

Pneumatics vs. Electric Motors:

The Case for Pneumatics

I prefer pneumatics over electrical motors for several reasons:

- **Linear motion (In and Out movement) is easy to achieve with an air cylinder.** This is the kind of motion most often needed for a animated character. Sometimes you need a limited rotational movement, but that can be achieved with a rotary air cylinder. An electric motor would require an expensive and heavy gear case to achieve the same effect.
- **Speed.** A powerful electric motor must operate at a high speed and be "reduced down" with a gear case. Pneumatics is inherently slow and can give you a lot of control in a small space for less money.
- **Power.** For its weight pneumatics will give you much more power in a smaller space. I've made many characters where several small cylinders were placed in a hand for finger movements. Imagine trying to do the same with electric motors.
- **Control.** Simple movements can be controlled with a simple air valve. More complex movements will require an electric control valve. A major amusement park ride will use a central computer to control all the characters at once. Electric motors would require huge circuits to control all the electrical power.
- **Safety.** Compressed air is much safer than electricity in a wet environment. You can trip over an air line, but you won't be electrocuted by one, which brings us to another important point: always use low voltage (24 volts or less) as a control voltage.

Special Effect Supply Co.

164 East Center * North Salt Lake UT 84054
Phone: 801-936-9762 * Fax: 801-936-9763
sales@fxsupply.com * www.fxsupply.com