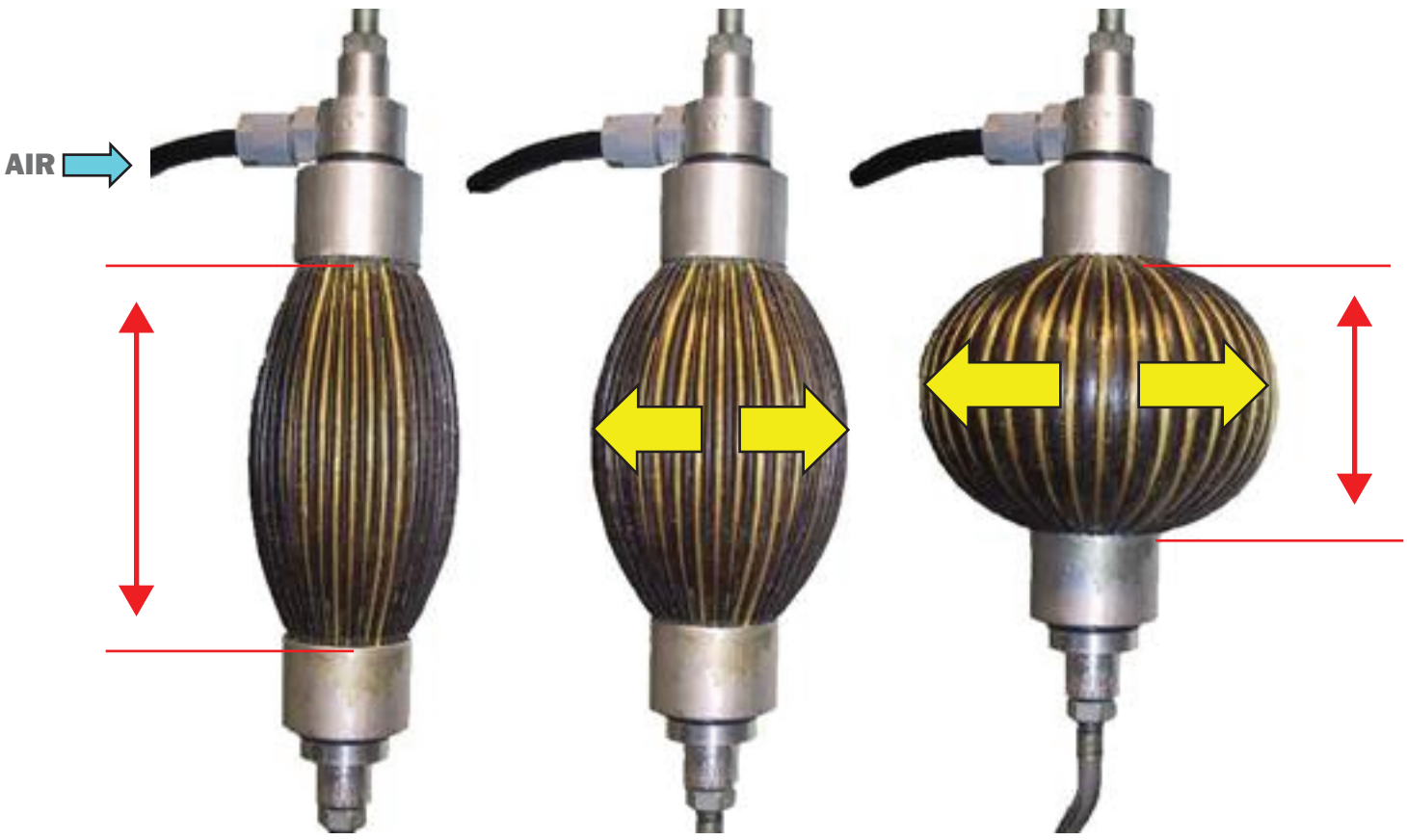
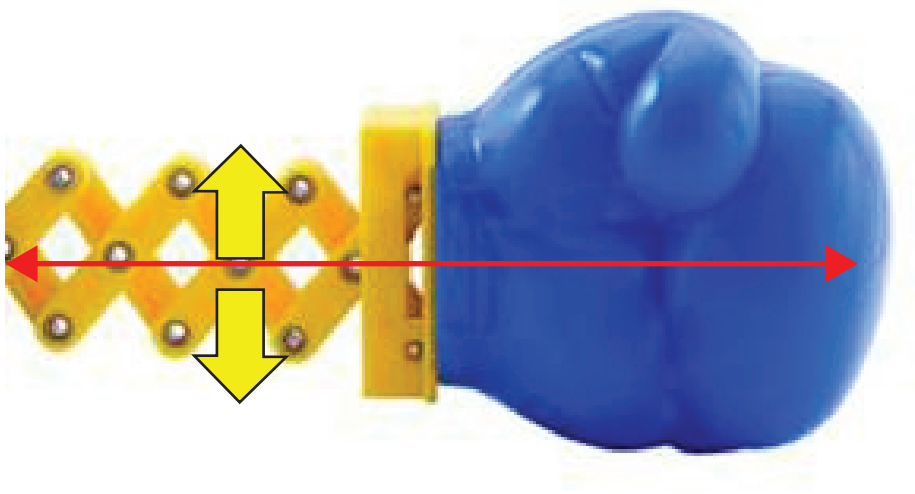
Air Muscles

How does it work?

Similar to a real muscle minus the charley horse- it contracts by thickening. Said in a different way, it gets shorter in length as it gets wider in diameter. And allowed to stretch back and shrink in diameter when the air is let out. (See below)



It works similar to a pantograph. A what? Like lazy tongs, or scissor jack, or that toy boxing thing...



Unlike a real muscle it's made from a special balloon (rubber tube) surrounded by a woven reinforced sleeve.

Balloon (rubber tube)

Balloon wrapped in woven material

Air is pumped into the balloon, causing it to inflate and thicken (grow in diameter).

These types of muscles can shorten by as much as 40%.

And, unlike a real muscles these little devils can be tugged on repeatedly and still exert forces over 400 times their weight.
(Just for reference pneumatic actuators exert about 16 times their weight and not bragging but my arm muscles do approximately *800 times their weight.)
*In a zero gravity environment

These muscles also work when twisted, bent around corners, or under water. Try doing that at home.

Now it's true that current applications of air muscles are mostly found in robots, but there are certainly other applications where expanding balloons are also used. Locksmiths unlock car doors with help of a balloon wedge? They even make special balloons that inflate with water and help pry up agitators in older washing machines (agi-tamer).

So, need a yank or a tug in your project? Then maybe It's time to embrace a muscle.
An Air muscle.

Wanna see it in action? Ask for a demo.