



APPLICATION NOTES

WHO'S AFRAID OF THE BIG, BAD PNEUMATIC ACTUATOR?

The next time you see the jaws of an alligator figure open and snap shut or a haunted house monster reach for you as you pass by, chances are you are seeing a pneumatic actuator in action.

There's also a very good chance a retaining ring is being used to hold the important components of this assembly together, making all that scary action possible.

Pneumatic rotary actuators are commonly used to convert compressed air pressure (in the form of a cylinder stroke) into an oscillating rotary motion. Like other pneumatic components, they are durable, offer simplicity and high force for their size, and can operate in hazardous environments.

A common actuator design consists of a piston with teeth on the underside. These mesh with complementary teeth machined along the circumference of a shaft. Compressed air is forced into one side of the cylinder which moves the piston in a linear direction, engaging the teeth of the shaft, thus converting it to a circular motion. This motion can be in a clockwise or counterclockwise direction depending on which side of the actuator the compressed air is introduced.

Both of these movements can be used to create a "back and forth" motion for applications requiring such movement. So when the arm of the simulated executioner lets his ax fall, the 180 degree movement of the ax from a vertical position to the neck of the hapless victim then back again can be accommodated through use of a pneumatic actuator.

Pneumatic actuators are used extensively in a variety of industrial applications as well. Some examples include powering brushes to clean pulp from rollers in the paper making process, causing targets to move during combat training for soldiers, lifting and lowering safety gates around part stamping machine operations.

The smooth turning of the shaft is assured through the use of a bearing, which in some applications can be subject to a significant axial load. In the actuator shown, design engineers selected an internal retaining ring to accomplish the important task of bearing retention. This is a logical choice since, like the actuator itself, it is made to function in tight spaces and to reduce weight and costs associated with other more costly fastener methods. The ring requires machining a simple groove, which can be accomplished with other production processes, further adding to the savings.



This pneumatic rotary actuator uses retaining rings on both the front and rear of the application in order to control the oscillating rotor.

For more information on all of our retaining rings or your own application uses, and to talk to one of our Technical Engineers, email us: sales@rotorclip.com

Or visit our website to view our entire product line and to request free samples.