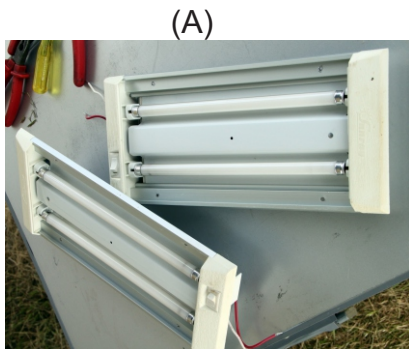


Generally to alter Fluorescent Fittings we use Koloona type numbers; **LK 41** a 21 SMD segment Card or **LK 43** series 18 SMD Strip. They could be used in multiples or combinations depending on the light output required and/or the position in which they are placed. Cool or Warm colours are available.

Cool light for High definition - Warm light for a softer light effect.

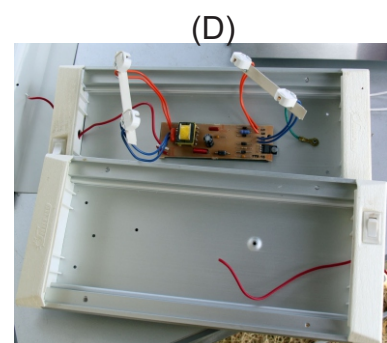
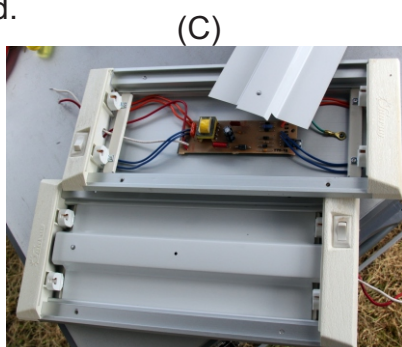
As a guide the **LK 41** (3.5 Watts) card gives a similar light output to a 24 Watt fitting and the LK 43 strip (3.4 Watts) similar to an 18 Watt fitting. The LED light output also has a far broader spread than a fluorescent tube and a much whiter light.

EXAMPLE 1: Replacing LED's into a Twin 12 Watt fitting:



(A) & (B) Remove fittings from ceiling being careful to leave sufficient cables for reconnecting. Some manufacturers use (QC) plug in adaptors, if not, cut wires separately to avoid shorting. You can solder together or attach the respective crimp connectors later. Note: Some installations use the earth as the neutral return, thus only one wire needs disconnecting

(C) & (D) Remove all the unnecessary fluorescent "bits", lamp holders, ballast and PC cards, etc. Leave only the switch and associated wires trimmed as long as possible, they can be cut later, if required.





(Using 1 x LK 41 or 1 x LK 43)

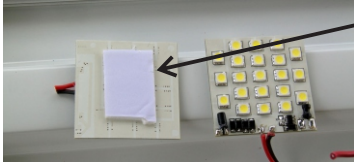
Determine how much light is required in the area and trial place the respective LED parts. If you need much more light than before, use two parts.

You can always insert the second part later if, one part does not satisfy the requirement.

(Although certainly not needed. In this application, there was sufficient space to easily fit 1,2,3 or 4 parts)

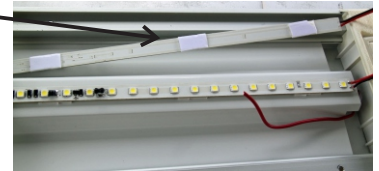


(Using 2 x LK 41 or 2 x LK 42)



Place a strip (s) of double sided adhesive on the rear of the selected part and carefully press into the selected position.

The cards are quite robust and direct pressure used, can be quite firm.



Unsolder or trim supplied wire leads, as required. Connecting one wire through the switch on the fitting. The other wire left long to connect back to neutral or to the frame.

Normally there is sufficient wire left from the original fluorescent parts.



The Koloona LED parts are not polarity sensitive, therefore any wire may be connected to a card terminal. However, we always try to ensure that the supply positive travels through the switch.



Finally the completed fitting can be put back into place. Reconnect the RV wiring using the QC terminals or soldering. Remember to ensure the wiring is insulated from each other correctly.

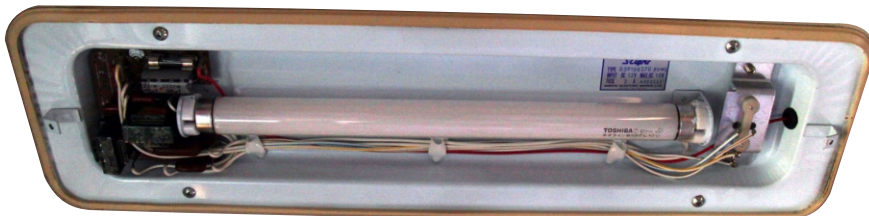
(Some of our examples show insulated 'Bullet' style crimp connectors being used.)

FINAL NOTE

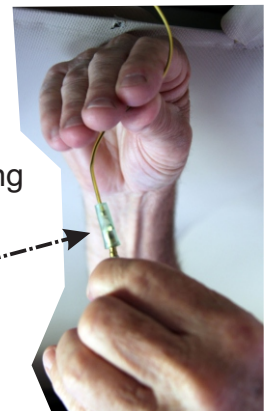
For this application only one LK 41 card and one LK 43 strip was required. These gave more than enough light at the same time saving costs and a lot of power usage (15%)



EXAMPLE 2: Replacing LED's into a Single 12 Watt Fluorescent Fitting

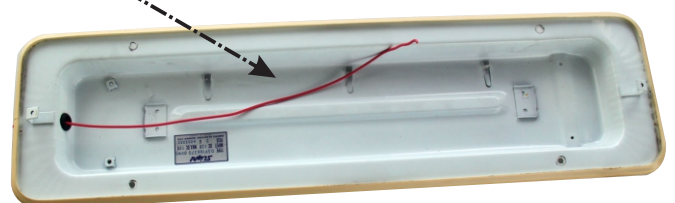
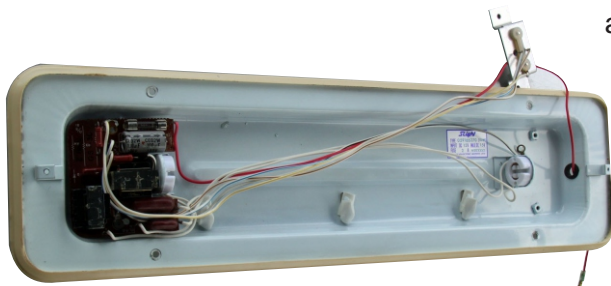


In the Ceiling with Diffuser Removed

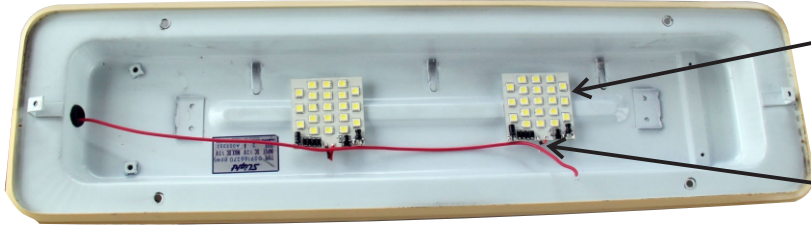


Unplug from existing wiring. Single wire because frame is neutral (earth)

Remove ALL existing Fluorescent parts keeping any useful wires.



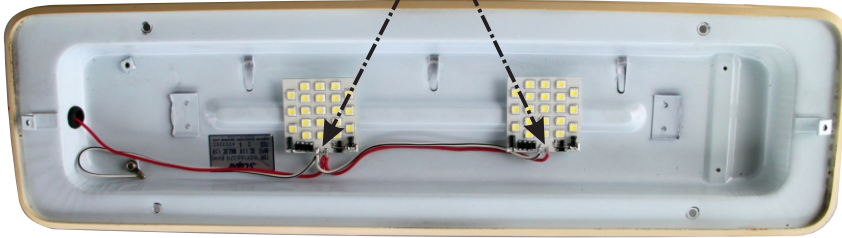
This application needed much more light to the same area. It was decided to use 2 x LK 41 cards increasing the available light by 3 to 4 times, using only approx 60% of the previous power.



Attach double sided tape to rear of LK 41 cards and press into position

De solder existing card wires and resolder suitable wiring using existing terminals. One for positive power and the other using earth loop for connecting to frame (earth)

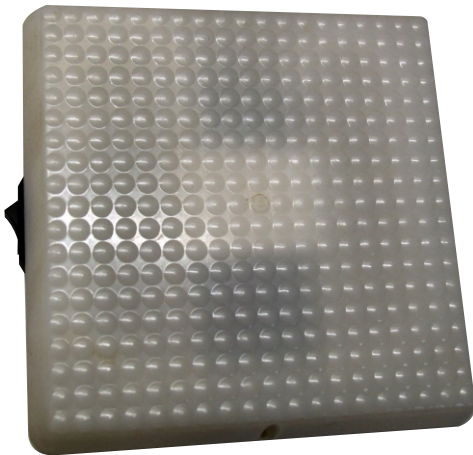
Connect LED cards in parallel



** Fitting rewired ready to be put back in place **



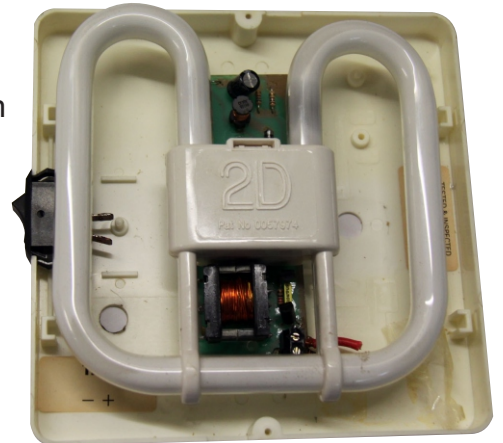
EXAMPLE 3: Replacing LED's into a Double 'D' style fluorescent fitting



Remove diffuser and take down fitting.

In this example wiring needed to be cut.

See below where insulated 'bullet style connectors were used to make reconnecting easier.



Remove ALL fluorescent parts taking care to maintain switch.

Apply double sided tape to rear of a LK 41 LED card and wire with the positive via the switch.

Note: We have applied crimp terminals to make refitting easier.

