

ROTATING LIGHTS

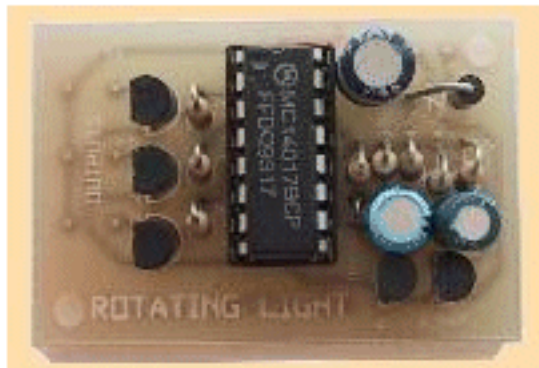
This kit is available from:

Talking Electronics

email **Colin Mitchell:**

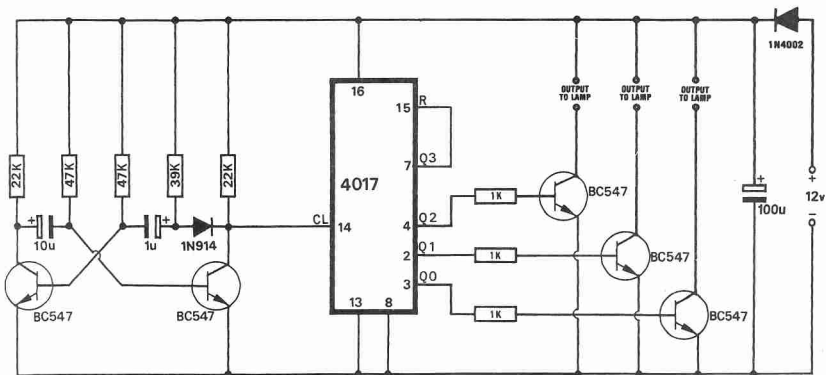
talking@tpg.com.au

for pricing and postage.



ROTATING LIGHT

Add a little life to the accident scenes on your model railway.



The Rotating Light Unit is a dedicated version of the Shop Display Driver.

Quite a few people have modelled accident scenes. These scenes look very 'static' and are easily overlooked by viewers, unless placed strategically.

Some modellers have overcome this problem by putting flashing lights in the emergency vehicles at the scene. Ambulances and fire-trucks often use red LEDs driven by simple flashing circuits. Tow trucks use yellow LEDs, but due to the absence of a blue LED in the LED range, police cars have to use coloured lamps.

With a simple circuit it is possible to simulate the rotation of these emergency lights. Due to the small size of rotating lights on models it would be impossible to make them operate mechanically, so the easiest way to simulate them is to use a small circular light chaser.

The circuit.

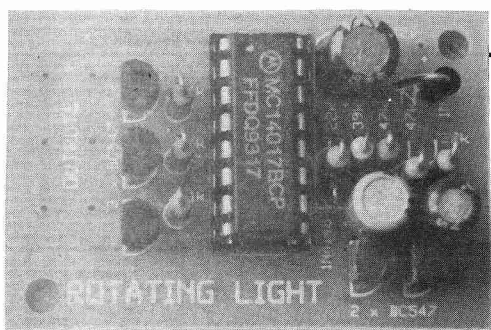
The rotating light circuit is a three step chaser. Compare the circuit diagram above with that of the Shop Display Driver on page 28. The two are almost identical. From this it can be seen that the Rotating Light is a dedicated version of the Shop Display Driver.

The Rotating Light circuit board is a lot more compact than the Shop Display Driver board for two reasons. The first is that a lot of the Shop Display Driver components are not required. The second is the Rotating Light was originally designed to fit on a 1/4 scale petrol driven buggy where space was limited.

The circuit can drive two grain-of-wheat lamps off each output. This will be useful where LEDs are not practical. When LEDs are used, current limiting resistors are required but they can be shared, one between three LEDs, as explained on page 29.



The tow truck in the accident scene is a modified Viking model. The rubber-band and wire hook towing arrangement was replaced with something that looked a little more realistic. The single orange dummy rotating light was replaced with the twin rectangular unit described in this article.



Construction

Due to the small size of the PC board many of the components are mounted vertically.

Solder in the IC socket first as it is the lowest component on the PC board. Make sure all the pins go through the PC board.

I have repaired several projects in which constructors had accidentally bent a pin under the IC socket. They then soldered the socket without noticing the absence of a pin through one of the holes. This creates a fault that is very difficult to trace as it is not obvious on a visual inspection of the project.

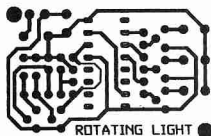
The easiest way to repair this fault is to drill a small hole beside the socket near the bent pin. A small link is then soldered between the pin on the chip and the copper pad on the PCB. If at anytime you need to remove the chip, simply unsolder the link.

When inserting the resistors you will find they will fit better in one direction than the other. Refer to the photograph for the best orientation of them.

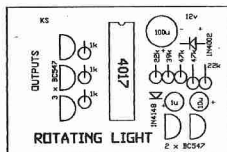
The next obvious step is to model the rotating lamp. Various methods will no doubt be tried, as there are several styles of rotating lamp in use. The easiest one to model is the dual rectangular style that is sometimes used on tow trucks.

To make this rotating lamp, six yellow 3mm LEDs are required, three per side. Each LED must be filed down until it is about 3mm by 1.5mm. The top is also filed flat. When selecting the LEDs, choose LEDs that have their internal structure low in the package as this will make it possible for you to shorten the LED to a reasonable height. Be careful not to file away the tiny wire inside the LED. Test each LED as you finish filing it. If it fails, throw it away and try again.

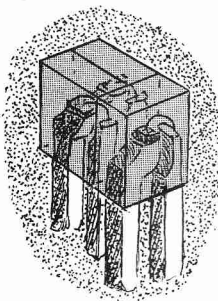
The next step is to glue the LEDs together using a clear epoxy. Plastic solvent will not hold the LEDs together as the LEDs are made of epoxy. Glue the LEDs together in groups of three, as shown in the drawing. Have the anodes of the LEDs in the centre as this will make wiring easier because the Rotating Light circuit drives common anode type displays. When soldering wires to the LEDs, take care because any stress on the pins of the LED could destroy it. Also, the heat of the soldering iron is enough to soften some epoxys, causing your assembly to fall apart.



ROTATING LIGHT



Red LEDs can be filed to represent the emergency lights on ambulances and fire trucks, but as these lights are usually round, it may be easier to use 5mm LEDs with only the top showing through the top of the vehicle. There are no blue LEDs available and you can't file globes so I will leave the construction of police car lights to your imagination.



Three 3mm LEDs were filed down and glued together to form each of the rotating lights.

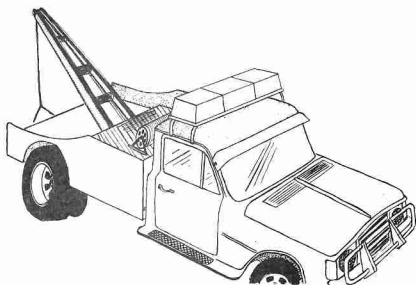
ROTATING LIGHT PARTS LIST

- 3 - 1K
- 2 - 22K
- 1 - 39K
- 2 - 47K

- 1 - 1 mfd electro
- 1 - 10 mfd electro
- 1 - 100 mfd electro

- 1 - 1N4002 diode
- 1 - 1N914 diode
- 5 - BC547 transistors
- 1 - 4017 chip

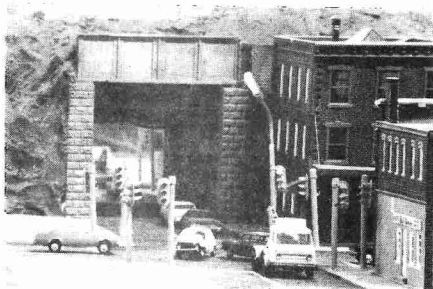
- 1 - 16 pin IC socket
- 1 - Rotating Light PCB



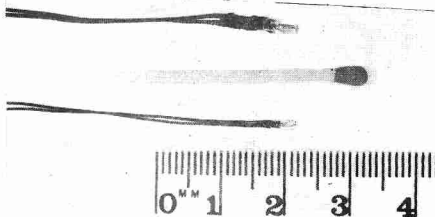
This drawing shows the twin rectangular rotating lights that are sometimes used on tow trucks.



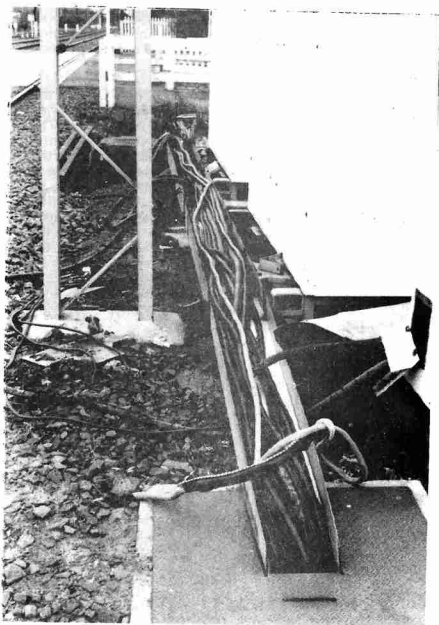
Two Viking cars were 'modified' for the accident scene. The modifications included sandpapered windows to simulate shattering, tyres flattened against a warm (not hot) soldering iron, doors knocked off their hinges and various dints inflicted with a small saw, a soldering iron and a knife. The cars were also modified to right hand drive.



The tow truck is at the accident scene on the AMRA club layout. Tow trucks usually get to an accident scene faster than the police or ambulance.



For those who want to model police cars, these tiny 1.5 volt globes should be ideal. The miniature globe is pictured above with a normal grain of wheat globe to give you some idea of size.



Does YOUR wiring look realistic?