

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 across its terminals. For example, a 1 volt source will maintain 1 volt between its terminals regardless of the size of resistor connected to it. The symbol for the voltage source and its I-V 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.

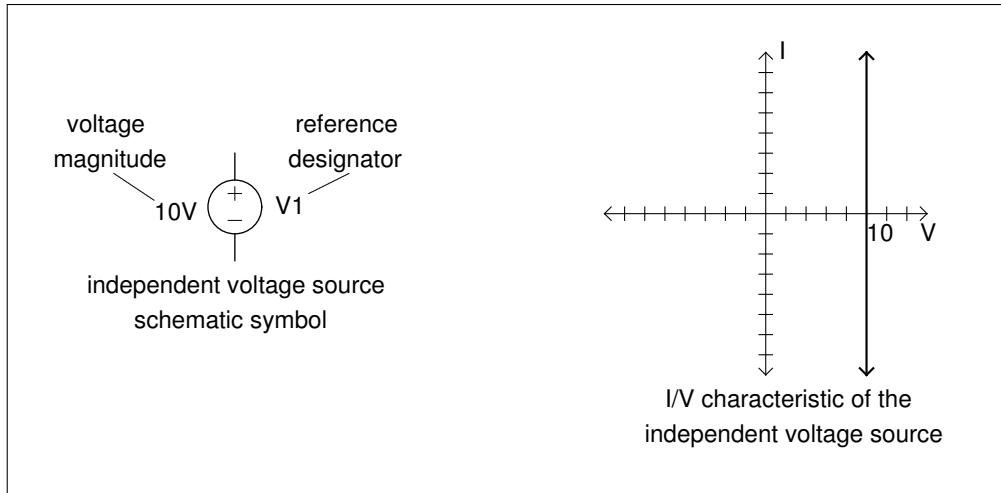


Figure 1: The independent voltage source

A 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.

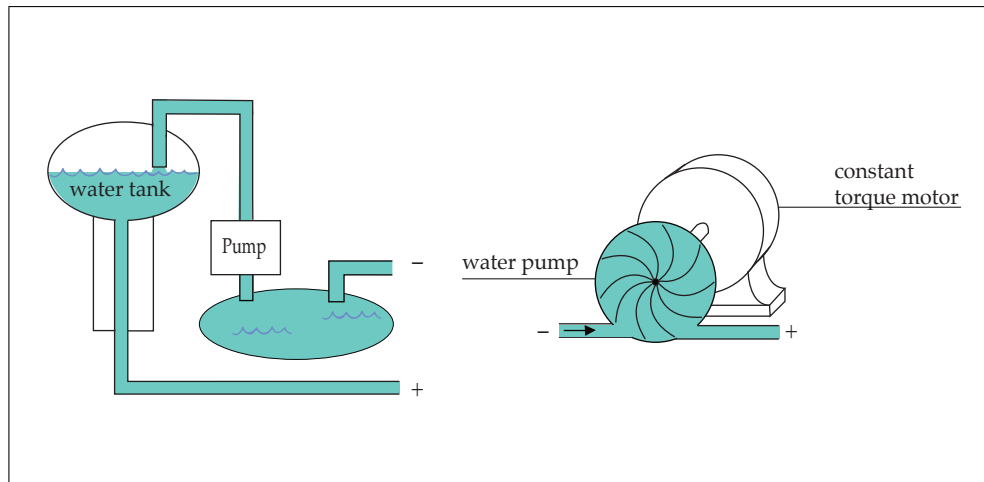


Figure 2: Two voltage source analogies