

PROPULSION – ROCKET ENGINE

MED 08.09



Material

Item-no.	Qty.	Description
DM300-2A	1	Dynamics trolley, demo, 50 g
DM340-3B	1	Cartridge adapter
DM340-3C	1	CO2-cartridges, set of 10

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Purpose

To demonstrate the propulsion due to outflowing gas

Preparation

Place the cartridge adapter on the trolley.



Remove the red screw from the adapter and place a CO₂-capsule in the cavity, the cap of the capsule should face towards the drilling.



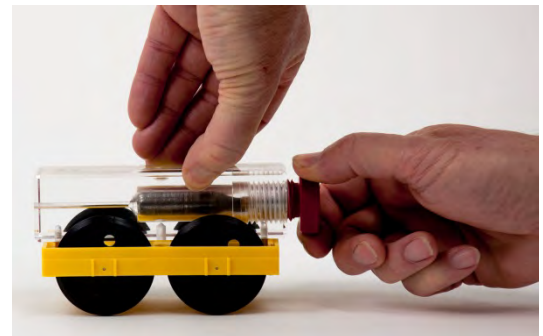
Screw the red screw in until the tip (on the head of the drilling) pushes against the cap of the capsule.



Experiment

Place the trolley together with the attached adapter on a smooth surface. The attachment is held in place and the screw is now tightened **quickly and firmly**.

As soon as the gas escapes make another partial turn (so that the cap of the cartridge is completely pierced) and then let go of the car immediately.



Result

The outflowing gas results in an acceleration of the trolley.

This experiment should also make it clear that a rocket does not push itself away from the ground. The simple rule is: "Gas" outflow - the cartridge (rocket) is accelerated in the opposite direction.

Note

On a smooth horizontal surface a distance of 6 to 8 m should be reached with the trolley. Thus it is recommended to carry this experiment on the floor of a big room.

Hint

You can also try to make quantitative considerations by determining the mass of carbon dioxide by weighing, estimating the force from the acceleration and then estimating the outflow velocity.