

## Water Rockets

From [2<sup>nd</sup> Kirkham](#) Scout Group.

Simple and brilliant. Everyones' favourite item at events.

Click on picture for larger version.



Water Rocket launchers



Setup



Adaptors



Connection

### Dimensions (mm) & Instructions for Making

Pipe - 1000 long, 103 inside diameter, 110 outside diameter

Wooden spine - 1210 long x 95 wide x 44 thick (giving a 210 free section to push the bottle into the pipe)

Tape pipe to wooden spine using 54 wide Duck Tape at 3 locations shown

Legs - 1000 (15mm copper pipe or anything suitable). Flatten end of tube, drill hole and screw into wooden spine 260 from the top (highest point). Add rubber feet (e.g. walking stick rubbers) if wish.

Foot pump support board - Wood or MDF 608 (2ft) long x 200 wide x 14 thick or similar (any scrap board will do). Drill 4 holes near each end of the pump to thread a cord through. Tighten cord and knot. Securing the foot pump to a wooden board stops it being bent and kids falling off it

Adaptors - a cork through which a plastic lilo inflator (slim cone shape) has been inserted with its wide end attached to a foot pump.

### Instructions for Use

Take a 2 litre lemonade bottle. Fill it 25% (only) with water. (Too full and it will balloon along the ground)

Into its open mouth jam the cork adaptor as tightly as possible

Push the bottle up the pipe that has been securely aimed somewhere safe

Pump away and it self launches at about 20-25psi - flies about 60-80ft high then tumbles slowly and safely down where we normally have Beavers and Cubs waiting to catch it. It

takes an adult about 4 or 5 big pumps, Beavers about 10 short pumps to launch.

## Points to note

It's safe as long as no one is allowed to peer down the drainpipe.

It's fast to relaunch - 2 to 3 goes a minute.

You don't need many bottles.

Some smaller bottles have the same size neck and fly well

Corks are not so easy to get . Build up a supply. Plastic corks tend to be too narrow. Rubber bungs of the right size are rare. Corks of cork are good though some may leak slightly - only about 10% seem to fit.

We used bicycle valves for a long time as adaptors - got through a lot. One day we ran out of them and a Scout used the lilo adaptor in desperation. It is far better, the air goes straight through into the bottle and the adaptor lasts and lasts and lasts.

The adaptors are normally included with a new foot pump. Morrisons' pump is only £3-49.

Will probably need to replace a pump about every 2 days of full use. The piston bends eventually with the wear and tear. This is brought on partly by the retaining cords gradually slackening. They need tightening up every so often.

The kids get their feet wet which everyone likes.

The ground will get soggy

Cost : pump with adaptor ~£3-50. + cork (free) + bottle (Free) . Just add drainpipe ~£5 or less ??, In fact, the wooden spine and legs are optional extras - say, around £10 - 15 total + paint. Best £10 - 15 we have ever spent. We have 2.