

Building the rocket launcher

Materials

- 3 union elbow fittings
- 1 union fitting (with a pipe coupling at one end, and an internal screw-thread to connect to the pipe plug at the other end)
- 1 ball valve
- 1 tyre valve
- 1 pipe plug
- 5 copper pipes Ø22 mm: 65 cm, 50 cm, 40 cm, 30 cm, 15 cm (200 cm in total)
- 1 low-cost air compressor or a bicycle pump with a built-in pressure gauge

It is not necessary to use these exact measurements, but it is important to check that all the parts fit together (see image).

Procedure

1. Insert the copper pipes into the union elbow fittings (B, C and E) and the ball valve (D) and tighten the connections with a spanner.
Do not tighten the third union elbow fitting (E) fully, as you will need to adjust the elevation angle when launching the rocket.
2. Screw the straight union fitting into the end of the launcher (A).
3. In the pipe plug, make a hole with the same dimension as the tyre valve, and insert the valve; this is where you will attach the air compressor to the launcher. Make sure that it fits properly, so that pressure can be maintained within the launcher.
4. Screw the plug, with the tyre valve inserted, onto the union fitting (A).

Supporting material for:

Rønningen JE, Vestnes F, Sheth R, Råken M (2012) Sky-high science: building rockets at school. *Science in School* **22**: 36-41.
www.scienceinschool.org/2012/issue22/rockets

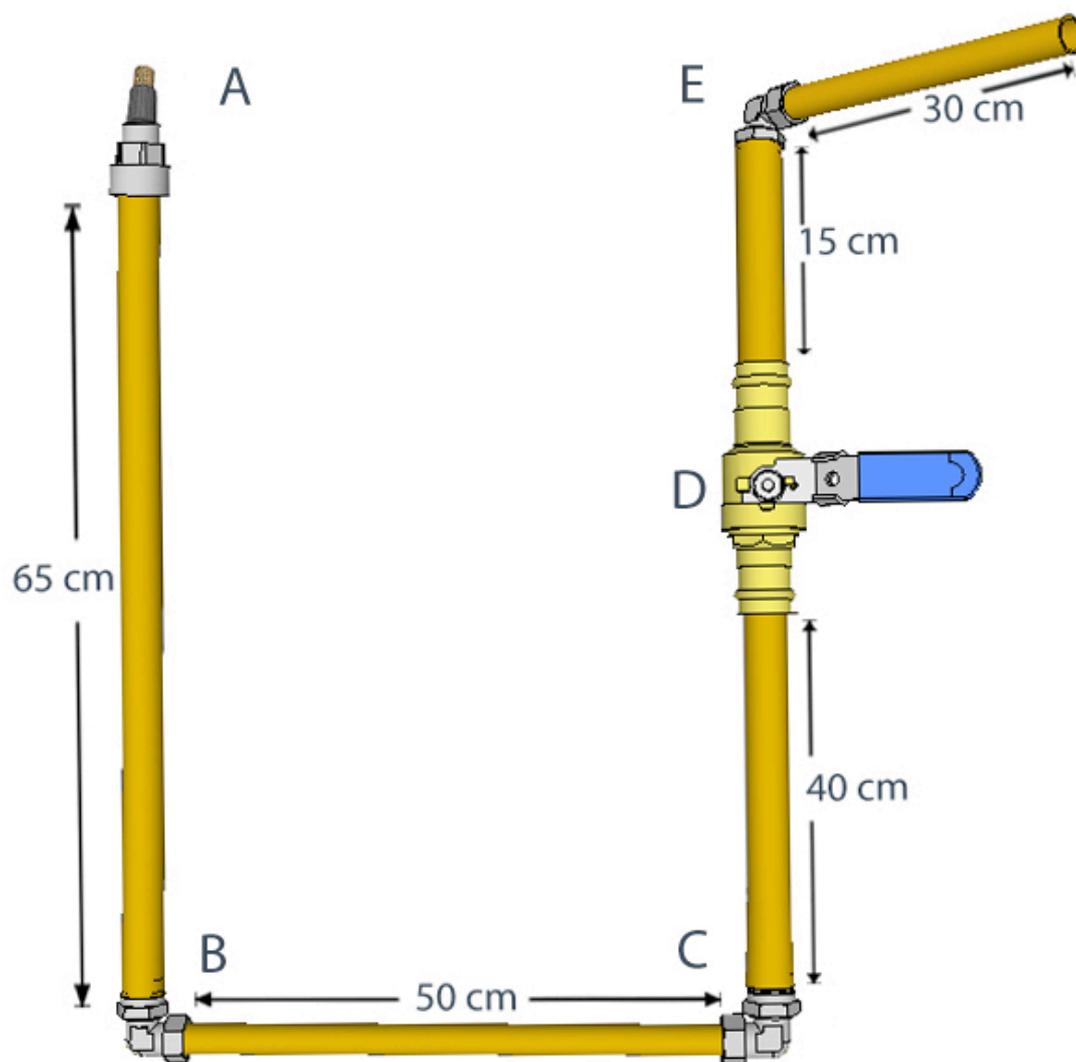


Figure 1: Assembling the rocket launcher. A: connection of the straight union fitting, plug and tyre valve; B: elbow union fitting (well tightened); C: elbow union fitting (well tightened); D: ball valve, to release the pressure within the launcher; E: third elbow union fitting (fairly tight but still easy to adjust)
Image courtesy of Frida Vestnes / Team Space Camp

Acknowledgement

These instructions were provided by the Norwegian Centre for Space-Related Education (NAROM), and translated by Team Space Camp.

Supporting material for:

Rønningen JE, Vestnes F, Sheth R, Råken M (2012) Sky-high science: building rockets at school. *Science in School* **22**: 36-41.
www.scienceinschool.org/2012/issue22/rockets