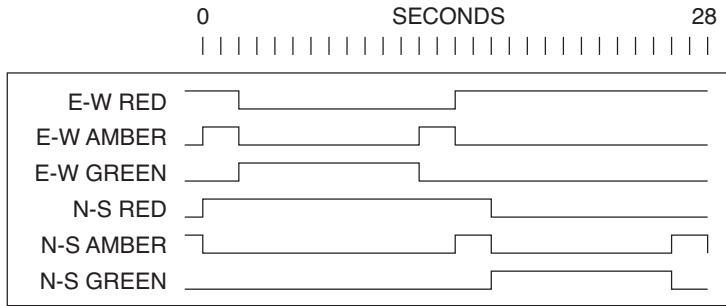


TIMING DIAGRAMS

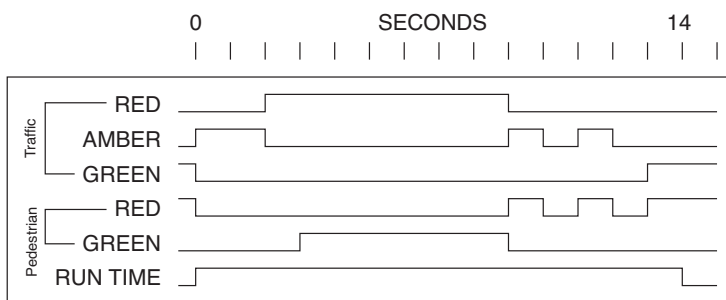
Synchronous sequential control systems, and the synchronous parts of mixed diagrams, can be usefully described with timing diagrams.



This diagram shows a typical timing diagram, in this case for a set of traffic lights. **The upper horizontal lines represent 'on' and the lower horizontal lines represent 'off'.**

The list of names down the left hand side shows the operations that are required - in this example they are the two sets of red, amber and green lights being switched on and off. Each light is controlled by one output of the system. The upper parts of the lines show when each of the outputs is on, and the times along the top show the times when they are switched on and switched off.

The diagram shows one complete cycle of the control system. In a completely synchronous system, like these traffic lights, the cycle runs continuously; as soon as the end of the cycle is reached it starts again. Notice that the diagram starts before 0s, this shows the end of one cycle leading to the start of the next.



In the timing diagram for a mixed system, such as that of a pelican crossing as shown below, the synchronous part of the system is when the traffic stopped to let pedestrians cross. The 'run time' output turns on the motor (in a mechanical timer) or the clock (in an electronic timer), and the synchronous events happen. When this output is turned off, the timer is also turned off and the crossing is left with the pedestrian red light on and the traffic green light on. The system stays like this until the pedestrian button is pressed again.