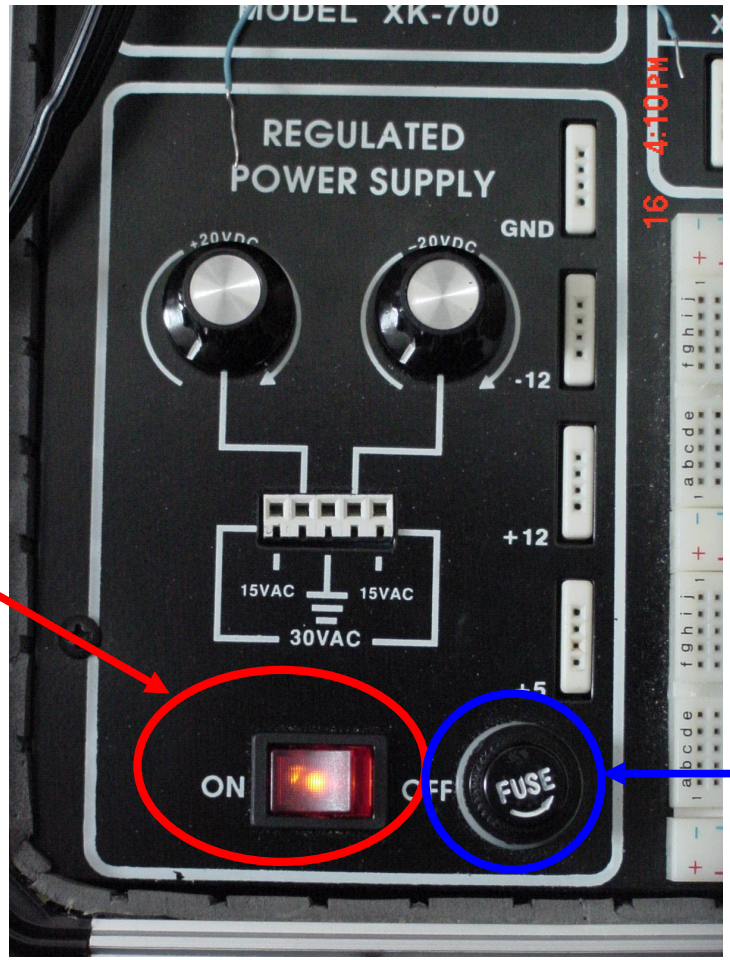
Electronic Trainer

Digital Electronics

Unit 1 - Fundamentals

Powering the Trainer

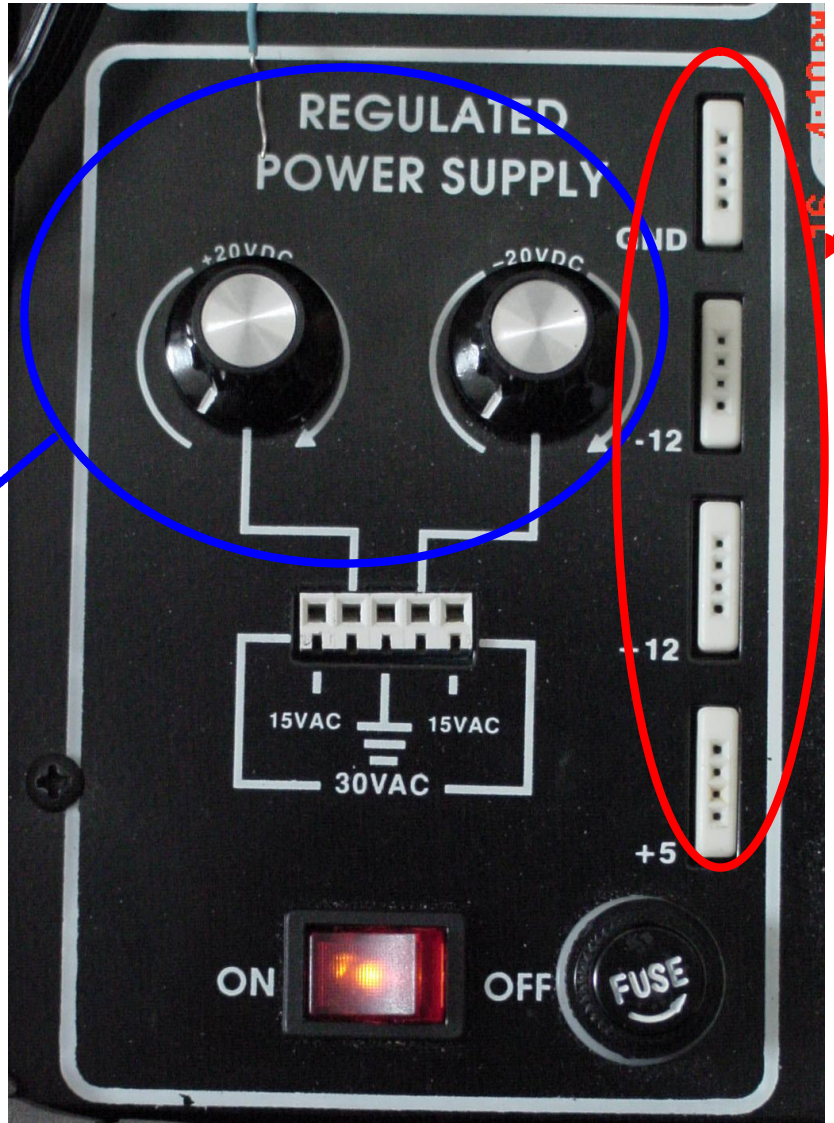


Power Switch

Fuse

Power Supply

Fixed Power Supply



Variable Power Supply

Power Supply

White Lines

Power Supply

AC Voltage Connections

Power Supply

+20 Volt Variable Connections

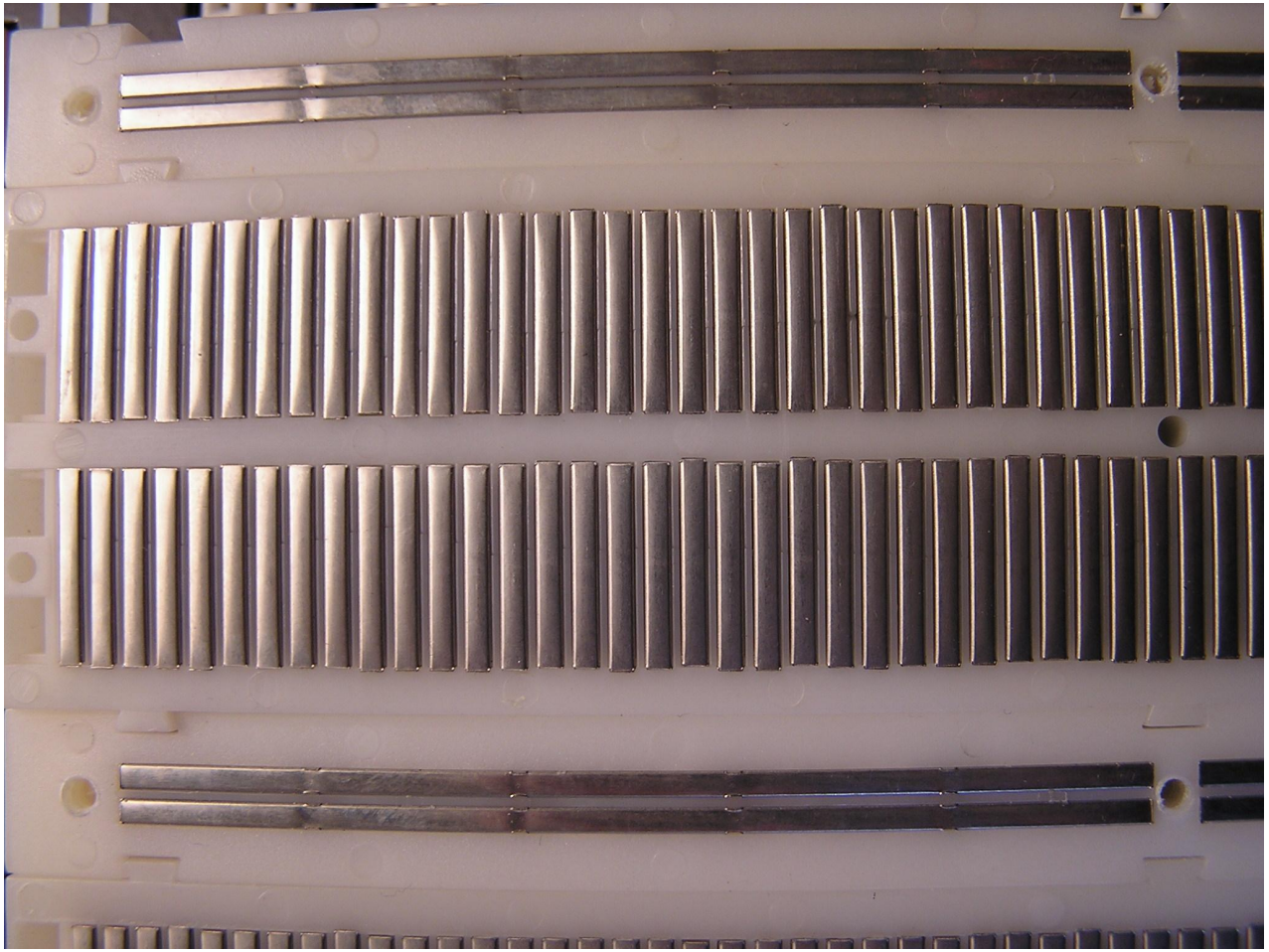
Power Supply

-20 Volt Variable Connections

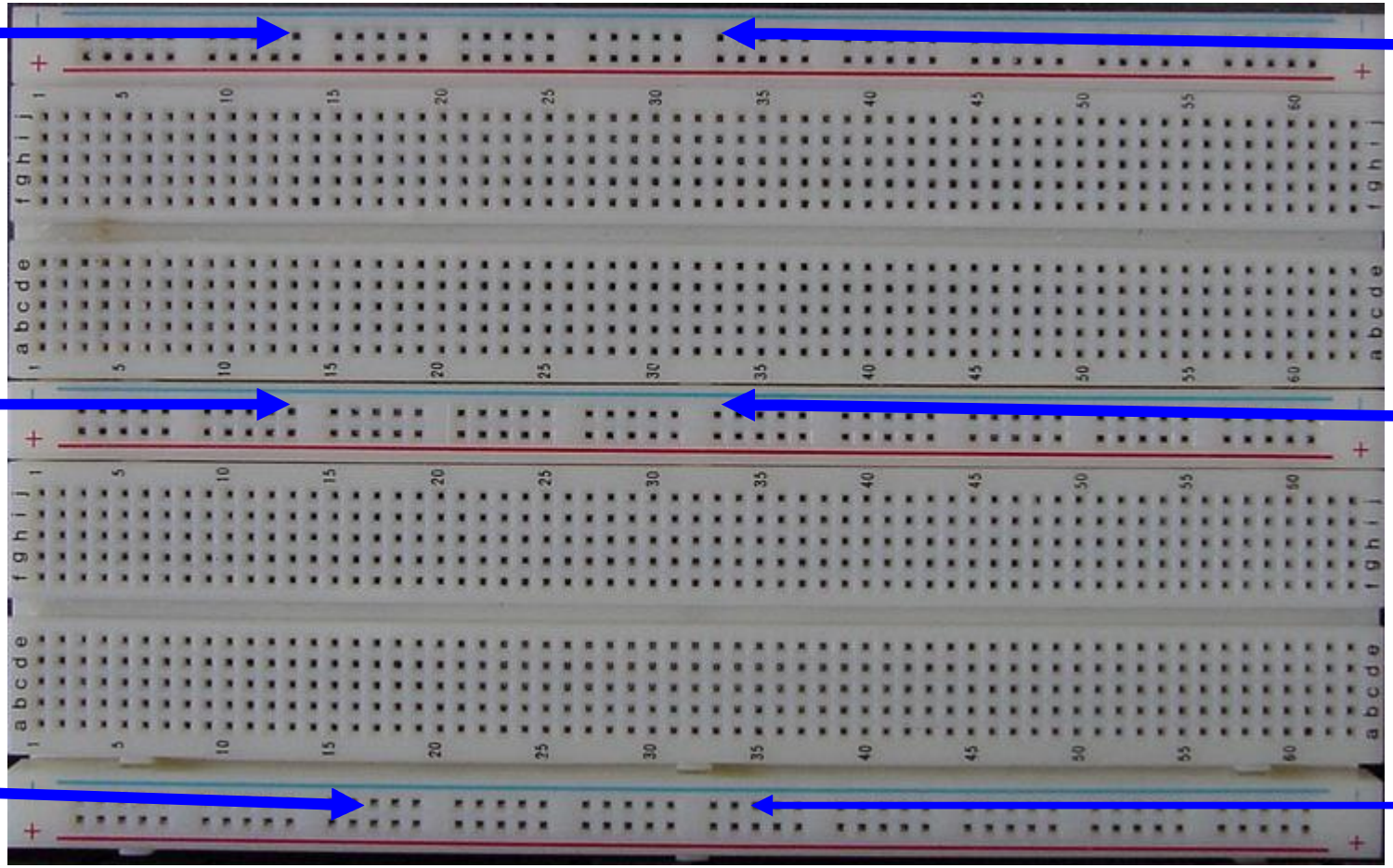
Fixed Power Supply

Fixed Power Supply

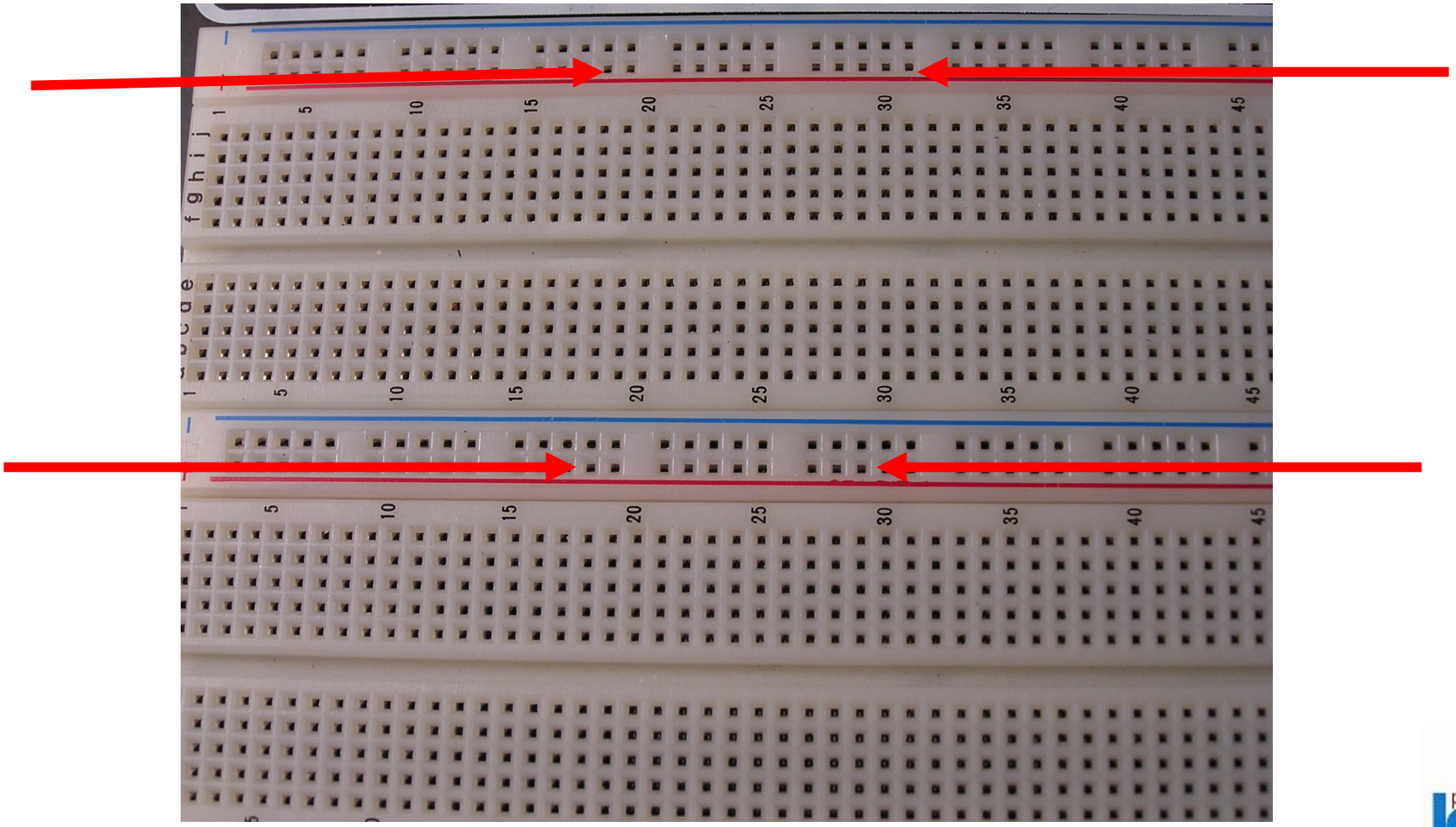
The Breadboard



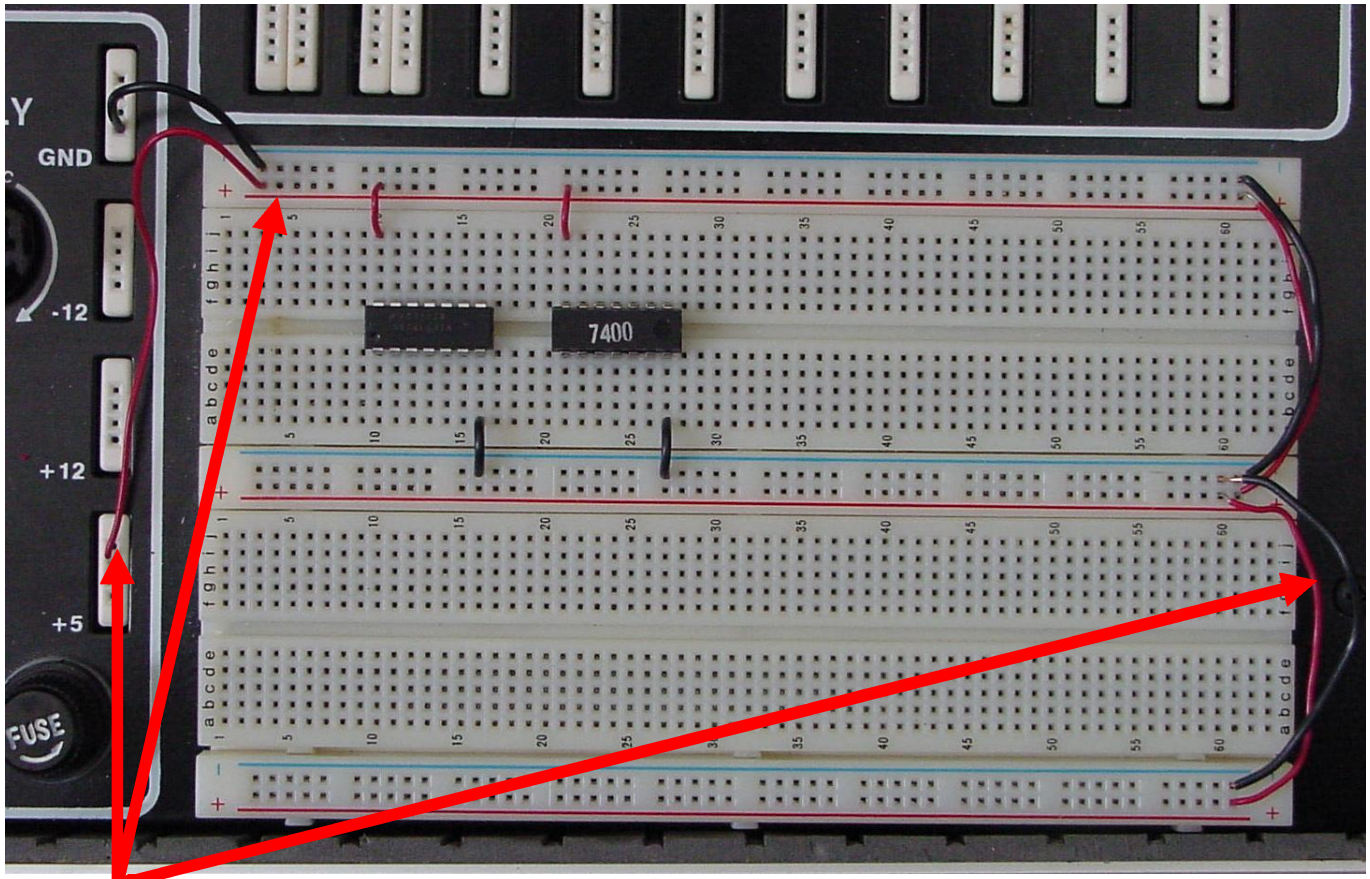
Horizontal Runs



Horizontal Runs

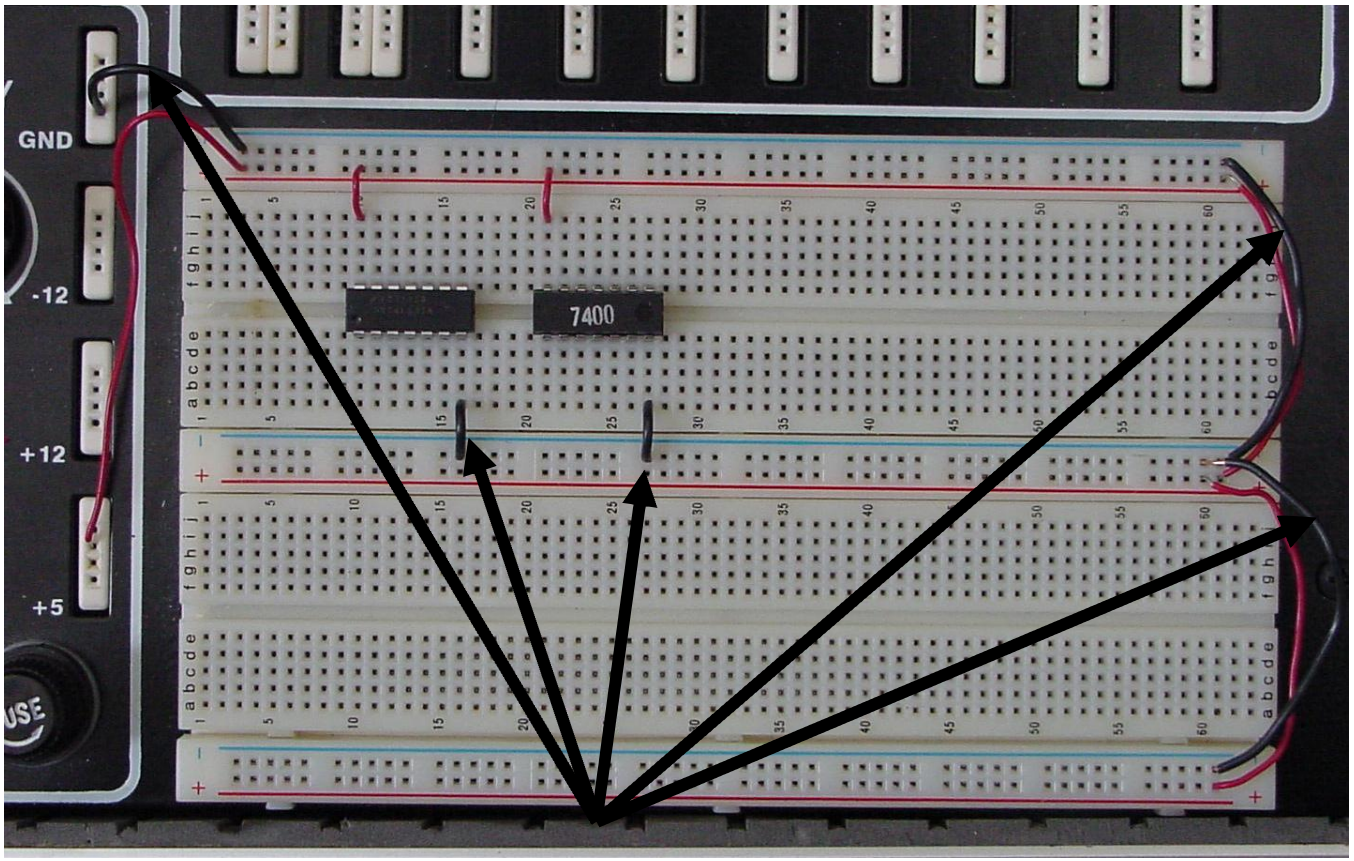


Using The Horizontal Holes



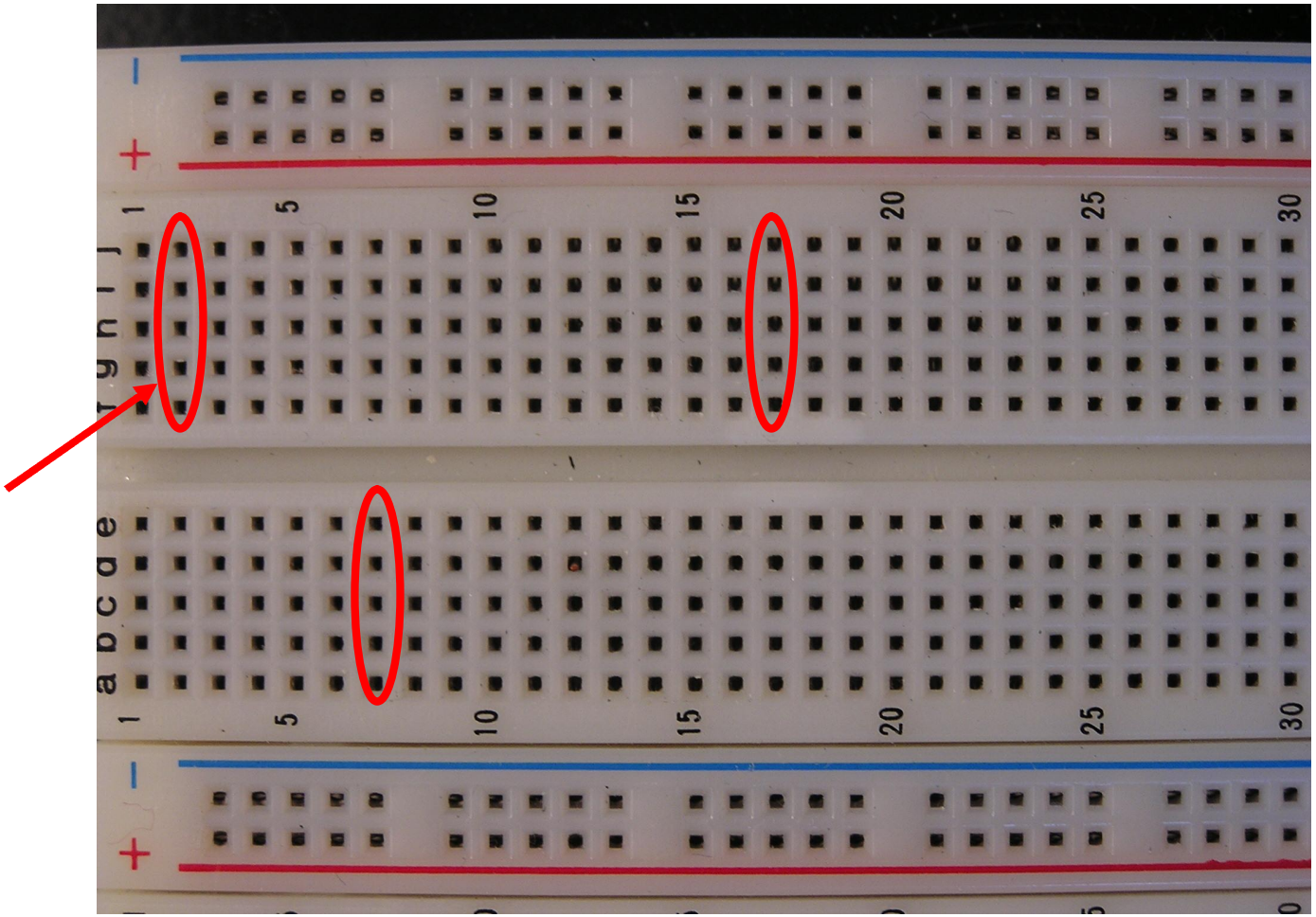
The Red marked holes and red wires are used for connecting the Voltage Source.

Using The Horizontal Holes

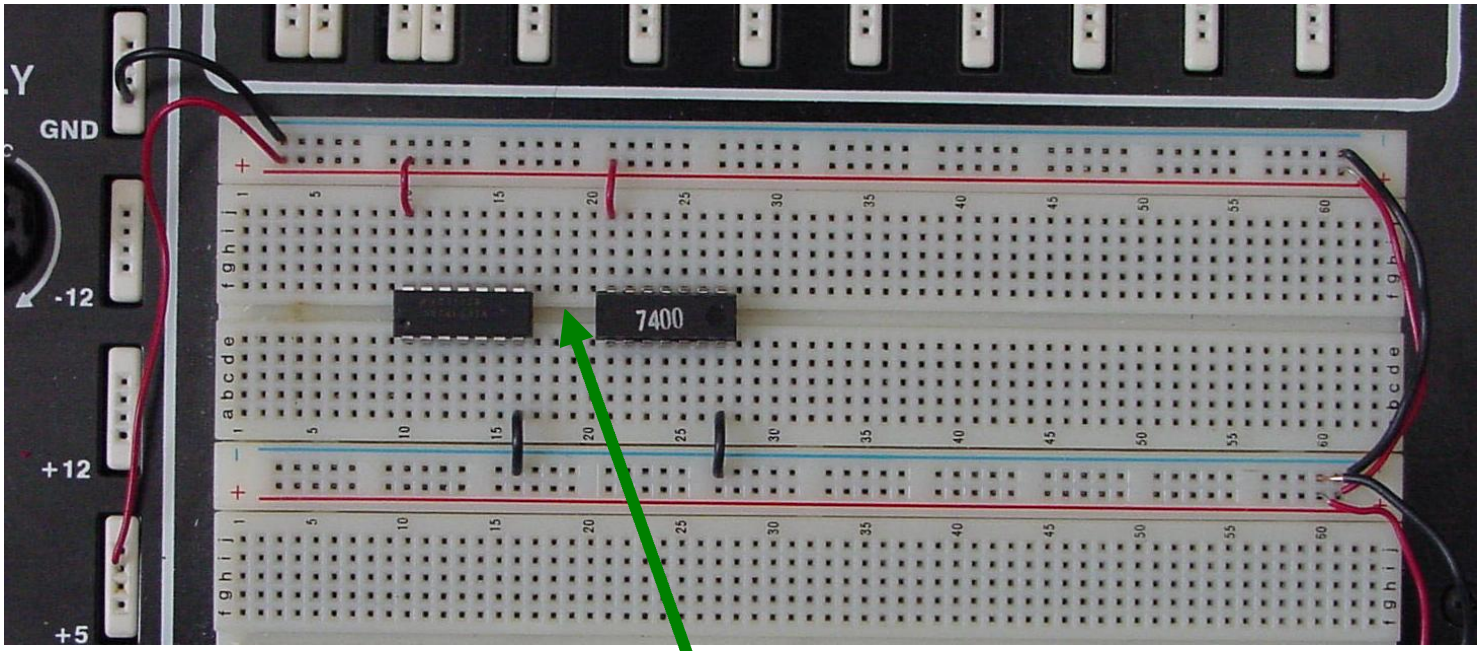


Grounds can be wired in the same way as the voltage sources, except black wires are used.

Vertical Runs

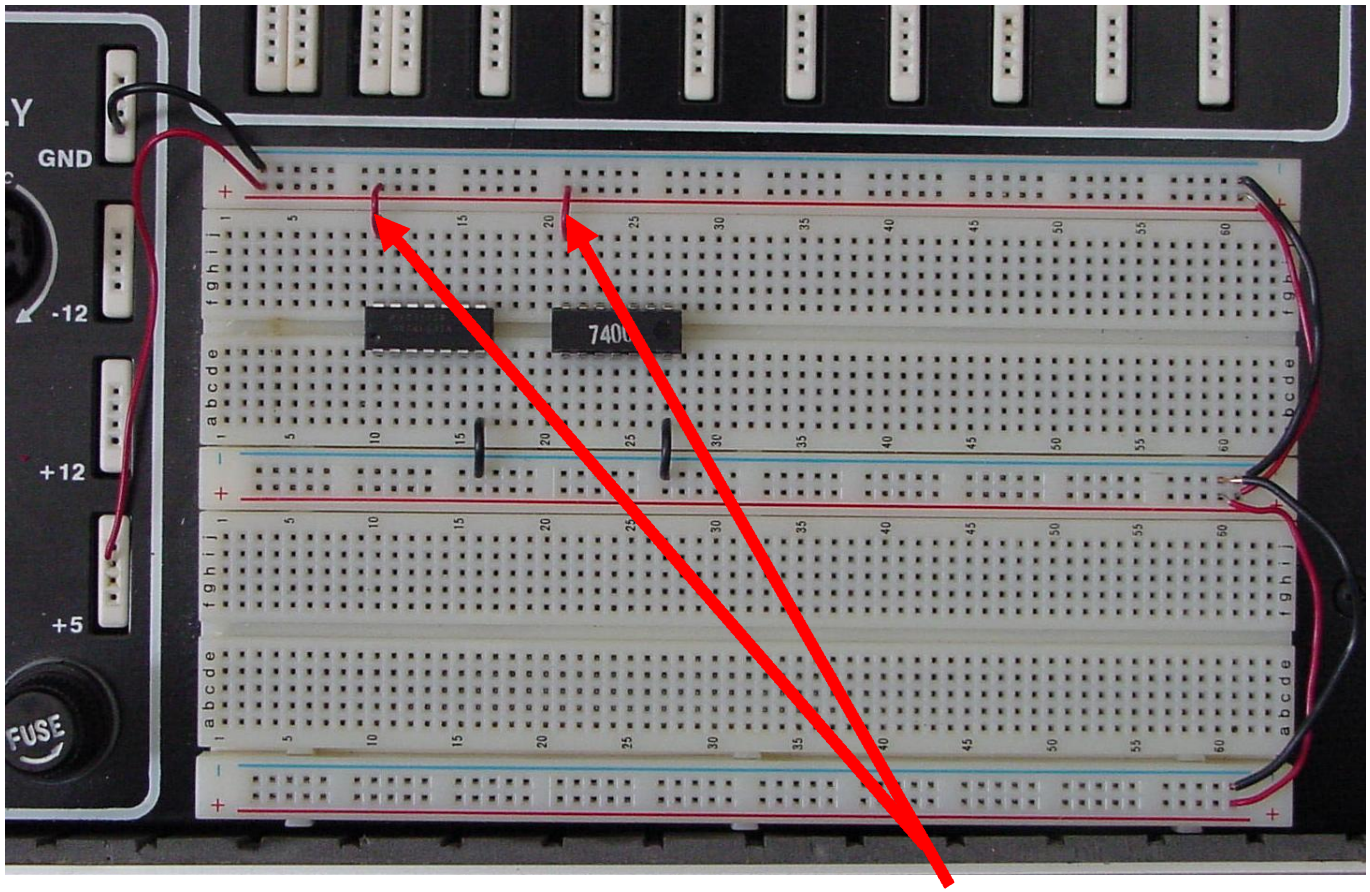


Vertical Runs



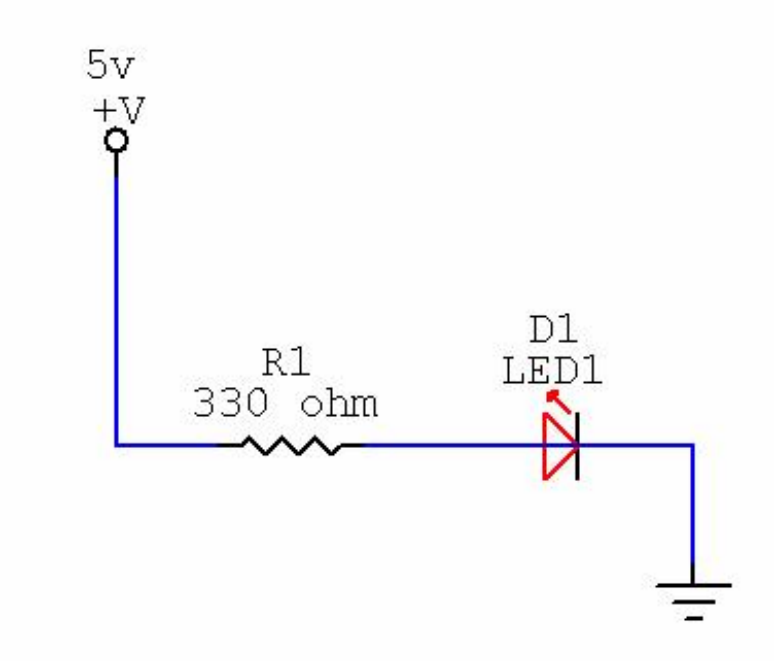
This gap the chip straddles separates the 5 pin run above the chip from the 5 pin run under it.

Connecting Horizontal and Vertical



Electronic devices can be powered neatly and at any location from those power busses.

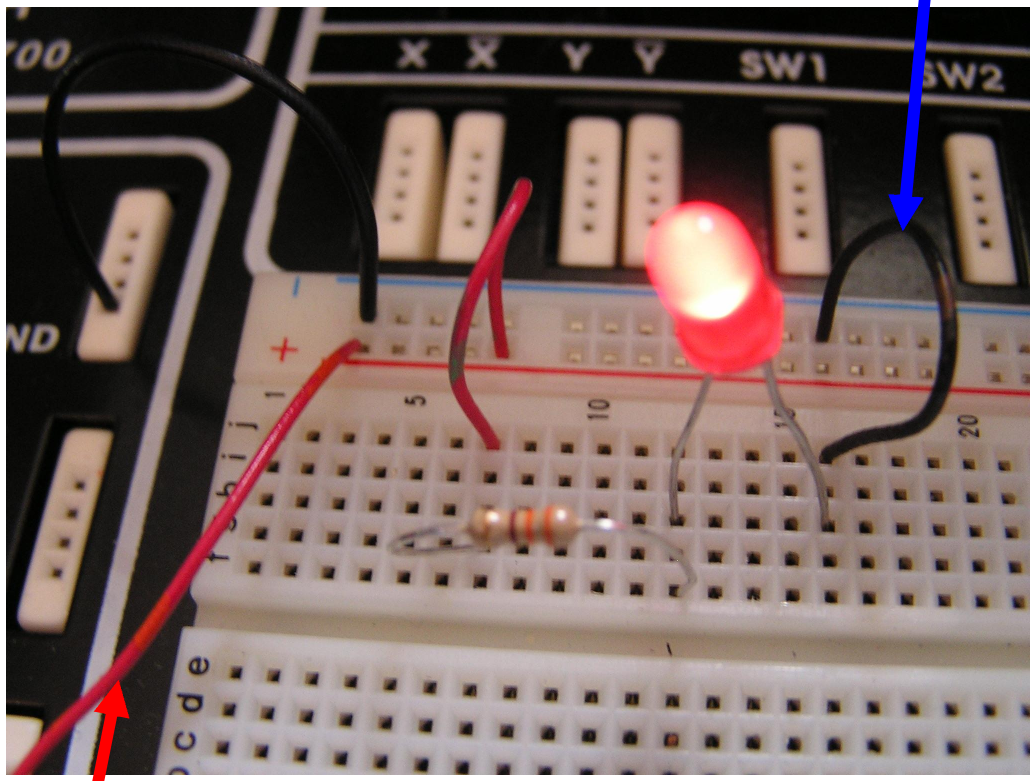
Simple Circuit, Ex. 1



Schematic of Circuit, ex. 1

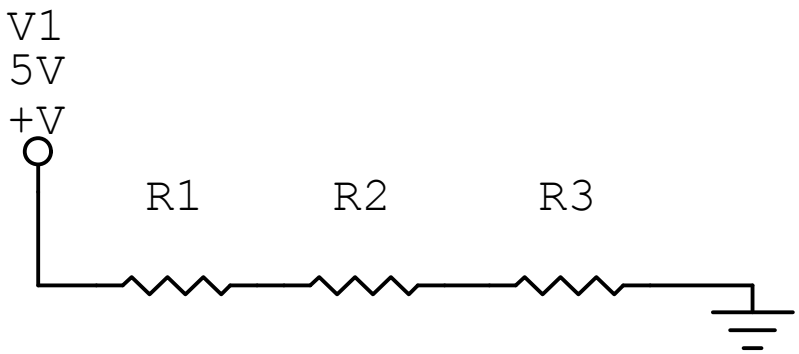
Example 1

Black Wire For Ground
End Of Circuit



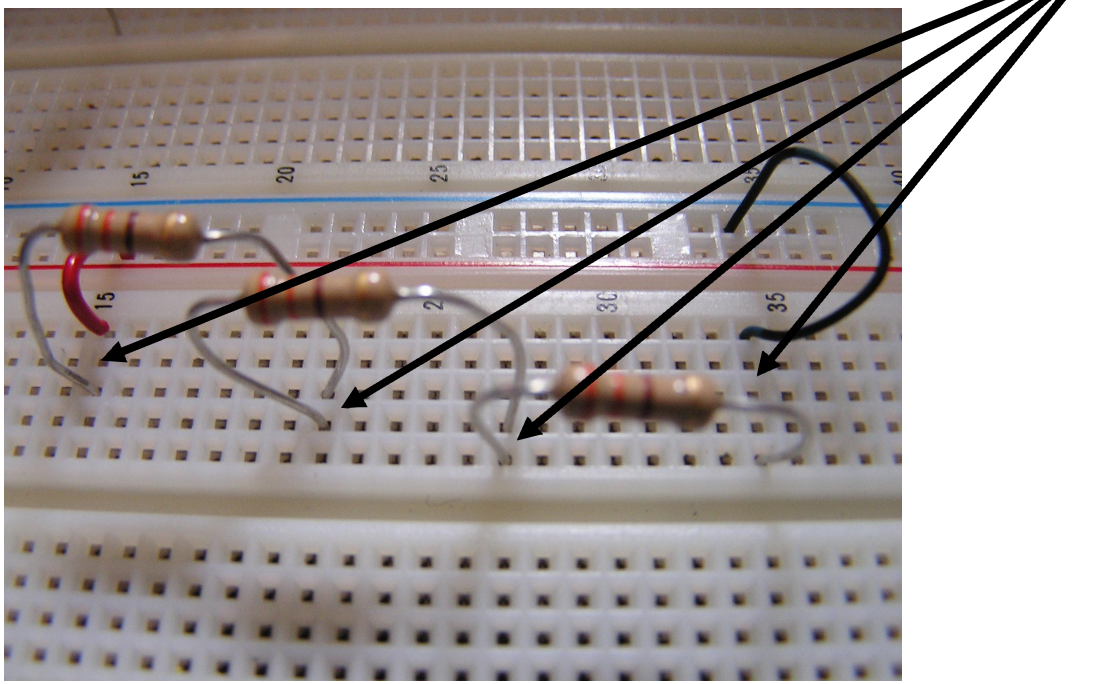
Red Wire For Source
End Of Circuit

Series Resistors, Ex. 2



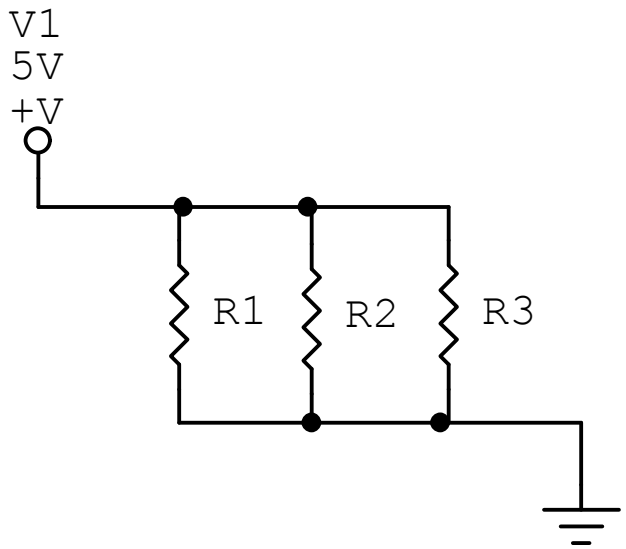
Schematic of Series circuit, ex. 2

Example 2 – Series Resistors



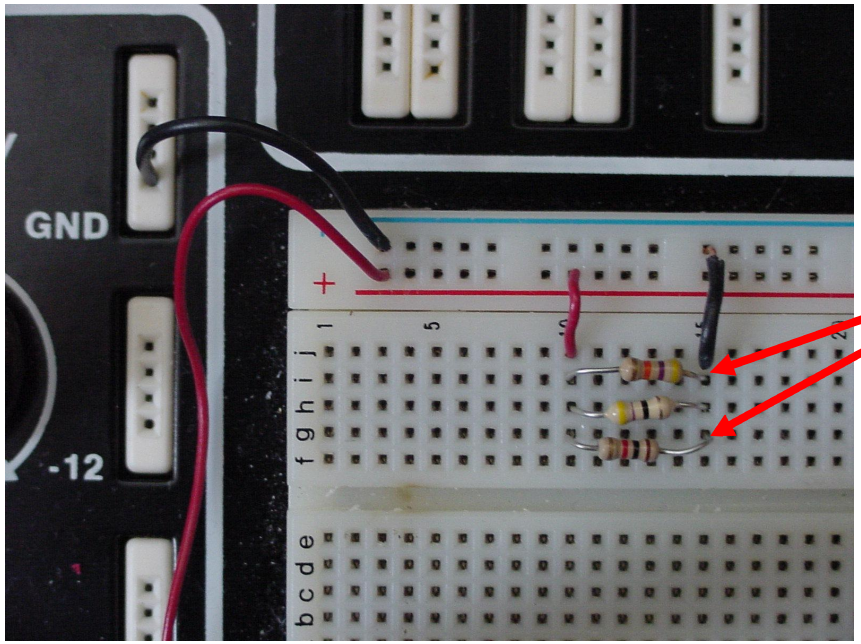
Notice how the ends of the resisters are placed in the group of five to connect them together in series.

Parallel Resistors, Ex. 3



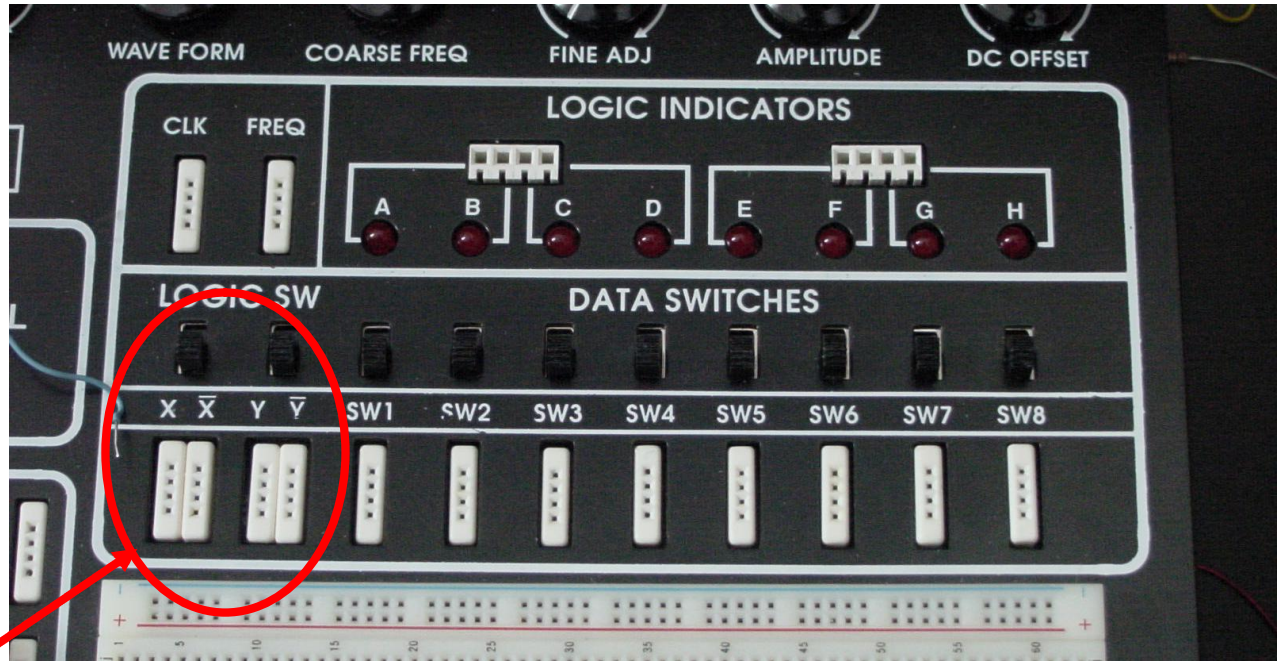
Schematic of Parallel circuit, ex. 3

Example 3, Parallel Resistors



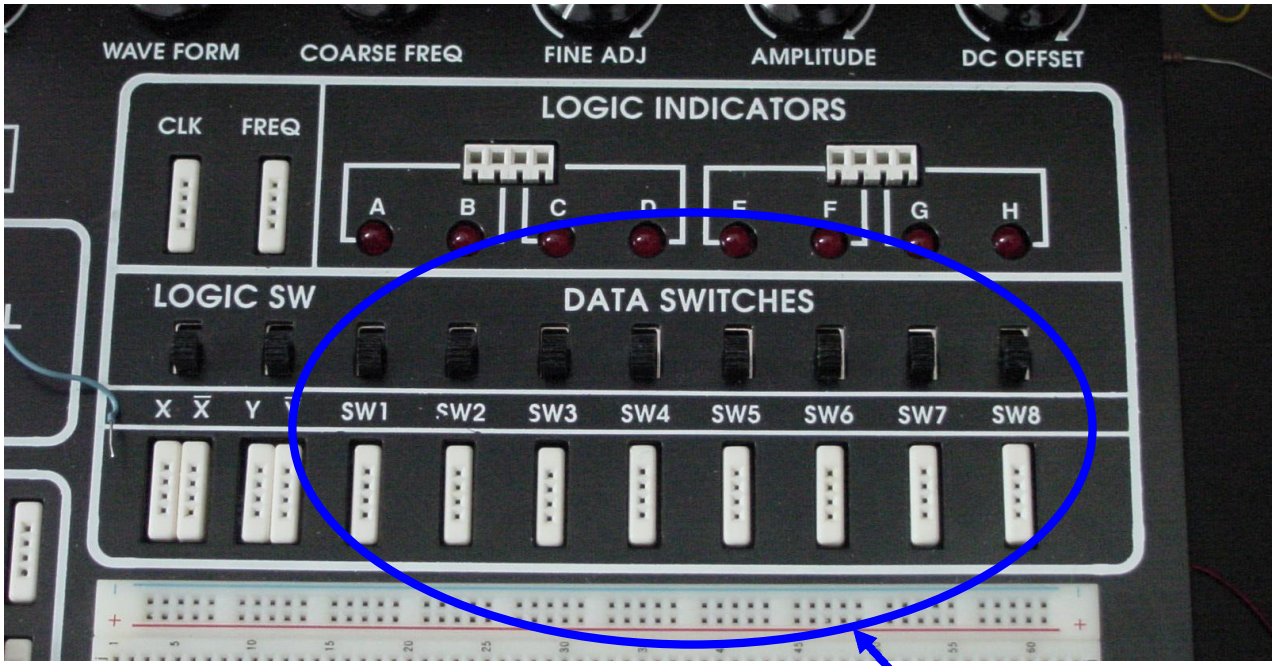
Note how the groups of five are used to create a parallel circuit.

Logic Switches



These logic switches have a set of four connections for a logic level and a set of four connections for the inverse.

Data Switches

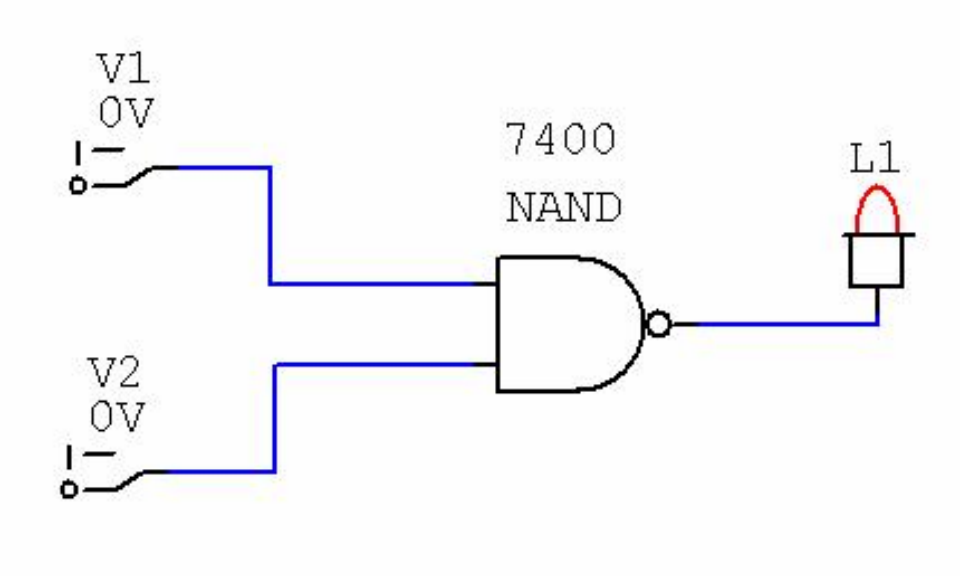


Data switches are used to switch an input from +5 volts to 0 volts. There are eight of them.

Logic Indicators

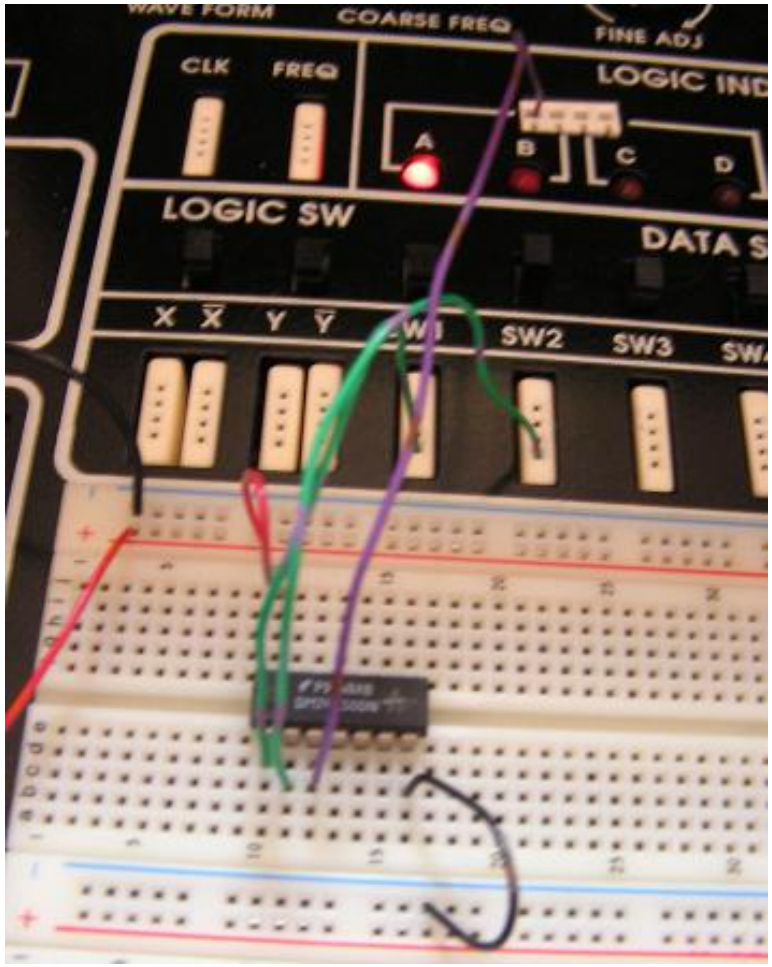
Logic Indicators are quick ways to connect an output to an LED to indicate high and low signals.

Using Logic Switch & Indicator



Schematic of NAND gate, ex. 4

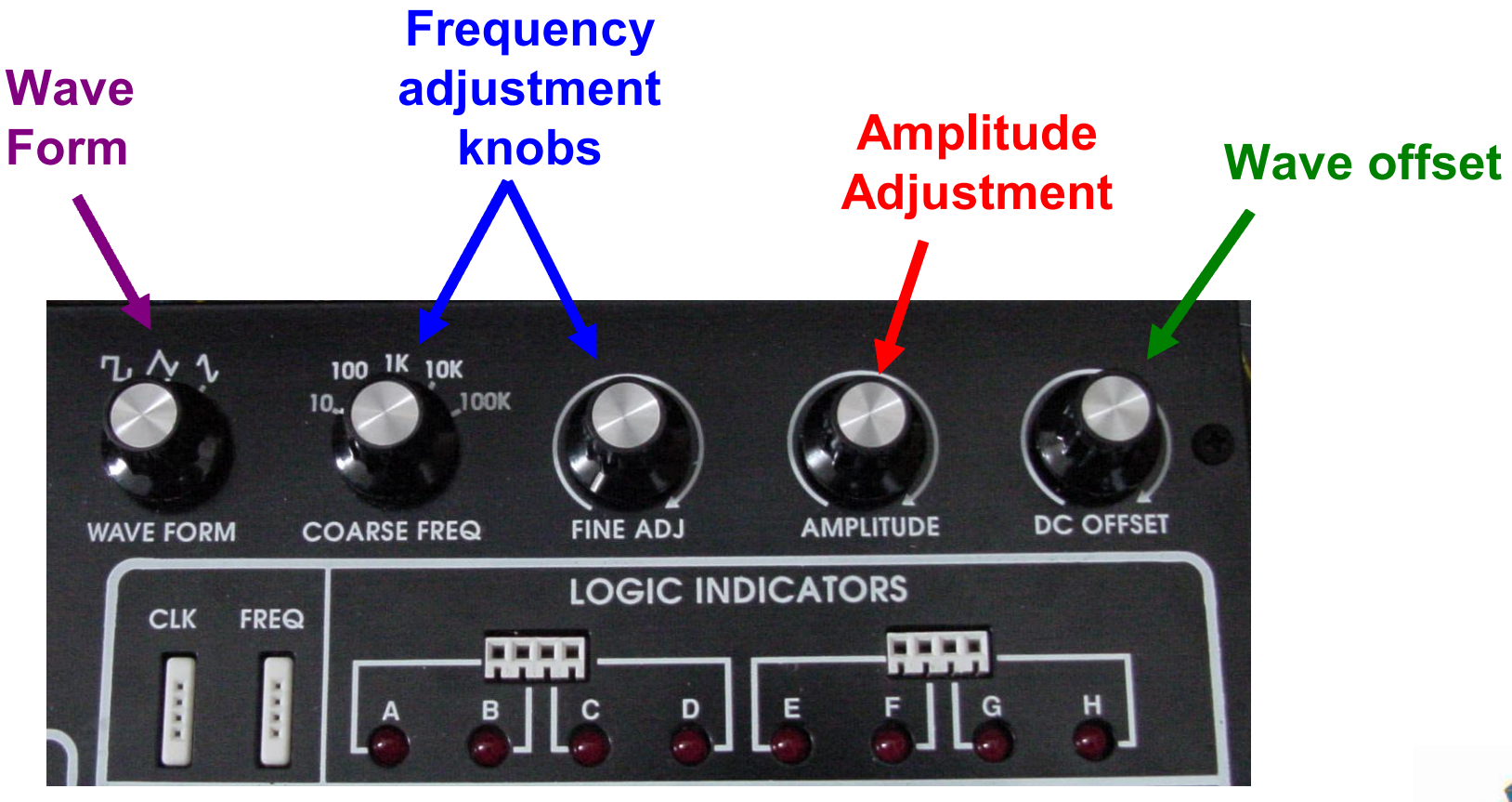
Example 4



Truth Table NAND

A	B	X
0	0	1
0	1	1
1	0	1
1	1	0

Frequency Generator



Frequency Generator

Output Periodic Square Wave only

Output Sine or Saw-tooth Wave

Curriculum Alignment:

Unit 1 - Fundamentals

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