Tasks

# Pneumatic platform lift

## Construction task

Build the scissors lift table model according to the building instructions. Ensure that the entire mechanism is stable, yet moves easily. All axles should be cleanly “flush” with one another, and nothing should be tilted.

First use just a single pneumatic cylinder. We will add a second cylinder in different ways in the experiments.

## Topic task

1. What is the heaviest weight the platform lift can still lift with just one cylinder? For the sake of simplicity, use different objects that you have on hand and place them on the platform lift.
2. How great is the “stroke”, or the difference in height between the highest and lowest position? Use a ruler or tape measure to measure this.
3. To increase the force, install two cylinders beside one another so that they are exercising force in parallel.
4. By what factor did the force with which the platform lift is driven increase?
5. What is the heaviest weight that can be lifted now?
6. How does this change in the design impact the length of the stroke?
7. To increase the path of travel and thereby the stroke, install two cylinders in sequence.
8. How does this affect the available force?
9. How long is the stroke now?
10. Why is the stroke not twice as long as with one cylinder?
11. Why can exhaust throttling be important with this kind of platform lift?

## Experimental task

Use your hand to shift the horizontal slide element in defined steps (for instance by 5 mm each time) and measure the stroke which can be achieved (with the zero point in the bottom position of the platform lift). Use this information to create a diagram with the path of travel on the x axis and the stroke on the y axis.