

## Experiment 6: Complex Circuits

### The Black Boxes

In this lab you are given two "black boxes", labeled *A* and *B*. The boxes have six contact ports (each a different color), where banana plug-jumper cables can be connected. Each box contains exactly 3 resistors connected in various ways to the ports. The difference between boxes *A* and *B* is that in box *A* there is only one resistor across each connection port (see Fig. 1), while in Box *B* the resistors can be in series and/or parallel across the connection ports. The resistors may be connected horizontally (along the long side of the box), vertically, or diagonally. For Box *B*, you are given two of the resistor values:  $220 \pm 5\%$  and  $270 \pm 5\%$ . **Your task** is to figure out the configuration of the resistors with their corresponding values in each box using only an ammeter and a power supply. Since the resistors have 5% tolerance, it is advised you give an appropriate range for your unknown resistor values.

A full lab report is not necessary for this lab. Instead submit a clear and neat outline/schematic of the resistor configuration(s) and their corresponding values (show any calculations).

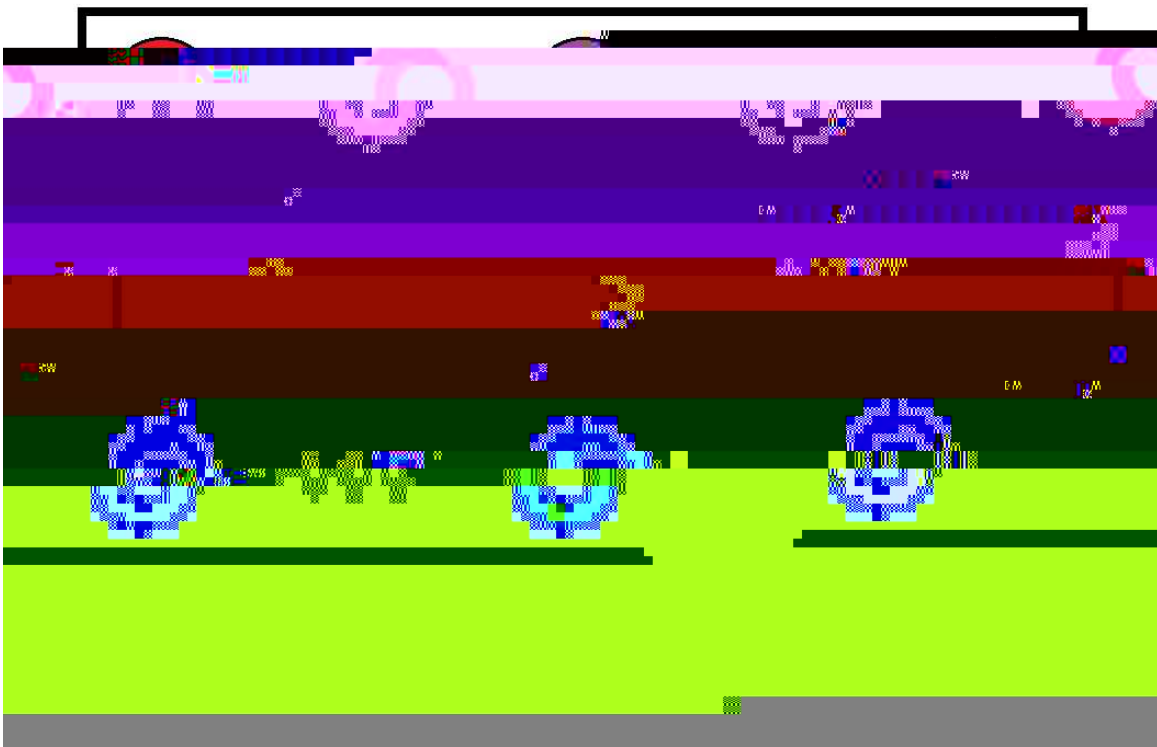


Figure 1: Sample configuration for box type A.

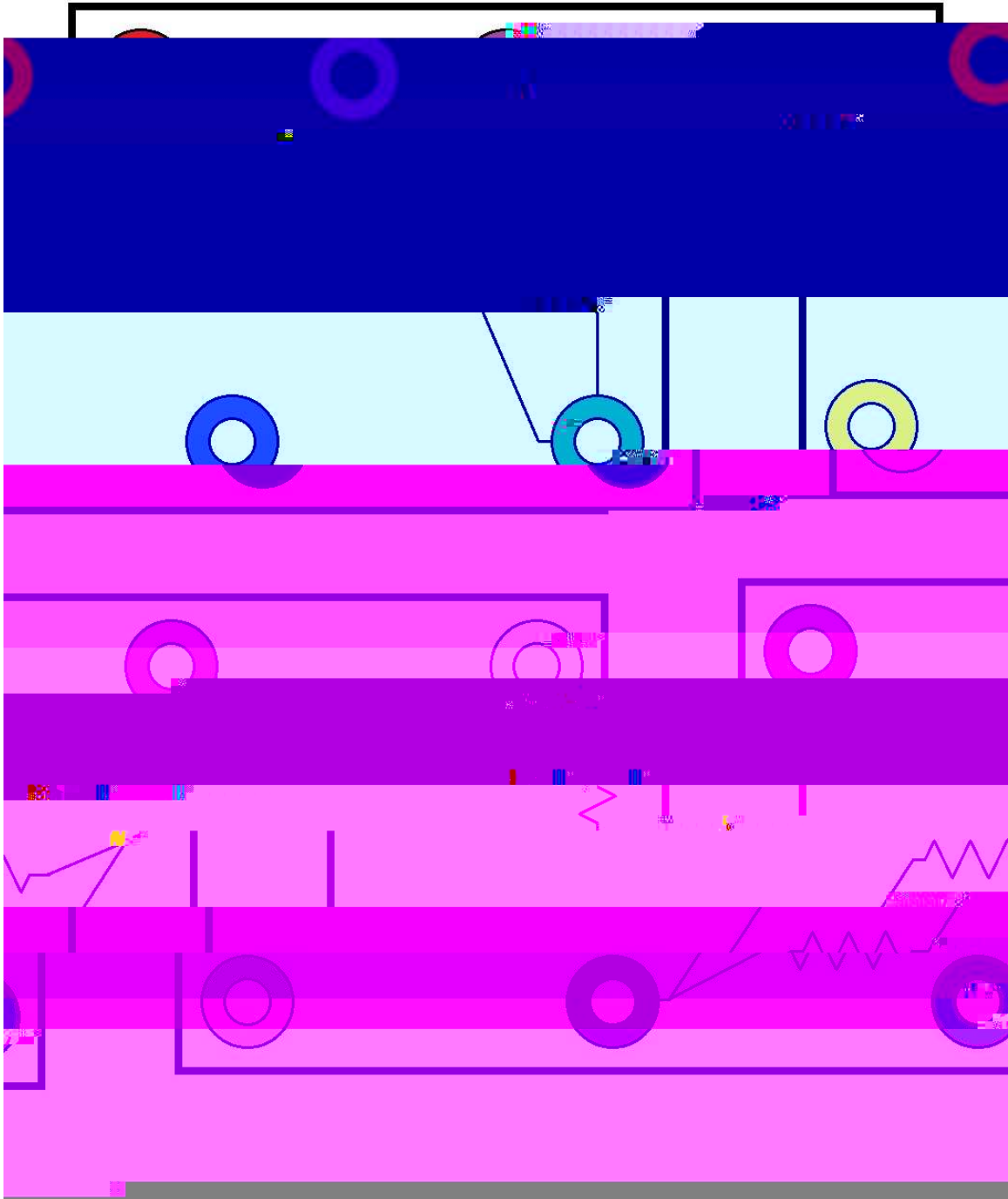


Figure 2: Sample configurations for box type B.