

## Setting Up the SFB Set

The dropController SFB Set is everything\* you need for Shoot From Below water drop photography.

There are a couple of things that you may want to add to secure the bottom block and nozzle.



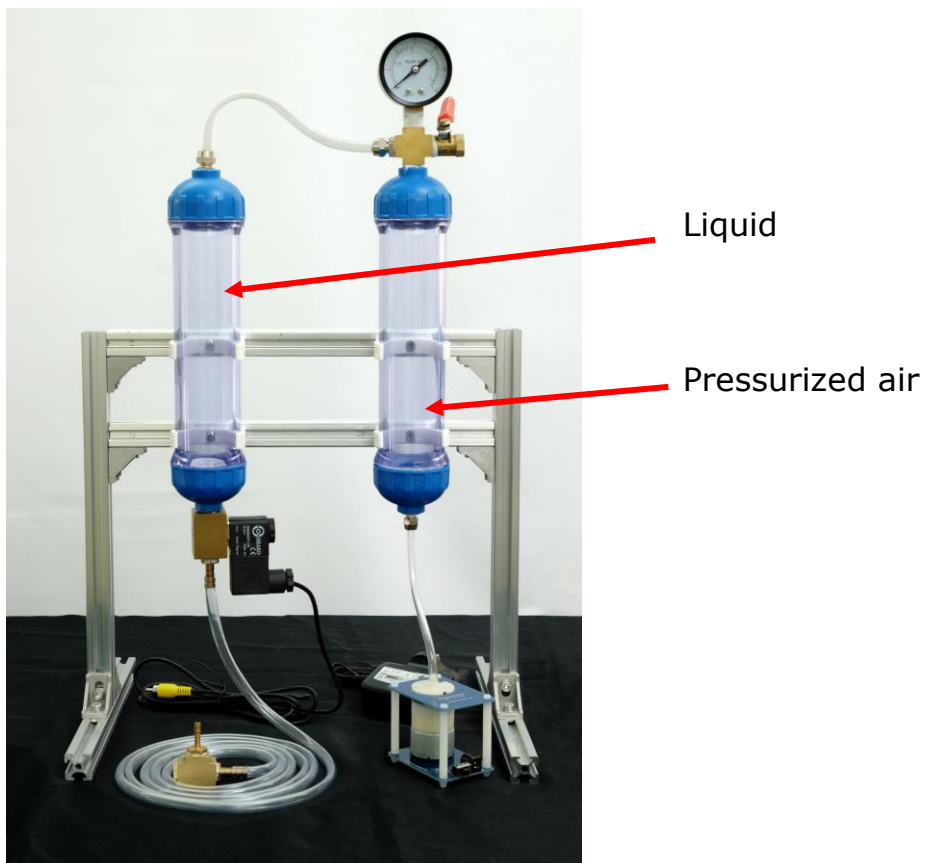
*4 x bottle clip not shown*



Here is the SFB Set on a small 2020 aluminum frame. The frame is not included in the set.

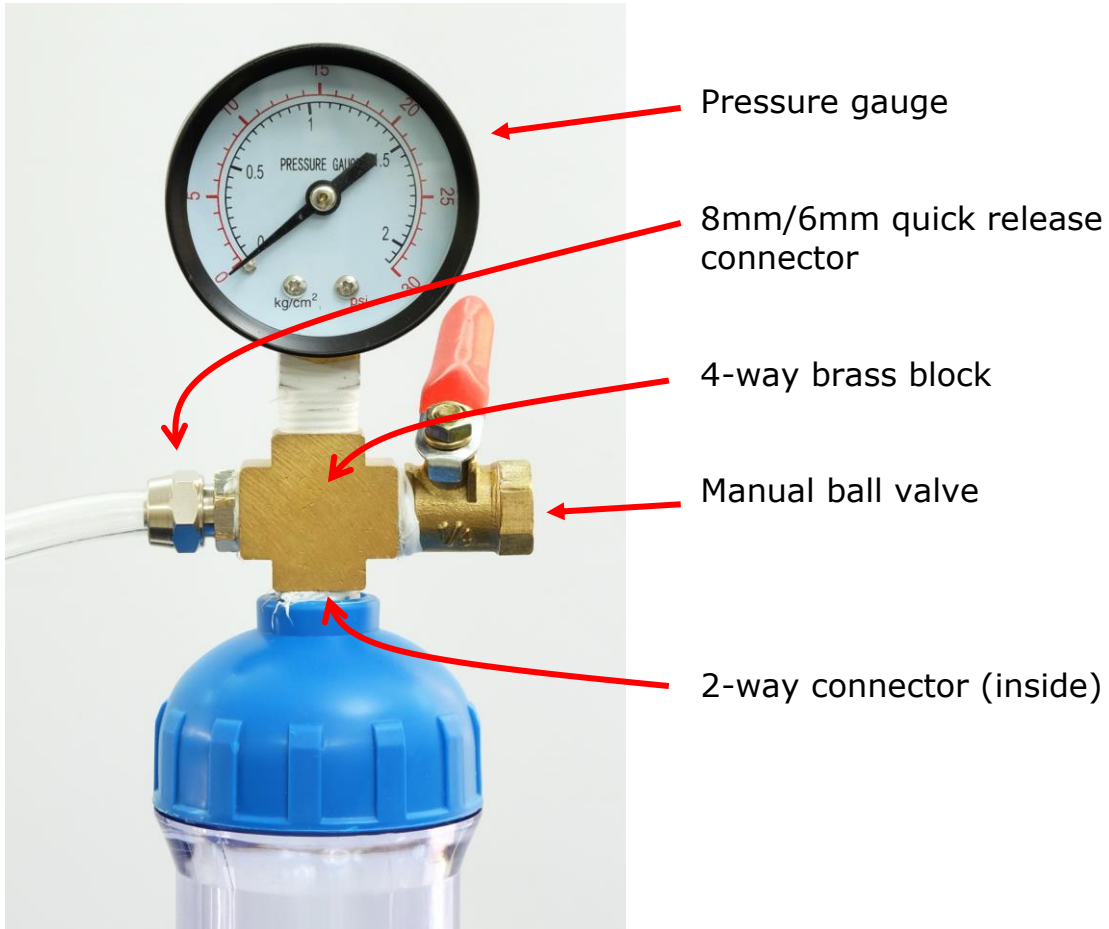
## Bottles

The set includes two bottles, one to hold the liquid and one that acts as a pressurized air container. The second bottle acts as a mini reservoir and helps keep the pressure constant when drops are made in quick succession.



The quick release connector on the liquid bottle allows the bottle cap to be easily removed for filling and cleaning.

## Pressure Gauge, 4-Way Block, Ball Valve

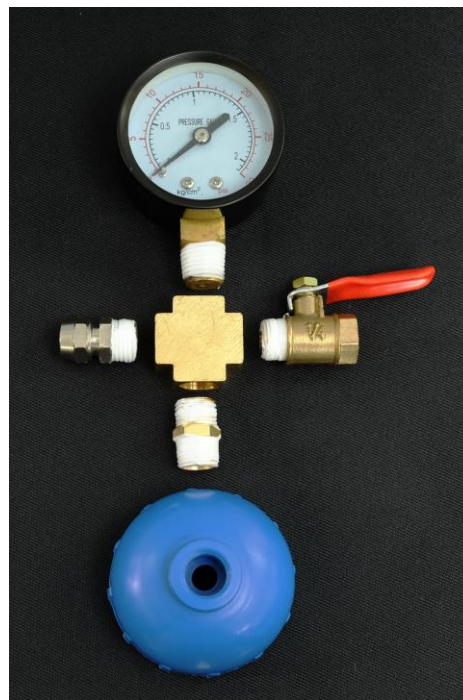


The pressure gauge displays pressures from 0 to 30 psi.

## Setting up the pressure Gauge, 4-Way Block, Ball Valve



The 4 way block connects everything together.



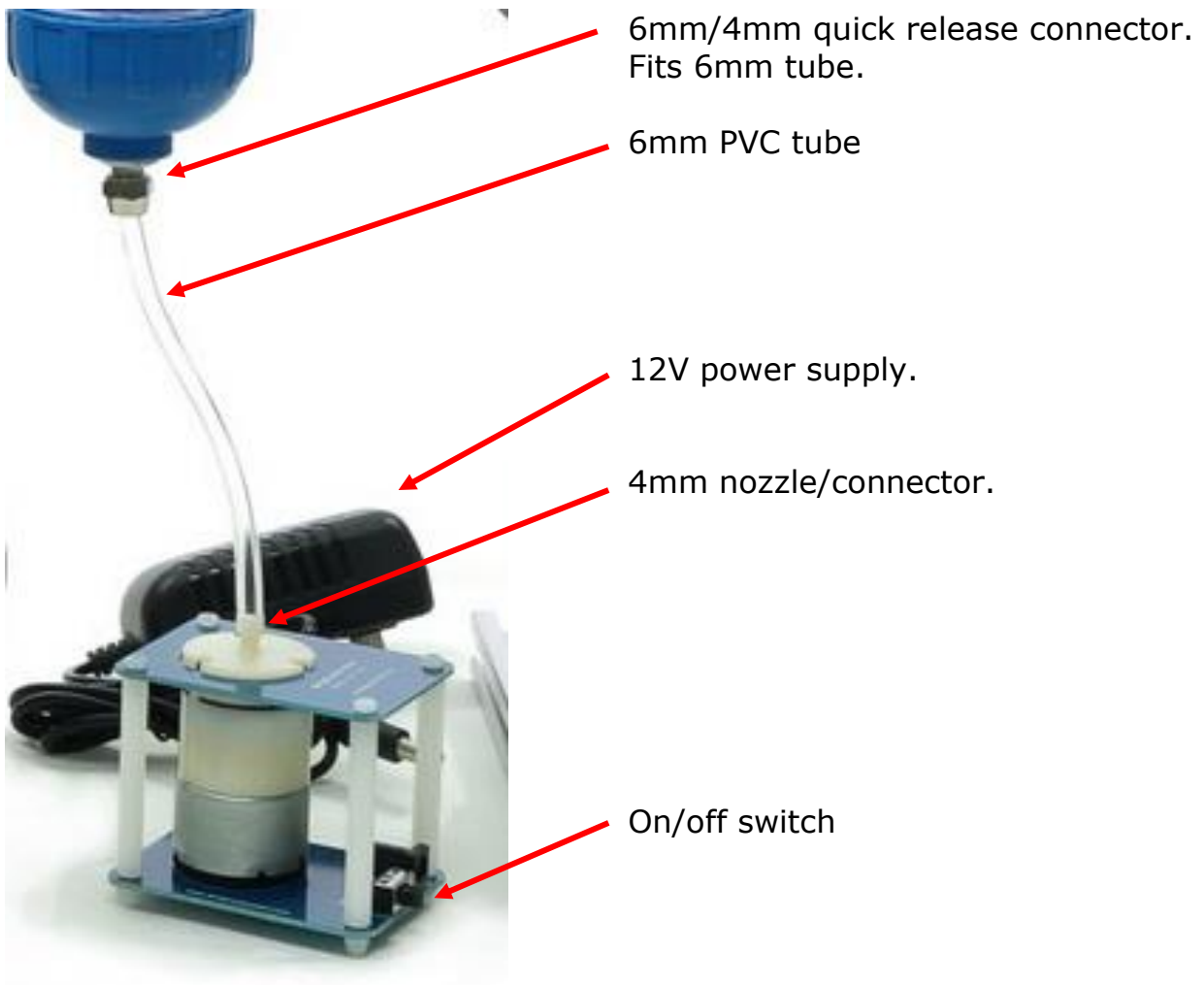
Add Teflon tap to all threads. Use a little more tape on the part that connects to the bottle cap.



It is unlikely you will get everything perfectly lined up.

The gauge may not be facing perfectly front and the ball valve handle may not be at the top.

## Air Pump



The air pump is able to operate from 6v to 24v. When used for SFB 12v is recommended and a 12v power supply is provided in the kit. The type of power supply plug provided will depend on the country of use.

When used at 12v the pump produces around 10psi of pressure. This is enough pressure to hit most ceilings with a jet of water.

The pump has a 4mm connector that fits 6mm PVC tube and 1 metre of suitable tube is supplied in the kit.

The connector on the bottom of the bottle is a 6mm/4mm quick release connector. Using the quick release connectors is covered a little later.

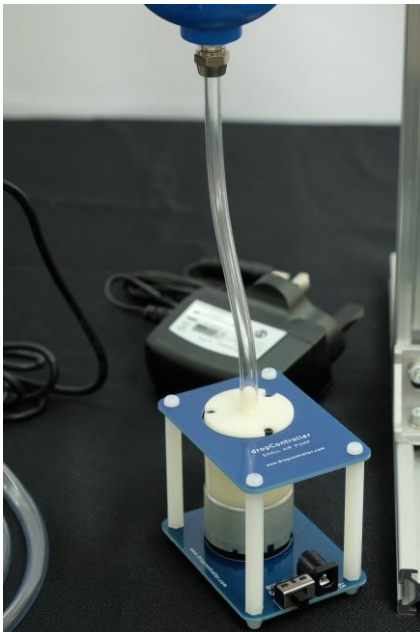
## Setting up the pump

Setting up the pump is fairly straight forward. Connect to the bottle, insert the power lead, turn on.

The air pump is able to operate from 6v to 24v. When used for SFB 12v is recommended and a 12v power supply is provided.

The type of power supply plug will depend on the country of use.

When used at 12v the pump produces around 10psi of pressure. This is enough pressure to hit most ceilings with a jet of water. I live in a small apartment and have to be careful about mess and normally use 1 to 3 psi. This is enough pressure to shoot the jet 50 or 60 cm. Enough height to still make a mess, just not on the ceiling.



The pump has a 4mm connector that fits 6mm PVC tube. 1 metre of tube is supplied in the kit.

The connector on the bottom of the bottle is a 6mm/4mm quick release connector. This has a 1/4" NPT thread.

Using the quick release connectors is covered a little later.

## Solenoid Valve



Double sided connector (inside)

Solenoid valve

6mm nozzle



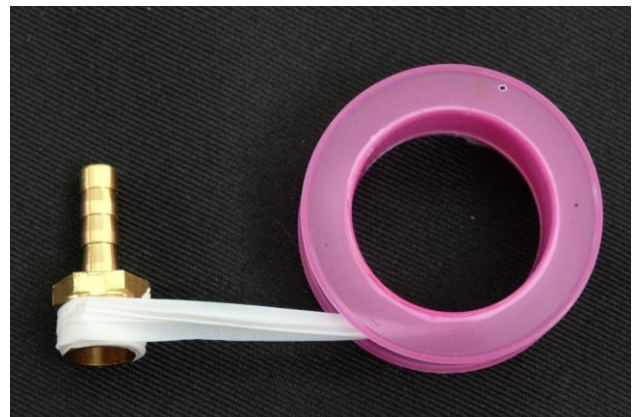
## Setting up the valve



The solenoid valve connects directly to one of the bottles using one of the 2-way connectors.



The valve connects to the bottle using one of the double sided connectors

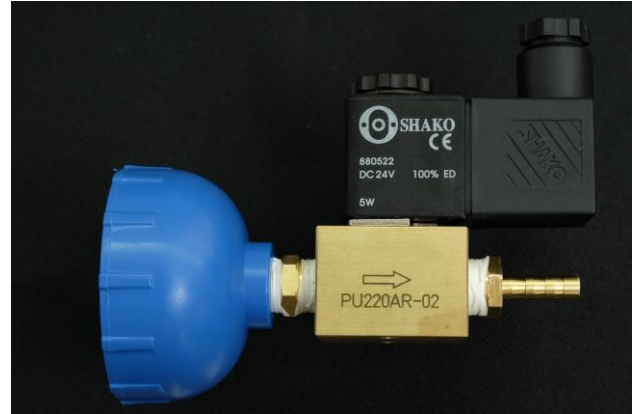


To get an air tight seal use Teflon tape.

Wrap the tape in the direction of the thread.



Use more tape on the side that connects to the bottle cap.



Some of the connections may be tight. This is good.

The parts above are not completely tight. I wanted all the parts to be visible in the photo.

Included with the kit are an extra 2 x 6mm nozzles. These allow you to separate the valve from the bottle should you wish. Using the valve connected to the bottle makes things a little easier and I recommend using this method when starting.

## SFB Nozzle



A 4mm barbed nozzle is included in the set. The nozzle is attached to the 3 way block which in turn is connected to the valve with the 8mm PVC pipe.

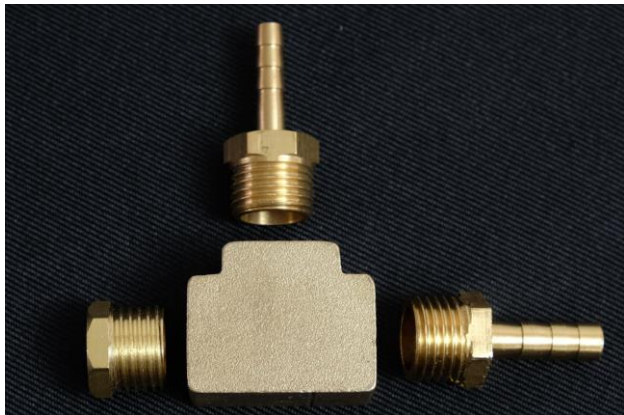
2 metres of 8mm pipe is included in the set. This is the larger thickness tube and fits the 6mm nozzles.

2 metres should be more than enough to allow you to experiment with different types of set up and nozzle positions.



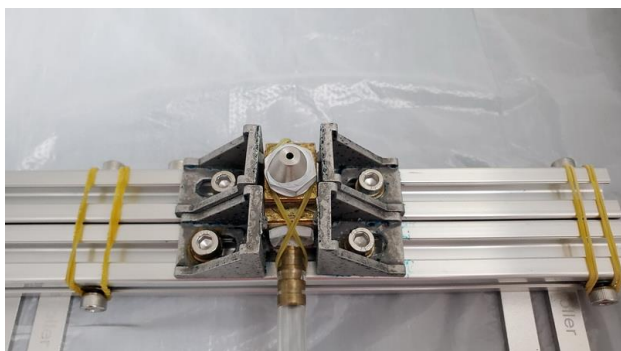
You will need a small length of the 8mm tube to connect the bottles together.

Attach the 4mm nozzle, a 6mm nozzle, and the end cap to the 3-way block. The 4mm nozzle points up, the 6mm nozzle is to the side and connects to the valve. A brass end cap is used to seal the third hole.



When assembling, remember to use Teflon tape to get a good seal.

The nozzle can be used like this but it is easy to move and it is better to secure it in some way.



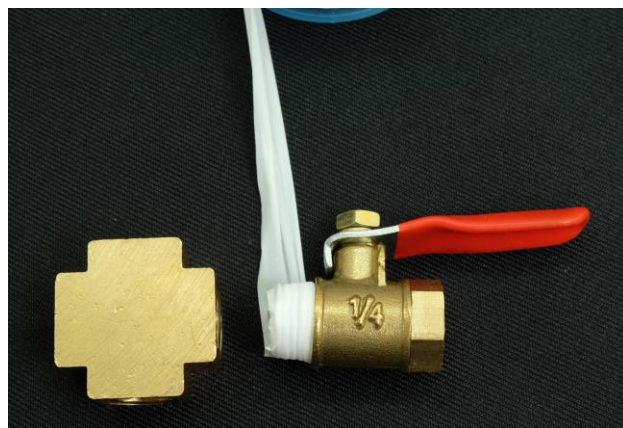
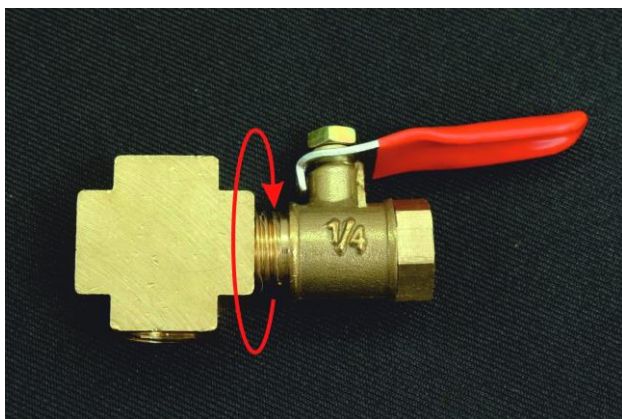
A simple method is too attached the block to something that has a bit of weight such as some short pieces of 2020 extrusion.

*Stainless steel nozzle sold separately.*

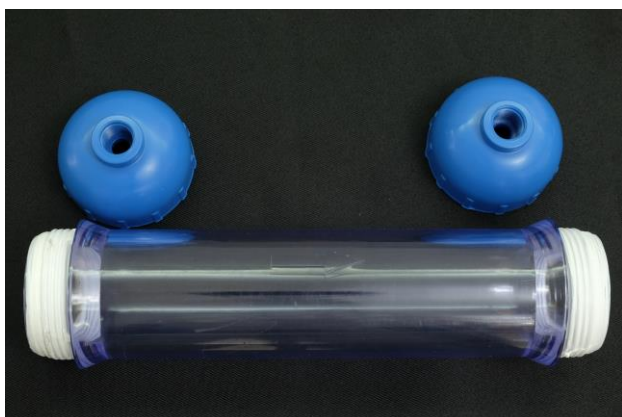
## Teflon Tape

To get air tight seals all threaded connection should have Teflon tape added. An air tight system means consistent pressures and will make controlling the pressure easier. If you have leaks you will find the pressure adjustments are not consistent. The only leak you want is from the ball valve.

Add the tape in the direction of the thread. All threads are in the same direction so once you have figured out the first one all the remaining ones are the same.



Wrap the tape so that the tail follows the direction when tightening. If it is on the other side it will bunch up and not wrap as well.

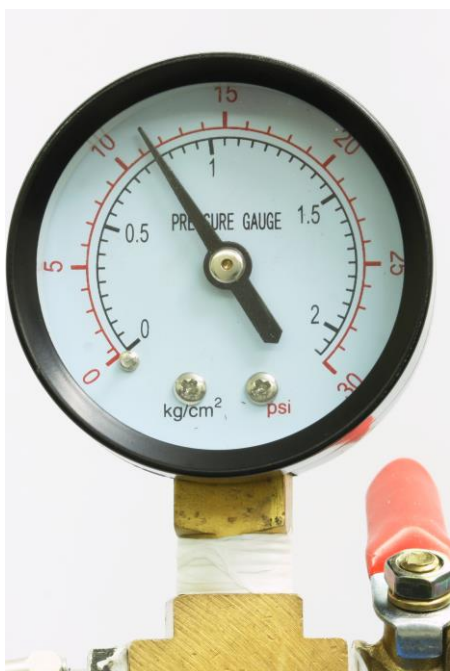


Don't forget to add Teflon tap to the bottle threads.

# Using the dropController Shoot From Below System



When you have the SFB system set up, give it a test and check for leaks.

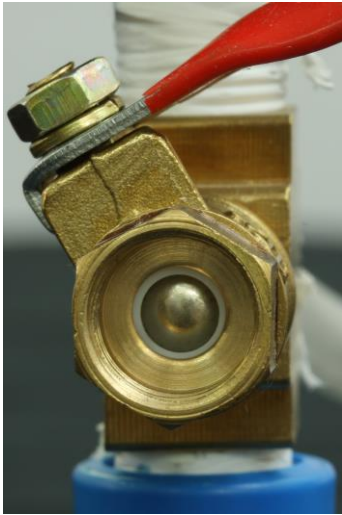


Fully close the ball valve and turn on the pump. The pressure should rise to around 10 psi.

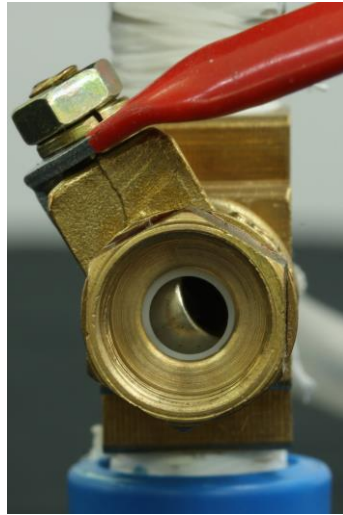
Wait a minute or so and then feel for leaks. If you find a leak, redo the connection and try again.

When you are happy that there are no leaks experiment with the ball valve.

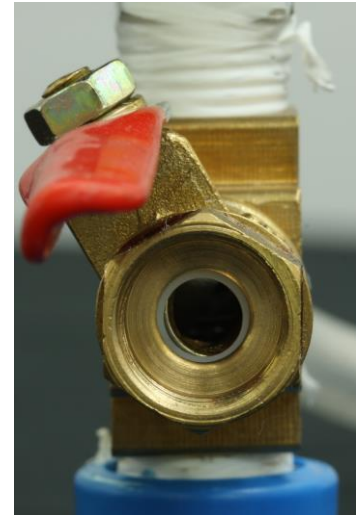
The amount of pressure used to generate the jet is controlled by the ball valve. The ball valve acts like a tap to control the air flow. Pressure is controlled by how much the valve is open and how much air is escaping. Maximum pressure is when the valve is fully closed. Minimum pressure (none) is when the valve is fully open.



Fully closed



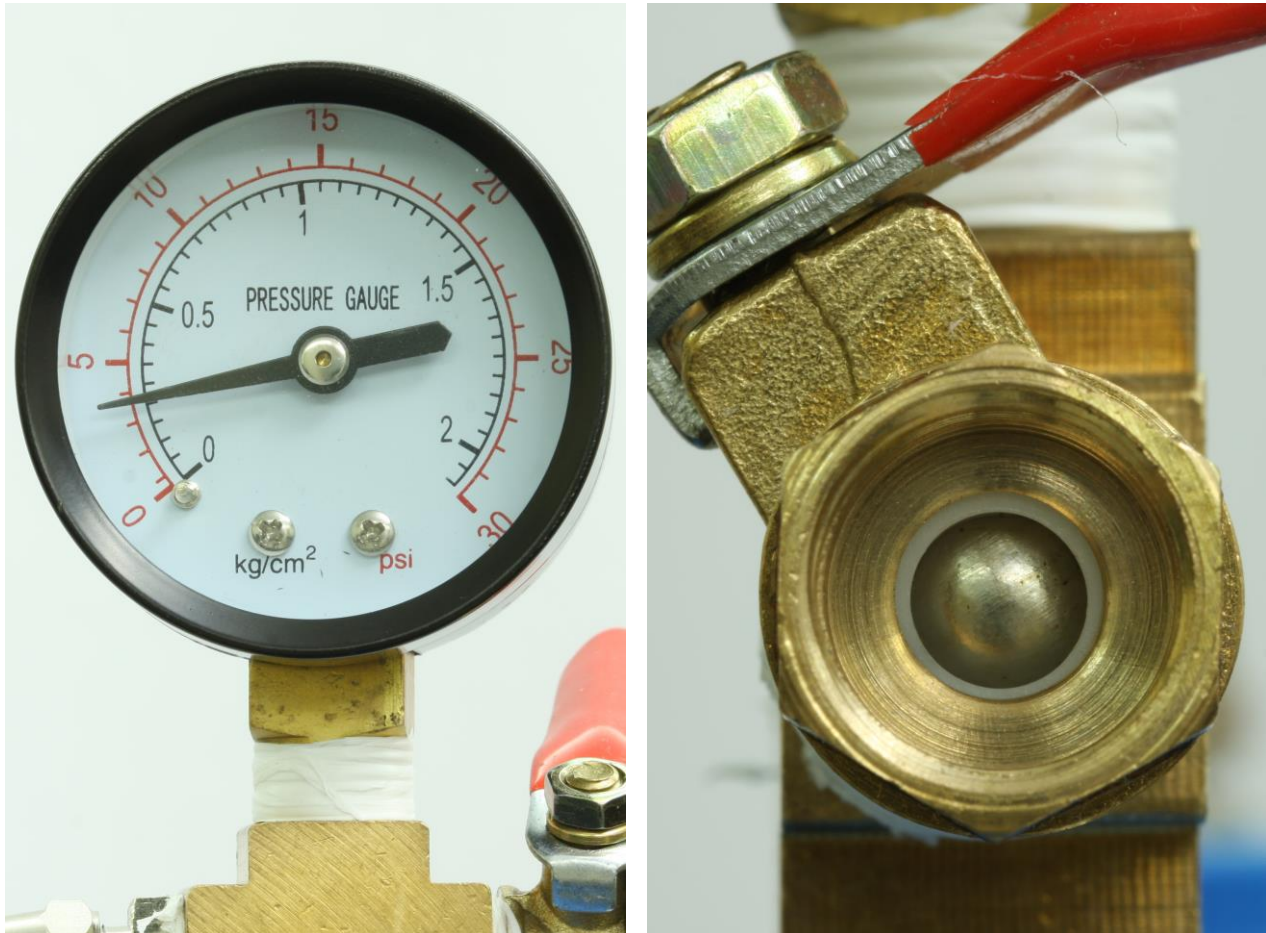
Half open



Fully open

When the ball valves are new they are a little stiff. This is normal. To loosen them work the handle back and forth a few times. Do not force the handle though.

Fine adjustments with the ball valve can be a little tricky and it may take a few attempts to get the pressure you want.



It is hard to tell from the photo that the valve is ever slightly open, and if you were to put your hand next the valve you would feel air escaping.

When using fairly low pressures the ball valve is only open a tiny bit.

If you are happy with how things are working, turn off the pump and release any stored pressure by opening the valve.

Add a liquid to the liquid bottle by first removing the tube (undo the quick release connector, pull off the tube from the connector) then remove the bottle cap. Fill the bottle with liquid. Put the cap back on, reconnect the tube.

Connect the valve to your controller. Turn the pump back on and set a low pressure, 2 or 3 psi. Use the controller to make some test drops/skirts.

Depending on the system you have it may take a few activations to get the liquid to flow through the valve. If you are using the dropController use the valve drain function but be careful of the initial squirt.