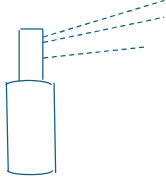


# Design guidance handout (2024)



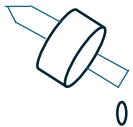
## **The 3 main / basic requirements of an effective sprinkler watering system for a standard suburban sized property:**

1. Every sprinkler head must be getting hit by water from at least 1 other sprinkler, or in the case of gardens where there is foliage obstruction, their throw radius must at least have the ability to do so.
2. When doing only 1 row of sprinklers, throw last 1/3 of sprinklers throw radius to waste due to lighter watering out in the far reaches, or put sprinklers closer together to compensate.
3. Only use a maximum of 80% of your measured bucket test flow rate (e.g. if your Tap is giving you 30Lt/min, only use 24Lt/min when calculating how many sprinklers you can run at once).



## **The 4 main / basic requirements of an effective dripline irrigation / watering system for a standard suburban sized property:**

1. Each parallel run should be 400mm or closer together when the built-in emitters are a standard 300mm apart.
2. To water both sides of a plant or tree's root ball, run dripline either side of the row (or loop around individual trees) rather than just 1 dripline running past a planting row on one side only.
3. Run for a minimum of 45 minutes per session using this layout method if each emitter is dripping at a fairly common 2 Lt/hr.
4. Use a Pressure Reducing Valve to reduce the pressure below 250kPa and only use a maximum of 80% of your measured bucket test flow rate (e.g. if your Tap is giving you 30Lt/min, only use 24Lt/min when calculating how many drippers you can run at once).



## **The 2 main / basic requirements of an effective dripper irrigation / watering system for a standard suburban sized property:**

1. Ideally and as a minimum, have at least 1 dripper either side of a plant or tree to water at least 2 sides of the root ball (dripper flow rates can vary or be changed according to a plant / tree's requirements) dripper.
2. Use a Pressure Reducing Valve to reduce the pressure below 250kPa and only use a maximum of 80% of your measured bucket test flow rate (e.g. if your Tap is giving you 30Lt/min, only use 24Lt/min when calculating how many drippers you can run at once).

## **Suggested maximum flow rates for sprinkler pipes on a suburban sized property:**

- 7 Litres per minute for 13mm Pipe; 22 Litres per minute for 19mm Pipe; 40 Litres per minute for 25mm Pipe.
- Higher flow rate through extra nozzle / emitter flow demand can result in pressure differences between beginning and end that may become evident in nozzle / emitter performance, as well as increasing potential for blow-outs when combining faster water with water pressure.

**These are our base rules, so please ask questions if you need more direction regarding your situation / project.**

**Sprinkler figures we use:**

(please refer to our [www.designerwatering.com.au](http://www.designerwatering.com.au) website for more information)

**Lawn pop-up smaller radius sprinklers:** The radius figures shown have been kept on the safe side, with some allowance for breeze distortion, so that your calculations will give you a system that works. The sprinklers can throw further if conditions are on their side.



<b>DESCRIPTION</b>	<b>WETTED AREA</b>	<b>FLOW-RATE</b>	<b>SELECTED PRESSURE</b>	<b><u>IDEAL MAX DISTANCE TO NEXT IDENTICAL SPRINKLER</u></b>
<i><b><u>Non-rotating, adjustable angle, adjustable radius reduction</u></b></i>				
10' RainBird	0 to 2.2mt radius	5.0 Lt/min @ 180°	220kpa	2.2mt
12' RainBird	0 to 3.2mt radius	4.5 Lt/min @ 180°	220kpa	3.2mt
15' RainBird	0 to 4.0mt radius	7.0 Lt/min @ 180°	220kpa	4.0mt
18' RainBird	0 to 4.5mt radius	10.5 Lt/min @ 180°	220kpa	4.5mt
Left Corner Strip pattern, RainBird	4.0mt x 1.0mt	2.0 Lt/min	220kpa	4.0mt
Right Corner Strip pattern, RainBird	4.0mt x 1.0mt	2.0 Lt/min	220kpa	4.0mt
End Strip pattern, RainBird	4.0mt x 1.0mt	2.3 Lt/min	220kpa	4.0mt
Centre Strip pattern, RainBird	8.0mt x 1.0mt	4.5 Lt/min	220kpa	4.0mt
Side Strip standard pattern, RainBird	8.0mt x 1.0mt	4.5 Lt/min	220kpa	4.0mt
Side Strip wide pattern, RainBird	4.5mt x 2.5mt	6.5 Lt/min	220kpa	2.25mt

**Lawn pop-up medium radius sprinklers:** The radius figures shown have been kept on the safe side, with some allowance for breeze distortion, so that your calculations will give you a system that works. The sprinklers can throw further if conditions are on their side.



<b><u>DESCRIPTION</u></b>	<b><u>WETTED AREA</u></b>	<b><u>FLOW-RATE</u></b>	<b><u>SELECTED PRESSURE</u></b>	<b><u>IDEAL MAX DISTANCE TO NEXT IDENTICAL SPRINKLER</u></b>
<b><i><u>Rotating Multi-jet RainBird Nozzle, 45 - 270° angle adjustment, approx 25% adjustable radius reduction</u></i></b>				
R-Van 14 Nozzle	3.4mt radius	3.5 Lt/min @ 180°	280kpa	3.4mt
R-Van 18 Nozzle	4.7mt radius	4.0 Lt/min @ 180°	280kpa	4.7mt
R-Van 24 Nozzle	6.0mt radius	7.0 Lt/min @ 180°	280kpa	6.0mt
<b><i><u>Rotating Single jet RainBird 3500 series, 40 - 360° angle adjustment, approx 25% adjustable radius reduction</u></i></b>				
0.75 Nozzle	4.4mt radius	3.0 Lt/min	280kpa	4.4mt
1.0 Nozzle	5.4mt radius	4.0 Lt/min	280kpa	5.4mt
1.5 Nozzle	6.0mt radius	6.0 Lt/min	280kpa	6.0mt
2.0 Nozzle	7.0mt radius	8.0 Lt/min	280kpa	7.0mt
3.0 Nozzle	8.0mt radius	12.0 Lt/min	280kpa	8.0mt
4.0 Nozzle	8.6mt radius	16.0 Lt/min	280kpa	8.6mt

**Lawn pop-up larger radius sprinklers:** The radius figures shown have been kept on the safe side, with some allowance for breeze distortion, so that your calculations will give you a system that works. The sprinklers can throw further if conditions are on their side.



<u>DESCRIPTION</u>	<u>WETTED AREA</u>	<u>FLOW-RATE</u>	<u>SELECTED PRESSURE</u>	<u>IDEAL MAX DISTANCE TO NEXT IDENTICAL SPRINKLER</u>
<i><b>Rotating RainBird 5000 series, 40 – 360° angle adjustment, approx 25% adjustable radius reduction</b></i>				
1.0 Low Angle nozzle	7.5mt radius	4.0 Lt/min	300kpa	7.5mt
1.5 Low Angle nozzle	8.0mt radius	6.0 Lt/min	300kpa	8.0mt
2.0 Low Angle nozzle	8.3mt radius	8.0 Lt/min	300kpa	8.3mt
3.0 Low Angle nozzle	9.0mt radius	12.0 Lt/min	300kpa	9.0mt
1.5 Standard Angle nozzle	8.8mt radius	6.0 Lt/min	300kpa	8.8mt
2.0 Standard Angle nozzle	9.3mt radius	8.0 Lt/min	300kpa	9.3mt
2.5 Standard Angle nozzle	9.6mt radius	10.0 Lt/min	300kpa	9.6mt
3.0 Standard Angle nozzle	10.0mt radius	12.0 Lt/min	300kpa	10.0mt
4.0 Standard Angle nozzle	10.7mt radius	16.0 Lt/min	350kpa	10.7mt
5.0 Standard Angle nozzle	11.5mt radius	20.0 Lt/min	350kpa	11.5mt
6.0 Standard Angle nozzle	11.8mt radius	24.0 Lt/min	350kpa	11.8mt
8.0 Standard Angle nozzle	12.0mt radius	32.0 Lt/min	350kpa	12.0mt

**Garden sprinklers:** The radius figures shown have been kept on the safe side, with some allowance for obstruction and breeze distortion, so that your calculations will give you a system that works. The sprinklers can throw further if conditions are on their side.



<b><u>DESCRIPTION</u></b>	<b><u>WETTED AREA</u></b>	<b><u>FLOW-RATE</u></b>	<b><u>IDEAL MINIMUM PRESSURE</u></b>	<b><u>IDEAL MAX DISTANCE TO NEXT IDENTICAL SPRINKLER</u></b>
<b><i>Garden Micro Sprays</i></b>				
90°, 2 piece, Blue & Black (B290)	1.8mt radius	0.75 Lt/min	180kpa	1.7mt
180°, 1 piece, Green (G1)	1.0mt radius	1.4 Lt/min	180kpa	1.0mt
180°, 2 piece, Blue & Blue (B2)	1.5mt radius	0.75 Lt/min	180kpa	1.5mt
180°, 2 piece, Green & Black (G2)	1.8mt radius	1.2 Lt/min	180kpa	1.7mt
360°, 1 piece, Black (B1)	1.0mt radius	1.9 Lt/min	180kpa	1.0mt
<b><i>Garden Micro Sprinkler</i></b>				
360° Blue Spinner (BS)	2.0mt radius	0.8 Lt/min	200kpa	1.7mt
360° Green Spinner (GS)	2.5mt radius	1.5 Lt/min	200kpa	2.0mt
360° Red Spinner (RS)	2.5mt radius	2.0 Lt/min	200kpa	2.0mt
<b><i>Misters</i></b>				
360°, 2 piece, Yellow & Black (Y2)	0.25mt radius	0.45 Lt/min	180kpa	0.3mt
<b><i>Strip Sprays (&gt;&lt; shape)</i></b>				
1 piece, Blue (B1S)	3.6mt x 1.0mt	1.5 Lt/min	180kpa	1.7mt
2 piece, Blue & Black (B2S)	5.0mt x 0.5mt	0.75 Lt/min	180kpa	2.0mt
<b><i>Adjustable Micro Sprays</i></b>				
90 degree, 2 piece Vari Jet (V290)	0 to 2.0mt radius	0 to 2.0 Lt/min	200kpa	1.7mt
180 degree, 2 piece Vari Jet (V2180)	0 to 2.0mt radius	0 to 2.0 Lt/min	200kpa	1.7mt
360 degree Adjustable Spray (V2360)	0 to 1.2mt radius	0 to 1.5 Lt/min	200kpa	1.0mt

**Dripline Irrigation:** Figures are based on standard loamy soil, and closer emitter spacings and closer parallel runs should be selected for sandy soil conditions.

<b><u>DESCRIPTION</u></b>	<b><u>EMITTER FLOW-RATE</u></b>	<b><u>EMITTER SPACING</u></b>	<b><u>MAXIMUM RUN LENGTH</u></b>	<b><u>PRESSURE OPERATING RANGE</u></b>
Pressure compensating for above ground application with standard 13mm insert fittings	2.0 Lt/hr	300mm	80mt @ 200kpa	100 – 300kpa
Pressure compensating suitable for below ground use due to a Copper Oxide impregnated diaphragm cover to provide added resistance against Root Intrusion. Size is 13mm to suit standard 13mm insert fittings	1.6 Lt/hr	300mm	80mt @ 200kpa	100 – 300kpa

**Dripper Irrigation**

<b><u>DESCRIPTION</u></b>	<b><u>EMITTER FLOW-RATE</u></b>	<b><u>EMITTER SPACING</u></b>	<b><u>MAXIMUM RUN LENGTH</u></b>	<b><u>PRESSURE OPERATING RANGE</u></b>
Individual Drippers with the Pressure compensating version being preferred for uniformity over a distance	2.0 Lt/hr, 4.0 Lt/hr and 8Lt/hr. We also try to keep the 0.5Lt/hr Dripper for small containments such as Hanging Baskets, Wall Gardens etc.	Either side of a root ball is best. More Drippers for larger plants or trees.	Depends on selected Drip emitter's flow rate	100 – 300kpa

**Estimation figures** for you to use as a guide to your materials cost of suburban 19mm residential irrigation in 2024:

- Allow \$25.00 + GST per **Pop-up Lawn sprinkler with a non-rotating nozzle**. This covers the cost of Pipe to the next sprinkler as well as fittings and clamps.
- Allow \$55.00 + GST per **rotating Pop-up Lawn sprinkler**. This covers the cost of Pipe to the next sprinkler as well as fittings and clamps.
- Allow \$8.00 + GST per **Garden micro sprinkler**. This covers the cost of Pipe to the next sprinkler as well as fittings and clamps.
- Allow \$2.30 + GST per lineal metre of **standard Dripline**. This covers the cost of a Pressure reducing Valve, fittings and clamps.
- **If 4 or more automatic irrigation stations**, an allowance of \$180.00 + GST per Solenoid Valve will usually cover the cost of an Irrigation Controller, Solenoid Valves, Solenoid Valve manifold fittings, Valve Box to cover Solenoid Valves, 10 metres of Low Voltage cable, Cable Joiners, 10 metres of 25mm Pressure Poly Pipe, regulation 'Backflow Prevention valve', several Pressure Pipe fittings to go between water source and Valve manifold.  
Less than 4 stations would probably cost more than \$180.00 + GST per Solenoid Valve, because you still need to cover the same infrastructure costs in the lesser Valve quantity set-up.

**Pricing, Price matching, and refund or return requests:**

- **10 – 15% Discounts** (depending on the items) are available at our discretion for 'repeat business Trade customers' as well as 'unassisted D.I.Y. purchases' over \$150.00 where further complications appear to be negligible.  
**"Unassisted" defined:** A quick and simple discussion for a bit of general direction, would not be considered as 'non-discountable assistance'.  
**Our request with regard to quick assistance for a bit of direction:** We would ask that we could interrupt the discussion to process other unassisted customer purchases and attend to interruptions requiring immediate attention.
- **Price matching is offered.** As a Business that would like to stay in business, we can't set all of our shelf prices to beat those on the Internet etc, where bulk deals and stock clearing strategies are utilised by the myriad of online Stores. So, our Shelf prices are our preferred prices to keep our Business operational, discounts are possible depending on certain criteria being met, and price matching can be done providing we don't lose money (although, we have sometimes been known to just close our eyes and take the hit for 'repeat business customers', or if sufficient other product is also being purchased).
- **Refund requests:** Due to the possibility of your purchase price being different to our Shelf price, we would need to see a proof of purchase showing the date as well. Depending on the soiled or damaged condition of the returned item, a minimum re-stocking fee of 15% may apply to your return.

**Now, a bit about us and how we may be able to help with your irrigation project:**

- When did Designer Watering Systems shop open it's doors? We are now 30 years old, and opened our Shop doors in Sumner Park Brisbane in February 1994.
- How can we help?

**First of all, our “unassisted” comment needs to be further explained:**

The reason we direct advantage towards unassisted purchasing in the previous pages, is that spare time is not a readily available commodity at Designer Watering Systems, and unfortunately we are not always able to provide the level of personal assistance that is often expected. The reason for this, is that Irrigation assistance and product selection can often be a lengthy process depending on your requirements or complexity, however, profit on a Business level is negated by the cost of having staff available and ready to attend to this time intensive free service. Our problem, not yours, so we have to come up with a compromise or options to enable you to get your project under way.

Please know that even though we can't make lengthy service a viable part of this Business, it doesn't stop us from trying to help whenever we can.

**Our methods of assistance / assistance options if time or scheduling were to be available:**

- For quick and immediate in-store assistance requests, ideally we would like to be able to suggest a suitable Sprinkler or Drip Irrigation layout or method. If this initial step doesn't become protracted, we may be able to move onto Sprinkler or Drip product selection (providing you have your flow rate / bucket test results), then finally Pipe sizing and fittings selection or guidance. Any of this assistance is subject to your willingness to allow interruption to process other unassisted customer purchases &/or attend to any matters requiring immediate attention.

- For lengthy or time-consuming work, if current workload and scheduling had some room to assist, we would firstly look at helping by way of some irrigation Design work with 'no upfront charge'. Our initial input would require 2 items of information from you, with the 1<sup>st</sup> being a 1:100 Scale drawing with correct measurements and angles, and the 2<sup>nd</sup> being your flow test results by timing how long it takes to fill a 9 Litre Garden Bucket with water from the water source you would use for your irrigation. The Bucket test information allows us to move beyond the Scale drawing stage by way of giving us direction in the types of irrigation to consider, as well as being used later in the Station breakdown calculations where certain parameters are not to be exceeded if you want your system to perform well.

Please note that because we can't make this expected free service a viable part of the Business, we are only allowing one shot at this, meaning that work would usually cease if there needed to be changes to the drawn area, or even if we have misunderstood your supplied information, as the drawing amendments would require extra time that we are unable to allocate.



Also, please be aware that there is no definite lead time for this Service, and we may not be able to assist at all if your supplied drawing is in the form of an alternative Scale, an insufficient Sketch, or has missing detail that would slow our drawing and information processes.

- If work is to continue, the Scale drawing we prepare would then move onto a sprinkler &/or dripline layout, followed by sprinkler and nozzle selection. We would then show you or email you the property drawing with sprinkler layout and a total materials costing estimate to help you decide whether you wish to continue with all or part of your project, but we wouldn't release the sprinkler and nozzle selection until a refundable deposit of \$180.00 incl GST is received. This deposit would be fully refunded within a purchase of a greater amount.
- Potentially you could take over from this point to avoid extra assistance charges or delays, where the next step could be as simple as purchasing a small selection of components to commence your project. Alternatively, you could continue with the extra planning by breaking down your irrigation into groups governed by your useable flow rate (from the sprinkler / dripper info supplied by us on the drawing) as well as sun, shade, or different watering requirements. After that, you can create a parts list with reference to your drawing and station breakdown if required (and possibly with a little bit of tutoring from us), then finally a materials costing.
- If we were required to help beyond the Sprinkler and nozzle selection stage and our current workload allowed the scheduling, we would ask for your input regarding any special Station breakdown requirements. This additional work would be charged at an hourly rate which is currently \$70.00 / hr + GST, and the estimate to take the work through to completion is \$280.00 + GST to \$350.00 + GST. Should you want to continue without making a parts lists, but still require some help without charges, we could potentially talk through one component of your project at a time in-store (store interruptions permitting). Hopefully, you would soon become familiar with the parts and how it comes together, so that you won't have to be waiting around for our help.

**Finally, all is not lost if our abovementioned assistance methods don't suit your requirements or time frames, as "Clearwater Irrigation" would be happy to assist (including the option of a site visit if required) if you are willing to pay for their time. Peter from Clearwater Irrigation can be contacted by phoning 0488 665 528.**

Please feel free to discuss any of the above with us if you have any questions or concerns.