Independent Voltage Sources

An independent voltage source is an energy source that pushes electrons with a constant force or pressure regardless of the load presented to it. In other words, a 1 volt source will maintain 1 volt between its terminals regardless of the load. The symbol for the voltage source and its V-I curve is shown below. The voltage source symbol must be identified with its positive or negative terminal marked and a value or variable for its voltage.



The water analogy of the voltage source shown previously is shown again below. The constant height of the water tank and its volume provides the constant (voltage) pressure. Another water analogy is of a constant torque motor driving a water pump. The constant torque motor applies the same force to the pump, yielding a constant water pressure.

