Mechanisms: Pneumatic Product

Curriculum Coverage:

Design

- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make

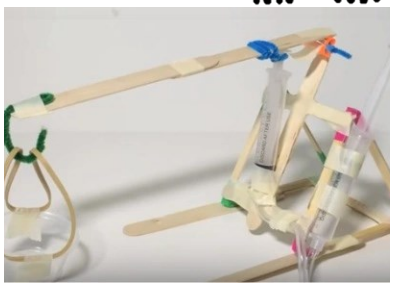
- Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

Evaluate

- Investigate and analyse a range of existing products
- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- Understand how key events and individuals in design and technology have helped shape the world

Technical Knowledge

- Apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]



Key Vocabulary

Pneumatic	Using the power of condensed air to make something move.
Criteria	A standard or rule for creating and evaluating a product.
Prototype	The first example of a product to help develop final product.
Target audience	The intended person or thing who uses the product.
Purpose	The intended result or aim.

Key Facts:

- Pneumatics use air pressure to create movement and are used in many real-life machines (brakes on buses, factory robots, fairground rides, and dentist's drills)
- Syringes and tubing can be used to make simple pneumatic systems that push or lift objects.

Key Skills:

- Explore a variety of products using pneumatic systems, identifying the key features and target audiences which they suit.
- Design a product based on a pre-set criteria and target audience, using research to influence decisions and ensure product is fit for purpose.
- Create complete prototypes based on designs, testing key features and evaluating before re-designing for a final time.
- Create a pneumatic product as well as a stable structure which the product can be supported by/tested with.
- Test designs and make improvements based on the success of their original model.
- Evaluate the effectiveness of their model and others based on a pre-set criteria.

We should already know:

- Prototypes are required to test designs.
- Wheels and axles are mechanisms which allow objects to move smoothly.
- Some mechanisms work alongside others to ensure an object can move.

Possible experiences:

- Product showcase
- Pneumatics workshop