

Water Rocket Launcher Instructional **Guide**



For the launcher you will first need, the Gardena profi maxi flow connector set with the g1(33.3mm) nozzle, a $\frac{3}{4}$ inch (19mm) hose connector, a $\frac{1}{2}$ inch(13mm) hose connector, a male-to-male hose link, half a meter of 19mm hosepipe, 5 meters of 13mm hosepipe, 6 meters of paracord, a Schrader tyre valve, a 13-20mm metal hose clamp, a 21-44mm metal hose clamp and 4 tent pegs.

For the non-return valve, you will need epoxy, a Dunlop style tyre valve, 8mm aluminium tube and 8mm inner diameter washers.

Finally, you will need some wood, any straight cuts will do, 4x4cm or 4x12cm for example and some 10 cm wood screws.

To create the feet for your launcher you need to cut two 44cm lengths of wood. I found that the 4x4cm wood works well for this.

After that, you need to create the legs that the platform for the launch nozzle will stand on. You need to cut two 21cm lengths of the 4x4 cm wood.

To create the platform for the launch neck, you need to cut one piece of 4x12cm wood that is 30 cm long.

For the last bit of the launcher, you will need to cut a square piece of 4x12cm wood and then cut it diagonally from corner to corner. These will act as braces for the legs of the launcher. Start by screwing the legs of the launcher platform onto the centre of the feet, using a screw straight through the bottom.

Then to fix the launchers nozzle platform to the legs, use a screw either side straight through into the top of the legs.

Place the brace pieces against the legs on alternating sides and then screw them in sideways through the leg and through the bottom of the feet to secure them in place and keep the legs sturdy.

Drill a 6mm hole through the feet at each corner of the launcher to allow you to use tent pegs to secure the launcher to the ground for extra safety.

Using a 38mm hole cutting drill bit, make a hole in the launch platform. This is where the Gardena profi connector will sit. Either side of this hole, drill two holes 6mm in diameter for the launch pull strings.

To make the deflector for the pull strings, screw one of the long screws through the leg, then cut a length of the aluminium tube to fit between the legs. Then after that screw another through the other leg to clamp the tube in place, creating a rolling bar between the legs. To create the non-return valve for the pressure system, you will need to cut an 8mm piece of the aluminium tube to act as a sleeve for the valve to fit into the male to male connector. Use epoxy to stick it in place, then stick the washer on top of that to act as a stop to prevent the valve from falling through the connector.

Now, slip the Gardena profi connector through the 38mm hole drilled on the launch platform, if it is a loose fit wrap with a layer of electrical or duct tape to create a solid fit. Now insert the 19mm hosepipe and screw the connector to clamp it down, on the other end of the 19mm hosepipe you need to attach the $\frac{3}{4}$ connector and clamp it onto the hose. Then insert your non return valve into the male-to-male coupler and insert it into the $\frac{3}{4}$ connector and then on the other side attach the $\frac{1}{2}$ connector to create a pipe size step down.

Now, insert and tighten down the 13mm hosepipe in the $\frac{1}{2}$ coupler. At the end of the 13mm hosepipe, insert a Schrader valve wrapped in electrical tape to ensure proper fit and then use the 13-20mm metal hose clamp to make it airtight and tighten it as much as possible.

Create two equal lengths of the paracord and feed them through the holes drilled earlier and then tie them on opposite sides of the 21-44mm hose clamp and then tighten that down onto the release neck of the hose connector so when pulled the nozzle will release. Finally feed the paracord under the metal deflector made earlier to enable you to release the rockets from a safe distance.