Step 1 - Measure Flow and Pressure

Whether you are going to design your own system or get someone else (like us) to do it, you need some basic information.

You need to know what the flow is from the tap where you intend to connect the irrigation system. If the flow and pressure are too low you may not be able to operate an automated system – at least not from the tap. This is unlikely in most reasonable sized towns where mains pressure is pretty good. If you are unsure you may need a plumber to help.
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FLOW CALCULATION

This is a critical piece of information. If you design your system on incorrect flow calculations your lawn rotators may not work and you may have to dig more trenches and add more zones later – not much fun!!!

ONLY carry out the test on the tap outlet you intend to connect the irrigation system to. Different outlets may have different flows around your house.

Figure 1 – Measuring flow

1. Turn all other water off in your home so there is nothing on.

2. Put a bucket under the tap that you know the volume of (in litres). Use a timer (e.g. your phone) to measure the time it takes to fill the bucket

3. Turn the tap on full before putting the bucket in the flow, starting the time at the same time

4. Repeat the process three times, to ensure there are no mistakes.

5. Choose the ***LONGEST*** time it took to fill the bucket from the three tests

6. Calculate the flow in Litres/Minute.

$$\text{Litres/ Minute} = \frac{\text{Bucket size (litres)}}{\text{Time to fill bucket (secs)}} \times 60 \text{ secs}$$

7. Allow 20% Margin for Error. It is important there is plenty of flow in all normal situations so allowing some margin for error is really important. The reasons for this are:
    - After installing the heads you may need to change to a larger size to get better distances or more rotation.
    - Other water may be turned on and off when the irrigation system is in use.
    - There are always slight variations in the supply of water at different outlets

Example:

Bucket Size = 18 Litres
Test 1 : Time to fill = 36 secs
Test 2 : Time to fill = 33 secs
Test 3 : Time to fill = 35 secs

Therefore choose 36 seconds (the longest)

Litres/minute = 18/36 x 60 seconds = 30 litres/minute

Allow 20% margin = 30 x (1- 0.2) = 30 x 0.80 = **24L/min**

PRESSURE MEASUREMENT

Lawn irrigation heads and solenoid valves will need a minimum pressure to operate. Also, higher pressures will typically generate more flow. As such, it is important to know what the pressure is at the outlet where you intend to connect your system.

If you have access to a pressure gauge it is useful to measure pressure (We can supply this equipment).

Figure 2 – Measure pressure

1. Connect the pressure gauge to the same outlet, again with no other water on in the house.

2. Allow the water to flow through the open valve.

3. Slowly close off the valve allowing the pressure to increase until the flow has completely stopped.

4. Allow the needle to settle before reading the pressure in kPa.

5. Repeat the test three times.

6. Choose the LOWEST Pressure from all three tests.

Typically, a pressure around **300kPa (or 3 Bar)** or more is preferred. There is also some reduction in pressure from the tap, where you connect the system, through the pipes to the heads. This is called **pressure drop** and is caused by **friction** throughout the system. This is why a higher pressure is preferred.