Two Wests & Elliott

Gardena Micro Drip System for Accruate Automatic Watering

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Growing Stronger Year after Year

48 Years of Gardening Experience

Watering your plants correctly is vital if you want them to be healthy.

Over the 48 years we have been in business we have seen a lot of gardening products come and go, but one of the brands which has lasted the test of time and remains a firm favourite with our customers is Gardena.

We first introduced their products in 1987 and as their product range expanded so did the items which we stock from them, such that in 2023 we now offer over 85 of their watering products online.

This Water Planner concentrates on their Micro Drip System which was introduced in 1990. This guide will help you create the perfect irrigation system to keep your garden and greenhouse plants well watered.

Happy watering!

Gardena . . . Water-Conserving Garden Irrigation

Gardena have always believed that water is a valuable resource and should be used responsibly and with this in mind they published their **'Ten Golden Rules For Watering'** which we've included on pg. 28-29 and is worth a quick read before planning your garden irrigation as it points out some simple, common sense facts which will improve the effectiveness of watering your plants.

Based on their innovative approach to product development - and their belief in watering wisely - they introduced their Micro Drip System. It enables anyone to install an accurate, water-saving drip irrigation system into their garden quickly and easily.

This is acheiveable as all the components for the system can be purchased individually, allowing you to create the optimal irrigation system perfectly suited to the individual needs of each plant. This versatility also means that the Micro Drip System can be used to water flower and vegetable beds, greenhouses and potted plants, as well as longer rows of hedges and shrubs.

Free Help and Advice

At **Two Wests and Elliott** we're well experienced in the design and manufacture of greenhouse equipment.

So if you ever need any help we're always available at the end of the phone. **01246 451077**

1yr GUARANTEE

All our products are covered by our **1yr guarantee** or longer if indicated. In the unlikely event a product fails within this period we will repair or replace it for you **FREE** of charge.

This guarantee covers failure due to a manufacturing fault. This does not affect your statutory rights.

Special Offer

LOOK OUT for Frankie and Bella! Everytime you see them you'll find an **EXCLUSIVE** Two Wests Offer **Saving YOU Pounds**

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Gardena Micro Drip System . . . Water-Conserving Garden Irrigation

Water is a precious resource that needs to be used sparingly: **every drop counts**. So watering your garden efficiently is particularly important. Gardena's Micro Drip System supplies individual plants with the right amount of water - neither too little nor too much. This type of watering not only saves water, but also simultaneously contributes to optimal plant growth.

Efficient watering results in

- ✓ Saving water and money
- ✓ Enhancing the growth and health of plants
- ✓ Saving time and is more convenient.

Installing a micro drip system as well as using water efficiently has also resulted in verifiable higher yields and less plant diseases compared to conventional irrigation methods.

Flower Pots

Precise watering of pot plants, planters and troughs using drip nozzles.

Planted Areas

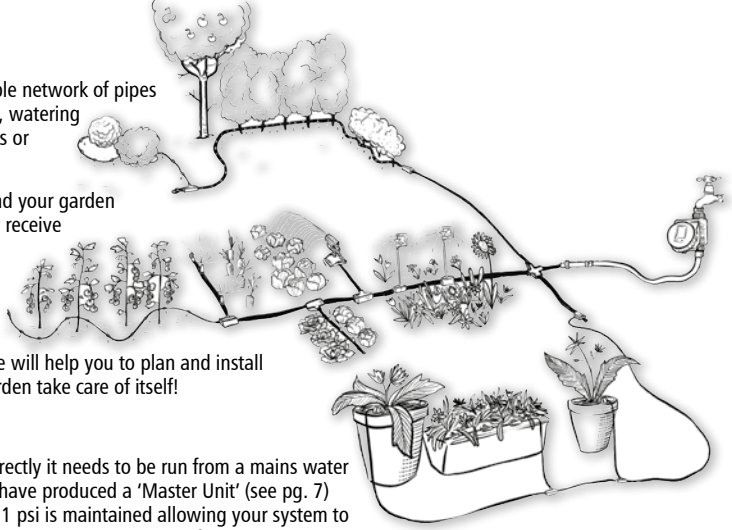
Flexible spray nozzles enable plants to be watered to optimum effect where vegetation times are short for plants in flowerbeds and vegetable patches.

Rows Of Plants

Root watering with pinpoint accuracy using drip nozzles along a hedge line or row of plants.

How To Get Started

Gardena's Micro Drip System is a simple network of pipes which take water around your garden, watering your plants using individual drip heads or small sprinklers.



Installing the Micro Drip System around your garden will ensure that your plants accurately receive the right amount of water for healthy growth - without you having to lift a finger.

Automatic watering is easy - even if you're a complete beginner. This guide will help you to plan and install your own system . . . then let your garden take care of itself!

Mains Water Required

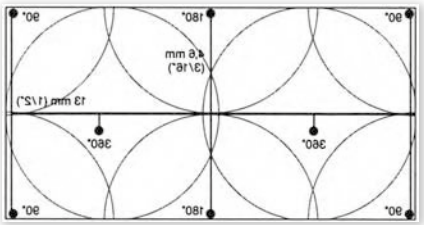
For the Micro Drip System to work correctly it needs to be run from a mains water supply with mains pressure. Gardena have produced a 'Master Unit' (see pg. 7) which ensures an optimum 1.5 bar / 21 psi is maintained allowing your system to work efficiently. The Micro Drip System isn't suitable to be run from water butts or tanks as the pressure is too low.

Plan It On Paper First

When planning your system it is best to plan it on paper - so you'll need plain paper, squared paper, coloured pencils and a long tape measure. Then follow these simple steps:

- ✓ Make a sketch of your garden in plan view (so pretend you're looking down on your garden) on a piece of plain paper.
- ✓ In your sketch include house walls, fences, paths, patios, trees, beds, borders, vegetable plots and of course the position of your outside tap.
- ✓ Take measurements of all the different parts of your garden and mark this on your sketch.
- ✓ It's now time to get some sense of scale by transferring your drawing onto the squared paper. For every 1cm square on the paper make this represent 1m square in your garden.
- ✓ Mark on the beds, borders and vegetable plots , together with the positions of pots, tubs, troughs and hanging baskets.
- ✓ Looking at the information about the different spray nozzles and sprinklers (pg. 14-17) available and the areas they can cover, take a compass and draw in their positions to water your plants.

  To make it easy to understand for each type of spray nozzle or sprinkler use a different colour - for example a 360° Spray Nozzle (pg. 15) as a purple circle or a 360° Micro Roto Sprinkler (pg. 17) as an orange circle.



- ✓ Looking at the different drip nozzles (pg. 10-11) available you can add these to your plan as triangles, again use different colours for the different types - this will really make it easier when writing your shopping list!
- ✓ You can now join everything up with Supply Tube and Branch Tube - again use a different colour to indicate the different type.
- ✓ Where there are sharp bends mark in the position for elbow connectors, where tube branches off T connectors (pg. 8-9).
- ✓ To complete your plan mark in the position of shut-off valves (pg. 13), tube plugs (pg. 12), nozzle joints and extension pipes (pg. 14).
- ✓ That should be your plan complete - the only things you won't have added would be a Water Computer (pg. 20-24) and this all depends on if you want to automate the watering - if you are out of work or away from home a lot we'd recommend this. You'll also need a Master Unit (pg. 7) and if you have a large area to keep watered you might need to add a Water Distributor (pg. 25).

Write Your Shopping List

To easily turn your plan into a shopping list with everything you need we've created a list for you where you can fill in the quantities you need to suit your layout. You'll find this on pages 30-31. Ideally print out these pages - even if you're ordering online - as it should enable you to order everything from your plan and nothing gets missed!

Orders & Advice **01246 451077** | Shop online at **www.twowests.co.uk**

One Outlet Tap Connector **£3.99** each

Make it simple and quick to connect a hose or water timer / computer to your outside tap with this threaded tap connector. It can be easily and securely tightened due to the sturdy grip. Whilst Gardena's Anti-Splash function is especially practical as it prevents drips and spillages while using the tap. *Fits ½" or ¾" taps.*

Top Tip . . .

Not sure what size your outside tap is?

There is a really simple way to check your tap size without a tape measure!!

Simply place a 2p against the outlet of the tap, if it's the same size as the thread (like the picture) it's a ¾" tap. Or if you place a 5p against the outlet and it's the same then your tap is ½".

Add this . . .

For maximum flexibility when you only have one outside tap we reccommend fitting either a Twin Outlet or Four Outlet Tap Connector so you have spare outlets for when you need to fill a watering can, etc.

On / off taps on each outlet enables you to control water flow on each or turn off the ones not in use.

The outlets have also been spaced to enable you to attach multiple water computers side by side if required.

Twin Outlet Tap Connector
£22.99 each

Four Outlet Tap Connector
£34.99 each

Gardena Classic ½" Hose

£24.99 per 30 metre **£39.99** per 50 metre

To carry the water from your outside tap to where your Micro Drip System will start you will need to use some ½" / 13mm hosepipe.

Gardena's Classic Hose is ideal as it will fit securely to both the connector on your tap and to the Master Unit for your watering system by fitting Snap-On Connectors to either end of the hosepipe.

Available in lengths of 30 or 50 metres, this hosepipe has the following high quality features:

- ✓ **Reinforced PVC** due to its internal textile this hose is pressure-resistant and keeps its shape
- ✓ **Flexible** makes it easy to unroll, use over along distances and around your garden
- ✓ **Free From Harmful Substances** free from phthalates (<0.1%), free of cadmium, lead and barium (<0.1%)
- ✓ **UV Resistant** for long life, backed by Gardena's 12 year warranty.

Gardena Snap-On Hose Connectors

Part of the Original Gardena System established over 50 years ago, a Snap-On Connector was developed to make it quick and easy to attach watering accessories to the end of your hosepipe. It's high quality design means everything interconnects from start to finish and stays watertight.

- ✓ **Power Grip** a specially shaped sleeve nut creates a very tight fit and trouble-free fitting to the end of your hosepipe
- ✓ **Comfortable Handling** with a soft plastic grip making it easy connecting.

½" Hose Connector

£5.99

Connects ½" hose to Tap Connectors, Hose Couplings, Watering Appliances.

½" Water Stop

£7.49

Connects ½" hose to watering appliance. When disconnected automatically stops water flow.

Gardena Master Unit

To ensure the Gardena Micro Drip & Spray System works correctly and the drip heads and spray nozzles have optimal operation the water pressure should not exceed 1.5 bar / 21 psi. To make this easy for you Gardena have designed a Master Unit which reliably reduces the water pressure to approx. 1.5 bar and at the same time filters the water to prevent any debris entering the system and blocking the spray nozzles or drippers.

The finished size of your watering system will determine whether you need to select either the **Standard Master Unit** or the **Large Master Unit**.

Standard Master Unit £15.99

For watering systems which will be using less than 1000 litres of water per hour.

Both of the Master Units have been designed to be connected

to ½" / 13mm Hose Connector on the inlet side.

On the outlet side of the master unit you can connect to either the ½" / 13mm Supply Tube or the 3/16" / 4.6mm Branch Tube using the adaptor supplied with the master unit.

Connecting the Master Unit in place is quick, easy and efficient due to Gardena's patented connection technology which ensures a durable, watertight connection.

Large Master Unit £23.99

For larger watering systems which will be using between 1000 up to 2000 litres of water per hour.

Top Tip . . .

You can work out whether you need to use the Standard or the Large Master Unit at the start of your Micro Drio & Spray System by working out the total flow rate required for your layout.
To calculate the flow rate required look at how many drip heads and spray nozzles you will be using and how many litres of water per hour they will use (see page 10 which shows the litres per hour for the Drip Heads, page 14 for the Spray Nozzles).
Simply multiply the number of each by their litres per hour and add together to create the total flow rate for your watering system.
If your system requires more than 2000 litres per hour of water to run then you will need to split the system into smaller areas. You can do this by using a Multi Control Duo Water Timer or a Twin Tap Connector and two Master Computers and then combining with a Water Distributor (see page 25).

½" Gardena Supply Tube

£0.99 per metre **£13.99** per 15 metres **£44.99** per 50 metre

The ½" / 13mm Supply Tube is used to transport water to where it is needed.

- ✓ **Long life** made from high quality materials this tube is UV resistant and impervious to light
- ✓ **Versatile** this tube can be installed above or below ground.

You can run a maximum of 120 metres of the Supply Tube from a single tap and it can be routed around the back of containers, buried or covered with mulch.

When your layout requires for this tube to go around corners or to travel in three directions then you will need to fit connectors as shown below. To make this quick, easy and watertight the ½" / 13mm connectors incorporate a 'twist and lock' feature to secure the connector in place and make it easy to remove and re-arrange if required. Simply fit the connector, turning the outer collar to lock it in place around the tube. Just turn in the opposite direction to unlock.

½" Straight Connectors

£5.99 per 3

Use these connectors if you need to extend your system and need to join two pieces of Supply Tube.

½" Elbow Connectors

£5.99 per 2

For precise branching of the Supply Tube, ideal when going around corners.

½" T Connectors

£6.99 per 2

Perfect when directing the Supply Tube into different areas of your garden or greenhouse this creates a 3 way junction.

3/16" Gardena Branch Tube

£0.65 per metre **£8.99** per 15 metres **£25.99** per 50 metre

The 3/16" / 4.6mm Branch Tube is used to take water from the Supply Tube to plants, containers and hanging baskets.

No more than 15 metres should be used in any single branch from the connecting pipe.

Top Tip . . .

When cutting either the Supply Tube or Branch Tube to the length you require you will need a sharp, strong pair of scissors or a sharp craft knife (such as a Stanley knife) to create a clean, straight cut.
Other tools which we recommend as you lay out your watering system would be a tape measure, and if you are fixing parts to a hard surface such as walls or patio, a hammer drill, screws and wall plugs.

3/16" Straight Connectors

£6.49 per 10

Use when extending the Branch Tube. Or use directly into the wall of the Supply Tube to then connect Branch Tube.

3/16" Elbow Connectors

£6.49 per 10

Use when directing the Branch Tube around corners without affecting the flow of water.

3/16" T Connectors

£7.99 per 10

Ideal when directing Branch Tube into different areas this creates a 3 way junction.

1/2" to 3/16" Connectors

£10.49 per 5

For transition from Supply Tube to Branch Tube this connector has two ends which are 1/2" / 13mm and one end which is 3/16" / 4.6mm.

Drippers

Gardena have designed these drippers to give a regular, measured drip of water - some give a fixed flow rate and others are adjustable. They should be placed at the base of individual plants, as a result no water is wasted as it will seep into the soil directly to the roots of your plants.

These drippers are suitable for use in containers, hanging baskets, along beds and borders, by hedges, in vegetable plots, greenhouses or cold frames.

In-line Drippers

Designed for use with the 3/16" / 4.6mm Branch Tube these drippers require you to cut the tube and refit it either side of the dripper. Each pack of drippers includes one end cap - this allows you to finish the end of a length of branch tube by fitting the tube to one side of the dripper and the end cap to the other.

0-10 ltr Adjustable Drippers

£13.49 per 10

With a removable cover and integrated cleaning needle it's easy to keep these drippers working efficiently for years.

Pack contains 10 drippers and 1 end cap.

2 ltr Per Hour Drippers

£10.49 per 10

Ideal for plants in small spaces such as hanging baskets and troughs.

Pack contains 10 drippers, 1 end cap and 1 cleaning needle.

4 ltr Per Hour Drippers

£10.49 per 10

Perfect for watering rows of plants such as in a kitchen garden or allotment.

Pack contains 10 drippers, 1 end cap and 1 cleaning needle..

DRIPPER	USES	APPLICATION
In-line 0-10 ltr Adjustable Drippers	For rows of plants with different watering requirements.	Can be fitted into Branch Tube, fitting the tube to either side of the dripper.
In-line 2 ltr Per Hour Drippers	For rows of plants with similar watering requirements.	Can be fitted into Branch Tube, fitting the tube to either side of the dripper.
In-line 4 ltr Per Hour Drippers	For rows of plants with similar watering requirements.	Can be fitted into Branch Tube, fitting the tube to either side of the dripper.
End-line 0-10 ltr Adjustable Drippers	For individual plants with different watering requirements.	Can be fitted to the end of Branch Tube or directly into the wall of Supply Tube.
End-line 2 ltr Per Hour Drippers	For individual plants with similar watering requirements.	Can be fitted to the end of Branch Tube or directly into the wall of Supply Tube.
End-line 4 ltr Per Hour Drippers	For individual plants with similar watering requirements.	Can be fitted to the end of Branch Tube or directly into the wall of Supply Tube.

End-line Drippers

These drippers can be used in two main ways when creating your watering system :

- ✓ Screwed into the end of 3/16" / 4.6mm Branch Tube or
- ✓ Fitted into the wall of ½" / 13mm Supply Tube after piercing a hole using an Installation tool.

0-10 ltr Adjustable Drippers

£11.49 per 10

Fit into the end of Branch Tube or the wall of Supply Tube. Perfect for rows of plants requiring different amounts of water.

Pack contains 10 drippers.

2 ltr Per Hour Drippers

£10.99 per 25

Ideal for spot irrigation or single plants or longer rows of plants with similar watering requirements.

Pack contains 25 drippers and cleaning needle.

4 ltr Per Hour Drippers

£10.49 per 25

By including a cleaning needle with your drippers a dirtied drip head can be easily cleaned.

Pack contains 25 drippers and cleaning needle.

Add this . . .

Installation Tool

£7.49 each

Essential for easy installation of the Gardena Drip & Spray System, this robust little tool has a multitude of uses, from piercing tube, inserting drippers, spray nozzles, extension pipes or connectors.

It's ergonomically shaped making it comfortable and easy to use.

The robust metal tip of this tool makes it easy and accurate when piercing the Supply Tube to insert drippers.

This tool securely holds 2 or 4 ltr end-line drippers to easily fit them to the end of Branch Tube or walls of Supply Tube.

Tube Plugs

Required to create a watertight seal at the end of either ½" Suppy Tube or 3/16" / 4.6mm Branch Tube these plugs are a vital part of your irrgiation system.

Both plugs form a watertight seal so no water is wasted. Both types can be removed if you need to drain the system or want to extend or amend the layout. Gardena have incorporated their patented 'Quick and Easy' pipe connection technology in the design of the ½" Tube Plugs. Featuring a rist and lock collar which helps to keep the plug securely connected to the Supply Tube, simply turn the collar to make it easy to be removed. To ensure a tight seal with the smaller 3/16" Tube Plug this features a screw threaded end.

½" Tube Plug

£5.99 per 5

Incorporates Gardena's patented 'Quick and Easy' connection technology making it easy to remove to drain the system.

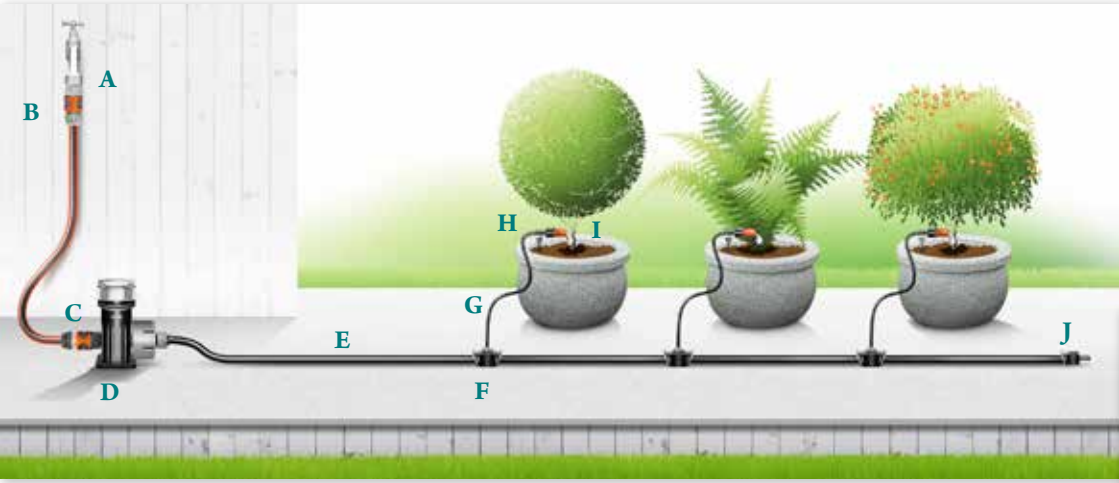
3/16" Tube Plug

£5.49 per 10

Use to seal the end of Branch Tube or to seal holes made in the Supply Tube when altering the layout.

Example Layout

The illustration below shows you the ½" Tube Plug being used to seal the end of the Supply Tube. It also shows the 3/16" End-line Adjustable Drippers used to enable the different shrubs to be supplied with variable amounts of water per hour.



Shopping List These are the parts you'd need to order for the layout above:

- ✓ **A One Outlet Tap Connector** fits ½" or ¾" taps
- ✓ **B ½" Hose Connector** joins Tap Connector to ½" hose
- ✓ **C ½" Water Stop** when disconnected stops water flow
- ✓ **D Large Master Unit** for more than 1000 ltrs per hour
- ✓ **E ½" Supply Tube** forms the central supply line
- ✓ **F ½" to 3/16" Connector** to connect the 3/16" Branch Tube
- ✓ **G 3/16" Branch Tube** carrying the water to each pot
- ✓ **H 3/16" Tube Peg** hold the Branch Tube securely in the pot
- ✓ **I 0-10 ltr End Line Adjustable Dripper** to fit into the Branch Tube taking the water close to the shrub
- ✓ **J ½" Tube Plug** to seal the end of the Supply Tube

Shut-Off Valves

If you are planning a large irrigation system we recommend using Shut-Off Valves to create separate sections. This makes it easy for you to stop the water flowiing into a particular area if you want to alter the layout, replace drippers or spray nozzles or carry out any maintenance.

½" Shut-Off Valve

£13.99 each

Incorporates Gardena's patented 'Quick and Easy' connection technology making it easy to remove to drain the system.

3/16" Shut-Off Valves

£7.49 per 2

Cut your Branch Tube and fit either side of this valve to be able to reduce or stop the flow of water into parts of your irrigation system.

Control Valves **£11.49** per 5

Have maximum control over the waterflow and range of your spray nozzles using these valves.

One side of the valve can be fitted into the wall of ½" Supply Tube or screwed onto an Extension Pipe.
On the opposite side the Drip Nozzle is securely held in place.

Spray Nozzles

Within the Gardena Drip and Spray System there is a wide range of spray nozzles to ensure you are able to provide good, overall watering to a range of plants in various situations.

All of these spray nozzles can be used within your watering system in a variety of ways:

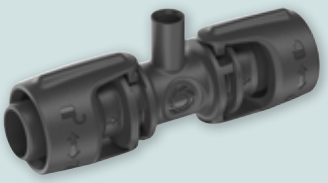
- ✓ **Directly in the wall of the Supply Tube** use the installation tool to both pierce the wall of the tube and screw into position (fig. A)
- ✓ **Held securely in position with 3/16" Nozzle Joint** when fitting a spray nozzle into into the 3/16" Branch Tube (fig. B)
- ✓ **Fitted into a Nozzle Joint** simply fit the joint into the Supply Tube, then screw the spray nozzle in place (fig C)
- ✓ **Use with an Extension Pipe** to hold the nozzle up from the ground to irrigate taller plants (fig. D). The Extension Pipe can be secured to the Supply Tube using a Nozzle Joint.
- ✓ **Combined with a Control Valve** to enable you to easily adjust the flow of water (fig. E).

½" Nozzle Joints

£9.49 per 5

For securely fixing Spray Nozzles or Drippers into ½" / 13mm Supply Tube.

Perfect for holding Spray Nozzles upright and Drippers sideways to drip directly onto the ground.

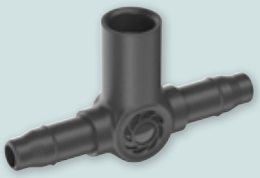


3/16" Nozzle Joints

£5.49 per 5

For fixing Spray Nozzles or Drippers securely into 3/16" / 4.6mm Branch Tube.

Perfect for holding Spray Nozzles upright and Drippers sideways to drip directly onto the ground.



9" Extension Pipe

£6.49 per 5

To enable you to water over and above taller plants.

Use one 9" pipe or screw one pipe into the top of another to make them even taller.

To hold them securely in place screw into the top of either of the nozzle joints opposite.

The Spray Nozzle is then screwed into the top of the Extension Pipe.

Spray Nozzles Producing Fine Spray For Small Areas

Perfect for use in flower beds or vegetable plots, these spray nozzles will create a spray range over either a 90°, 180° or 360° shaped area depending on which you choose.

All three nozzles will cover an area up to 3m / 9ft with a fine spray of water (you can reduce this range by incorporating a Control Value next to the Spray Nozzle).

For larger areas use more spray nozzles to build up coverage over the whole area you need to water. For taller plants use these nozzles combined with Extension Pipes to lift the spray 23cm / 9in above the ground.

90° Spray Nozzles

£6.49 per 5

Perfect for placing in the corner of a flower bed so that the spray of water is directed onto your plants and away from a pathway, drive, lawn, fence etc.

180° Spray Nozzles

£6.49 per 5

For use in a rectangular shaped bed, or against a wall, fence or path this nozzle will create a spray of water in front and to the sides, not behind.

360° Spray Nozzles

£6.49 per 5

For watering areas up to 6m / 9ft in dia. this nozzle will produce a regular spray of water over a whole area. It's perfect for placing into the centre of raised beds etc.

Top Tip . . .

We reccommend watering flower beds, borders and vegetable plots for a prolonged period at least twice a week to ensure the water reaches the lowest roots.

Each spray nozzle will distribute approximately 5 litres of water over a square metre per hour. This corresponds to a seeping depth of approximately 5cm per hour, depending on the type of soil in your garden.

360° Micro Mist Nozzles

£6.49 per 5

These Micro Mist Nozzles give a very fine mist and are perfect for watering seedlings, newly planted beds, delicate plants or damping down in hot weather.

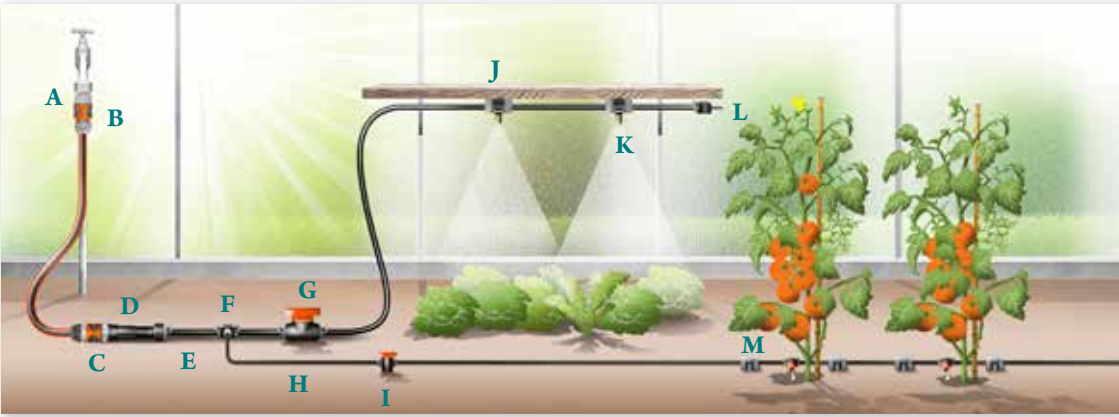
To water seedlings from above in your greenhouse or cold frame run Supply Tube along the roof or below shelving or staging.

You can then install the nozzles directly into the wall of the tube using an Installation Tool, spacing them approximately 50cm / 20in apart (fig. A).

Or fix a Nozzle Joint into the Supply Tube first and then screw the Nozzle into the joint (fig. B), this way it's possible to easily swop over the nozzle if you wish to, as your plants grow larger.

Example Layout

The illustration below shows you the Micro Mist Nozzles being used in a greenhouse as part of an irrigation system, set up to run from a tap situated at one end of the greenhouse.



Shopping List These are the parts you'd need to order for the layout above:

- ✓ **A One Outlet Tap Connector** fits ½" or ¾" taps
- ✓ **B ½" Hose Connector** joins Tap Connector to ½" hose
- ✓ **C ½" Water Stop** when disconnected stops water flow
- ✓ **D Standard Master Unit** for less than 1000 ltrs per hour
- ✓ **E ½" Supply Tube** forms the central supply line
- ✓ **F ½" to 3/16" Connector** to connect the 3/16" Branch Tube
- ✓ **G ½" Shut-Off Valve** to isolate this section
- ✓ **H 3/16" Branch Tube** to carry water to individual plants
- ✓ **I 3/16" Shut-Off Valve** to isolate this section
- ✓ **J ½" Tube Wall Clamp** fixes tube underneath wooden shelf
- ✓ **K 360° Micro Mist Nozzle** with 5ft diameter coverage
- ✓ **L ½" Plug** to seal the end of this section
- ✓ **M 3/16" Tube Peg** holds the tube on the surface of soil
- ✓ **N 2ltr per hour Dripper** fitting into the Branch Tube

Adjustable Spray Nozzles Producing Fine Spray For Small Areas

These two spray nozzles allow you to adjust the spray of water between 4-16" / 10-40cm diameter making them easy to adapt for the requirements of individual plants. They produce a 360° spray of water and can be used close to the ground or lifted higher by securing the End-line Spray Nozzle into an Extension Pipe. They have a 40 ltr per hour flow rate.

Small Area End-line Spray Nozzles

£8.49 per 10

Can be fitted into the end of 3/16" Branch Tube or into the wall of ½" / 13mm Supply Tube.

Small Area In-line Spray Nozzles

£12.49 per 10

To use with 3/16" Branch Tube, simply cut the tube and attach to either side of the drip nozzle.

6 Pattern Adjustable Spray Nozzles

£8.49 per 2

The most versatile spray nozzle it incorporates a simple control knob which can be turned to adjust the spray pattern between :

90°, 180°, 270°, 360°, mid strip or end strip.

It has a 35 ltr per hour flow rate . The range covered is adjustable up to a maximum of approx. 8ft / 2.5m.

Designed for use with the ½" Supply Tube.

To Secure The System

When you are laying out your irrigation system in your greenhouse, garden or cold frame it could be going long distances, over hard or soft surfaces, up to pots, onto raised beds etc etc so you need a way to keep the tube in place as it carries the water. Gardena have created strong plastic pegs to be pushed into soil or compost ro secure Supply or Branch Tube in place.

½" Tube Pegs **£7.49** per 10

These robust plastic pegs are 6¼" / 16cm long enabling you to push them securely into soft ground to hold the **Supply Tube** in place (fig. A).

They can also be used with **½" Nozzle Joints** to prevent **Spray Nozzles** or **Drippers** from moving as water flows.

This ensures sprayers remain vertical to create a spray of water to your plants (fig. B) or to ensure drippers only drip water onto the surafce of the soil.

3/16" Tube Pegs **£5.99** per 15

These economical 3½" / 9cm long plastic pegs are ideal when simply needing to hold the thinner 3/16" / 4.6mm **Branch Tube** into soil to prevent it from moving.

Ideal for use in in pots, troughs or hanging baskets.

Gardena are producing these pegs from >80% recycled plastic as part of their EcoLine where the plastic elements are made of high percentage of recycled plastic.

Example Layout

In the example opposite **End-Line Adjustable Drippers** are being used in the end of **Branch Tube** to provide water to some potted plants. As the tube is being carried up to the surface of the soil in the pots, to keep it in place and to ensure the drippers do not move from their position, **3/16" Tube Pegs** are being used.

Shopping List

These are the parts you'd need to order for the layout opposite:

- ✓ **A** **3/16" T Connector** to branch the 3/16" Branch Tube in different directions
- ✓ **B** **3/16" Branch Tube** to carry the water to the plants
- ✓ **C** **3/16" Tube Pegs** to secure the tube into the compost in the pot
- ✓ **D** **0-10 ltr End-line Adjustable Drippers** screwed into the end of the Branch Tube

Example Layout

In the photograph below you can see the **½" Tube Pegs** being used to secure the **Supply Tube** as it is curved around the plants in a garden.

When the tube is being laid in gentle curves elbow connectors are not needed, but it is important that you use the strong 6¼" / 16cm long pegs to anchor the tube so it does not move as it carries the water around your garden to your plants. This illustrates how important these simple pegs are when laying a large irrigation system around your garden, at your allotment or in your polytunnel.

Automatic Watering - Giving You More Freedom

Watering your garden once your Micro Drip System is in place can be automatically controlled by adding a water timer / computer. Your Garden will then be watered at the correct time of day, for the right length of time, even when you are out or away on holiday.

Gardena have designed a range of timers / computers to suit different types of gardeners and their needs:

For new gardeners

✓ **Flex**

With popular programming options and innovative features such as optimum watering options for plant pots.

For demanding gardeners

✓ **Select**

✓ **Multi Control Duo**

Flexible irrigation settings.

For passionate gardeners

✓ **Master**

Individual programming of up to six independent schedules.

Combine with the Water Distributor to water up to six garden areas one after another.

Flex Water Computer

£44.99 each

Gardena developed this timer to have a short run time of just 1 second making it perfect for gardeners who grow everything in pots or containers that have limited compost volume so can only retain a small buffer of water.

- ✓ **Number Of Schedules** 1 (you can select one combination of start time, run time and frequency)
- ✓ **Watering Start** time adjustable
- ✓ **Run Time** from 1 second up to 99 minutes
- ✓ **Frequency** every 4, 6, 8, 12, 24, 47 or 72 hours.

Powered by 1 x PP3 9 volt battery (not inc.) Gardena's Safe Water Stop Technology ensures that the next irrigation cycle is not started when the battery power is low - the battery level is shown on the digital display.

Easy Operation

The weatherproof operating panel can be removed to enable you to carry out the setting in comfort.

Thanks to an optional key lock, inadvertent adjustment of the settings can be prevented.

Perfect For Patios

Due to the extra-short watering duration in seconds and the possibility of activation up to 6 times per day this computer is ideal for plants in pots which require frequent, small amounts of water to keep plants healthy.

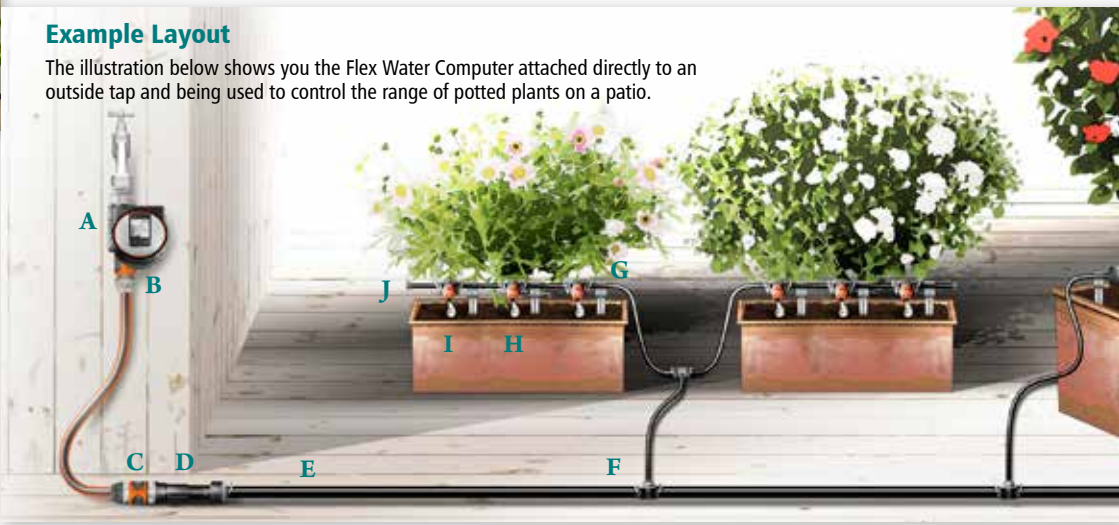
Water Now Function

If you want to start watering immediately you can manually activate without removing the computer from the tap or changing the settings.

So you can fill a watering can from the same tap your irrigation system uses.

Example Layout

The illustration below shows you the Flex Water Computer attached directly to an outside tap and being used to control the range of potted plants on a patio.



Shopping List

These are the parts you'd need to order for the layout above:

- ✓ **A Flex Water Computer** fitted directly to the tap
- ✓ **B ½" Hose Connector** joins Tap Connector to ½" hose
- ✓ **C ½" Water Stop** when disconnected stops water flow
- ✓ **D Standard Master Unit** for less than 1000 ltrs per hour
- ✓ **E ½" Supply Tube** forms the central supply line
- ✓ **F ½" T Connector** branching the Supply Tube
- ✓ **G ½" Tube & Nozzle Pegs** hold Tube above the compost
- ✓ **H ½" Nozzle Joints** fitted into the Supply Tube
- ✓ **I 2 ltr per hour Drippers** fitted into ½" Nozzle Joints
- ✓ **J ½" Plug** to seal the end of this section

Select Water Computer

£52.99 each

Automatic watering is a great help especially if you are away a lot. The computer is connected directly to your water tap and then your hose attached using a snap-on connector. You can then use it to control your Micro Drip System, a sprinkler or an underground sprinkler system.

- ✓ **Number Of Schedules 3** (you can select three combinations of start time, run time and frequency per day)
- ✓ **Watering Start** time adjustable
- ✓ **Run Time** from 1 minute up to 7 hours 59 minutes
- ✓ **Frequency** days of the week.

Powered by 1 x PP3 9 volt battery (not inc.). The battery level indicator on the digital display shows when to replace the battery & Safe Water Stop Technology stops the next irrigation cycle starting when the power is to low .

Easy Setting

This computer can be easily adjusted using the rotary and push switch for selection of data and for confirmation. An easily-legible digital display shows all the setting at a glance. Thanks to an optional key lock, inadvertent adjustment of the settings can be prevented.

Flexible Irrigation

Three different and independent schedules can be created. This allows more expert gardeners to create additional pre-watering which prepares the soil and roots for the later, main irrigation improving water absorption and plant growth.

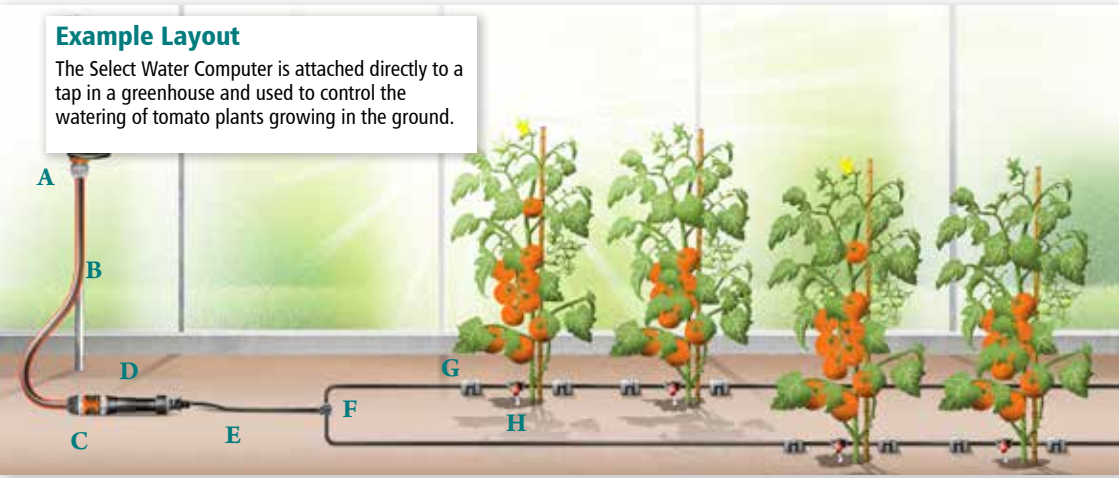
Water Now Function

You can overide the settings on the computer & start watering immediately by pressing the water now button.

This also means you can detach your irrigation system from the base of the computer, fill a watering can and then re-attach.

Example Layout

The Select Water Computer is attached directly to a tap in a greenhouse and used to control the watering of tomato plants growing in the ground.



Shopping List These are the parts you'd need to order for the layout above:

- ✓ **A ½" Hose Connector** joins Tap Connector to ½" hose
- ✓ **B ½" Hose** transferring the water to the irrigation system
- ✓ **C ½" Water Stop** when disconnected stops water flow
- ✓ **D Standard Master Unit** for less than 1000 ltrs per hour
- ✓ **E 3/16" Branch Tube** carrying water to your plants
- ✓ **F 3/16" T Connector** dividing the Branch Tube in two directions
- ✓ **G 3/16" Tube Peg** holds the tube on the surface of soil
- ✓ **H 4 ltr per hour Drippers** fitted into the Branch Tube

Multi Control Duo Water Computer

£109.99 each

Gardena have designed this computer to enable you to water two seperate areas of your garden, such as the lawn at the front of your house and the flower boxes in your back garden, with varying watering durations and frequencies easily and automatically thanks to the two outlets. So you can water the whole of your outdoor space reliably and conveniently - even when you are not at home!

This also means that you could set it to automatically water in the early morning hours or in the evening, which is more efficient as less water evaporates, saving you money whilst still have a lush, green garden and beautiful, healthy plants.

- ✓ **Number Of Schedules 1** (you can select six combinations of start time, run time and frequency per day)
- ✓ **Watering Start** time adjustable
- ✓ **Run Time** from 1 minute up to 3 hours 59 minutes
- ✓ **Frequency** free selection of watering days or every 2nd, 3rd or 7th day.

Powered by 1 x PP3 9 volt battery (not included).

Manually Watering

For maximum flexibility it is possible to leave the computer attached to your tap, select one of the outlets and press the Man key to open the valve manually. This means you could turn on your watering system immediately or disconnect it and fill a watering can.

Easy Programming

The control panel of the computer is easy to detach so you can programme it in comfort.

Just five buttons help you to set the start, duration and interval of watering for the two seperate areas. The large digital display shows the data clearly for you to easily read.

Safe Operation

The battery level display shows you the charging status of the battery so you'll know when it needs to be changed.

Gardena's built in Safe Stop Technology ensures the next irrigation cycle does not start if the battery is too low to finish the cycle, so preventing water leakage.

Powered by 1 x PP3 9 volt battery (not inc.). If the energy level of the battery is too low to completely control a watering period then the process will not commence due to Gardena's Safe Water Stop Technology.

Master Water Computer

£101.99 each

With the ability to program up to six schedules this is Gardena's most sophisticated controller. Using a computer enables you to save money and ensures targetted, optimised irrigation, e.g. set to start early morning or evening, when less water evaporates.

- ✓ **Number Of Schedules 6** (you can select six combinations of start time, run time and frequency per day)
- ✓ **Watering Start** time adjustable
- ✓ **Run Time** from 1 minute up to 4 hours
- ✓ **Frequency** days of the week.

Simple Operation

The weatherproof operating unit can be removed to carry out the setting of the watering schedules.

Setting is simple with the use of a rotary and push switch for selection of the data and confirmation - use the key lock function to prevent inadvertant changes.

Highly Flexible Watering

Six independent schedules can be created, with start time, duration and weekdays all adjustable.

If the weather changes you can also reduce the watering duration centrally in 10% steps or stopped during a phase of bad weather for 1 to 7 days.

Water Now Function

Without removing the computer from the tap or changing the settings, the 'Water Now' button allows watering to be started immediately.

So you could fill a watering can, attach a hose with a spray gun etc etc whilst only using one outside tap.

Watering Several Garden Areas Individually

Use the Master Water Computer in combination with the Water Distributor opposite and you will be able to control six different watering devices automatically.

This could be six different micro drip systems or a combination of micro drip systems, underground watering, lawn sprinklers etc.

The Master Water Computer is the only one which works with the Distributor as it is the only one with six programmable schedules.

Water Distributor

£91.99 each

Gardena have designed their Distrubutor so that from a single mains inlet you can run up to six irrigation areas in your garden one after the other.

As one outlet is supplied at a time the Distributor is ideal where there is insufficient water pressure to operate all the watering systems together.

Each time the water flow is stopped / started the Distributor switches the water supply to the next outlet.

It can be operated manually or controlled automatically by combining with the Master Water Computer.

5" wide x 11" deep x 5" high.

Add this . . .

For each outlet on the Distributor you'll need a Hose Connector to attach your hose.

½" Hose Connector

£5.99

For watertight connections.

Easy To Operate

Although the Distributor can water six areas, you don't have to use them all. It's quick and simple to deactive the non-required outlets using the setting lever.

Needs Little Space

The Distributor has six outlets which are placed next to each other and arranged in one direction.

The base plate supplied with the unit can be fixed on the ground or on a wall, thereby saving space.

The only water computer suitable for controlling the Water Distributor is the Master Water Computer as it has six schedules which can be set to control the six outlets on the Distributor.

The Best Way To Water Rows

Whether it's a row of vegetables, flowers, shrubs or a hedgerow it's simple to keep it correctly watered using this Micro Drip System.

You have two simple choices when it comes to watering along a row:

Using Supply Tube

End-line drippers (pg 11) can by installed directly into the walls of the ½" / 13mm Supply Tube (pg 8).

Simply route the tube along the base of the row and position each dripper at the base of each plant.

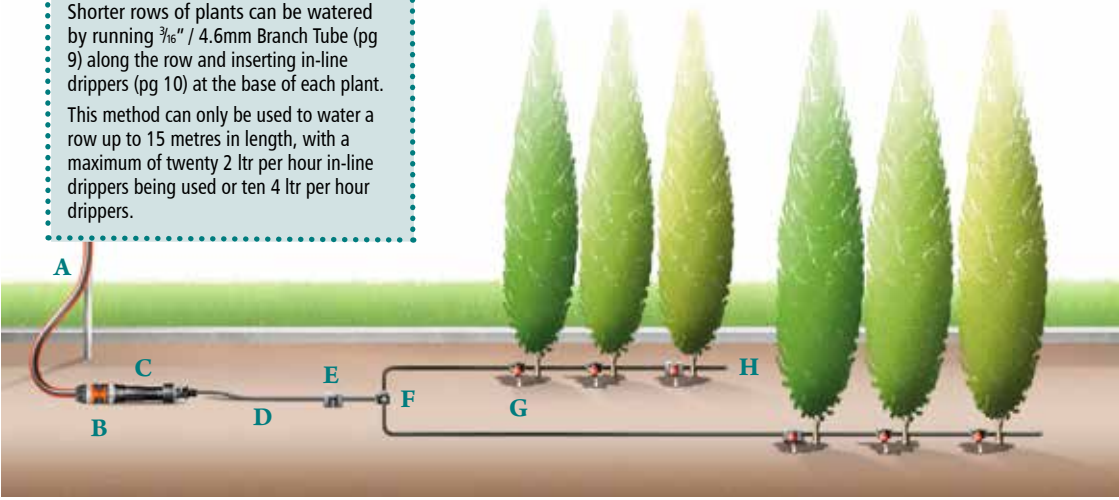
Shopping List These are the parts you'd need to order for the layout above:

- ✓ **A One Outlet Tap Connector** to click to hose connector
- ✓ **B ½" Hose Connector** secures hose to tap connector
- ✓ **C ½" Hose** transferring the water to the irrigation system
- ✓ **D ½" Water Stop** when disconnected stops water flow
- ✓ **E Standard Master Unit** for up to 1000 ltrs per hour
- ✓ **F ½" Supply Tube** carrying water to your plants
- ✓ **G ½" Tube & Nozzle Pegs** to hold tube securely in place
- ✓ **H 2 ltr per hour End-line Drippers** for precise watering
- ✓ **I ½" Tube Plug** to seal the end of the Supply Tube.

Using Branch Tube

Shorter rows of plants can be watered by running 3/16" / 4.6mm Branch Tube (pg 9) along the row and inserting in-line drippers (pg 10) at the base of each plant.

This method can only be used to water a row up to 15 metres in length, with a maximum of twenty 2 ltr per hour in-line drippers being used or ten 4 ltr per hour drippers.



Shopping List These are the parts you'd need to order for the layout above:

- ✓ **A ½" Hose** transferring the water to the irrigation system
- ✓ **B ½" Water Stop** when disconnected stops water flow
- ✓ **C Standard Master Unit** for up to 1000 ltrs per hour
- ✓ **D 3/16" Branch Tube** carrying water to your plants
- ✓ **E 3/16" Tube & Nozzle Pegs** to hold tube securely in place
- ✓ **F 3/16" T Connector** branching the Tube in multiple directions
- ✓ **G 2 ltr per hour In-line Drippers** for precise watering
- ✓ **H 3/16" Tube Plug** to seal the end of the Branch Tube.

Ways To Water Plants Growing In Raised Beds

Raised beds are becoming increasingly popular with gardeners as it makes it easy for you to keep the soil / compost in perfect condition for your plants, makes it easier to garden as the plants are off the ground and makes it possible to grow your own pretty much anywhere! However, it is important to have a simple, convenient way to water your raised beds and Gardena's Micro Drip System is ideal. When planning the layout we recommend considering the following:

Routing The Pipework Into Rows

If you have sown rows of plants in your raised bed then the simplest way to carry the water to the rows is to run one length of **½" Supply Tube** and branch off down each row with the **3/16" Branch Tube**.

To to this use the ensure the branch tube remains in place use the **½" to 3/16" Connectors** to transition from one tube to another (see page 9 for full details).

Isolating Areas For Versatile Watering

Your raised bed could cover a large area and have rows of different plants with very different watering requirements.

So as you lay out the **3/16" Branch Tube** down each row fit a **3/16" Shut-Off Valve** which will make it possible for you to water one row at a time - so for greedy plants you could water some rows more often than others.

Anchoring Tube As It Carries Water Around

Your irrigation system will be in operation for many months throughout the year, so it's important that it doesn't move around as the water flows through it.

For secure anchorage of both **½" Supply Tube** and **3/16" Branch Tube** use the sturdy **Pegs** shown on page 18.

Ten Golden Rules For Watering

To prevent your plants hanging their heads in the summer, they need plenty of water. But how much, how often, water from above or below? Gardena have put together some smart and helpful facts for watering your plants:

Rule Number One . . . 'Keep Evenly Moist'

Most plants depend on even moisture. However, slight drying out before watering promotes healthy root growth.

Rule Number Two . . . 'Water More Seldom But Then Thoroughly'

When watering a flower bed, one or two watering sessions per week are usually sufficient - the rule to remember is, it's better to water more seldom with plenty of water than watering a little often.

Rule Number Three . . . 'Water Late In The Evening or Early In The Morning'

Watering cooled soil in the evening or during the night means there is less water evaporation than if you watered hot soil during the day. It gives your plants sufficient time to absorb the water before the next day's heat.

But, I can hear you cry 'watering during the night . . . that's a bit exhausting!' You don't have to water yourself, rather, set up a watering system controlled with a timer and your plants can be watered whilst you sleep . . . it's that simple!

Rule Number Four . . . 'Keep Leaves Dry'

Wet leaves become diseased leaves, especially if leaves stay wet overnight, when leaf-mould diseases may result.
Leaves can also develop slight burn marks (burning glass effect of the water droplets) if they are watered during hot sun.

To avoid this Gardena have developed a range of watering devices which will supply water at ground level, meaning leaves are left water free.

Rule Number Five . . .
'Give The Right Quantity Of Water'

Providing the right quantity of water means that there must be sufficient water to reach the roots of your plants - too little often means water only covers the upper few centimetres of soil, not even reaching the roots of your plants at all, e.g. when there is a mulch covering the soil and too little water is provided.

Requirement-suited watering also means that crop plants which are particularly dependent upon moist soil for bumper crops are kept correctly watered until their crops are ripe for harvesting, examples include:

- ✓ the forming of **roots and corms** (carrots, potatoes)
- ✓ the forming of **leaves** (basil, field salad)
- ✓ the forming of **heads** (cauliflower, cabbage)
- ✓ the forming of **husks** (beans)
- ✓ or the forming of **fruit** (tomatoes, strawberries).

Rule Number Six . . . 'Give Larger Water Quantities In Parts'

When watering your garden you need to allow sufficient time for the water to seep into the soil. This means, if you are trying to provide a lot of water, it's better to water repeatedly in parts rather than watering all at once when the water may not have time to be absorbed into the soil and will run off unused.

Or you can do a 'pre water' prior to your main water - this allows more water to soak into the soil when you water the second time around.

Rule Number Seven . . .
'Water With A Target But Distribute'

If you always water your plant at one point this can result in one-sided root growth and poorer nutrient absorption in the soil.

To prevent this you should water equally all around your plants.

Rule Number Eight . . .
'Irrigate In A Way That Saves Water'

Water as much as necessary but also as little as possible.

This is made simple if you install an automatic irrigation system with a water timer / computer (pg. 20-24).

This type of system (the Micro Drip System is the perfect example) can be used to water a bed in your garden, plants growing in pots and troughs on a balcony, patio or courtyard.

Rule Number Nine . . . 'Avoid Water Logging'

Water logging suppresses the available breathing air around the roots of your plants - without pockets of air in the soil the root cells will drown from lack of oxygen.

Rule Number Ten . . . 'Use Quality Soil'

Ideally the soil within your garden should be rich in clay minerals as these have better expanding properties and can therefore hold water in the soil better and in a more even way. However, you also need to ensure in wet summers and in the winter that there is sufficient water drainage to prevent water logging.

PAGE	PRODUCT DESCRIPTION	QTY	PRICE	TOTAL
5	One Outlet Tap Connector			
5	Twin Outlet Tap Connector			
5	Four Outlet Tap Connector			
6	Gardena Classic ½" Hose - 30 metres / 50 metres			
6	½" Hose Connector			
6	½" Water Stop			
7	Master Unit - Standard / Master			
8	½" Supply Tube - per metre / 15 metres / 50 metres			
8	½" Straight Connectors (pk 3)			
8	½" Elbow Connectors (pk 2)			
8	½" T Connectors (pk 2)			
9	3/16" Branch Tube - per metre / 15 metres / 50 metres			
9	3/16" Straight Connectors (pk 10)			
9	3/16" Elbow Connectors (pk 10)			
9	3/16" T Connectors (pk 10)			
9	½" to 3/16" Connectors (pk 5)			
10	In-line Drippers - 0-10 ltr Adjustable Drippers (pk 10)			
10	In-line Drippers - 2 ltr Per Hour Drippers (pk 10)			
10	In-line Drippers - 4 ltr Per Hour Drippers (pk 10)			
11	End-line Drippers - 0-10 ltr Adjustable Drippers (pk 10)			
11	End-line Drippers - 2 ltr Per Hour Drippers (pk 25)			
11	End-line Drippers - 4 ltr Per Hour Drippers (pk 25)			
11	Installation Tool			
12	½" Tube Plug (pk 5)			
12	3/16" Tube Plug (pk 10)			
13	½" Shut-Off Valve			
13	3/16" Shut-Off Valve (pk 2)			
13	Control Valves (pk 5)			
14	½" Nozzle Joints (pk 5)			
14	3/16" Nozzle Joints (pk 5)			
14	9" Extension Pipes (pk 5)			
15	Small Area Spray Nozzles - 90° Spray Nozzles (pk 5)			
15	Small Area Spray Nozzles - 180° Spray Nozzles (pk 5)			
15	Small Area Spray Nozzles - 360° Spray Nozzles (pk 5)			
16	360° Micro Mist Nozzles (pk 5)			

PAGE	PRODUCT DESCRIPTION	QTY	PRICE	TOTAL
17	Adjustable Spray Nozzles For Small Areas - End-line Spray Nozzles (pk 10)			
17	Adjustable Spray Nozzles For Small Areas - In-line Spray Nozzles (pk 10)			
17	6 Pattern Adjustable Spray Nozzles (pk 2)			
18	½" Tube Pegs (pk 10)			
18	3/16" Tube Pegs (pk 10)			
18	3/16" Tube & Nozzle Pegs (pk 3)			
20	Water Computer - Flex (pg21)/ Select (pg22) / Multi (pg23) / Master (pg24)			
25	Water Distributor			

Top Tip . . .

OK . . so you've planned your system, worked out a shopping list and placed your order. Whilst you wait for it to arrive here are a few things we recommend you put ready in your tool kit . . .

- ✓ A pair of strong, sharp scissors
- ✓ A tape measure
- ✓ A hammer, drill, screws and raw plugs if you need to attach any parts to hard surfaces.

P.S Hope you remembered to order an Installation Tool as this will make setting up the system so much easier!

Micro Drip Irrigation Drip Starter Set

£74.99 each

If you're not sure how to plan your own irrigation system then this Drip Starter Set includes sufficient components to water a total of 30 plants with different watering requirements - it is perfect for plants in pots, tubs or troughs!

This set provides everything you need ready to get started immediately with installation acheived in just a few simple steps.

With all the ½" / 13mm connectors featuring Gardena's patented **'Quick & Easy Connection Technology'** this allows you to amend or extend the layout of this kit to suit your needs. So you can use this kit to help you get familiar with the layout, then purchase individual components to extend it to water larger areas and more plants.

Contents List

Within the drip starter kit are included all the following items:

- ✓ **1 Standard Master Unit** - details page 7
- ✓ **2 ½" Supply Tube** 15 metres - details page 8
- ✓ **3 3/16" Branch Tube** 20 metres - details page 9
- ✓ **4 3/16" T Connectors** 5 - details page 9
- ✓ **5 ½" to ½" to 3/16" Connectors** 10 - details page 9
- ✓ **6 2 ltr per hour In-line Drippers** 20 - details page 10
- ✓ **7 0-15 ltr Adjustable End-line Drippers** 10 - details opposite
- ✓ **8 ½" Tube Peg** 5 - details page 18
- ✓ **9 3/16" Tube Peg** 20 - details page 18
- ✓ **10 3/16" Shut-Off Valves** 3 - details page 12
- ✓ **11 ½" Tube Plug** 2 - details page 12
- ✓ **12 3/16" Tube Plug** 5 - details page 12
- ✓ **Cleaning Needle** - details opposite

Adjustable End-line Drippers

By using drippers to deliver water to your plants you get pinpoint accuracy, with an even water delivery, placed exactly where your plants need it, close to their roots.

With an adjustable water flow from between approx. 0 up to 15 litres per hour, these drippers are easy to adjust to suit the different water requirements of your plants.

Add this . . .

Automate the **Drip Starter Set** with this computer (see page 21 for full details). It features extra-short watering durations in seconds, which is ideal when watering plants in pots.

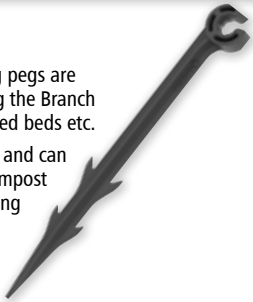
Flex Water Computer **£44.99**

Orders & Advice **01246 451077** | Shop online at **www.twowests.co.uk**

3/16" Tube Pegs

These robust 4¼" / 11cm long pegs are perfect when you are directing the Branch Tube into pots or troughs, raised beds etc.

The peg clips around the tube and can then be pushed into soil or compost to prevent the tube from moving whilst the irrigation system operates.



Cleaning Needle

Keep your In-line Drippers operating efficiently using this needle.

If a dripper gets blocked - with dirt or debris from your garden - push the needle into the front of the dripper. This will force the inner ball within the dripper to be pushed back and allow the water to flush through removing any blockages.

Removing the needle will then allow the ball to fall back into place so that the water then drips again.

Gardena's Patented 'Quick & Easy' Connection Technology

Gardena understands watering requirements can change over time. When designing their Micro Drip System they have incorporated a **twist and lock mechanism** in their ½" / 13mm connectors to ensure watertight joins that are:

- ✓ easy to loosen, re-position and reuse
- ✓ fast and efficient when setting up and extending layouts.

3/16" T Connectors

Within this Starter Set are included five of these T Connectors to use in the **3/16" Branch Tube**.

These barbed fittings (full details page 9) create a secure, watertight join within the tube.

They enable you to branch off this tube to other areas and to end-line drippers - perfect when you want to water plants growing in long, wide pots, containers or raised beds.

What Size System Can I Run From My Tap ?

Although your Micro Drip System is connected to your mains water, this does not mean that you can set up an irrigation of unlimited size!. It is the 'flow rate' (the amount of water that you get from your tap) which will determine the number of drip nozzles and spray nozzles you can run successfully.

Calculating The Flow Rate Is Easy

Just follow these three simple steps and you will be able to calculate what size of system you can operate successfully from your single outdoor tap.

Step One Remove all fittings from your outside tap and place a 10 litre bucket under it.

Step Two Turn the tap on fully and time in seconds how long it takes to fill the bucket.

Step Three Write the time it takes to fill your bucket here

Using the table below you can now find out how much water you have available to run your system.

BUCKET FILL TIMES Select your nearest bucket fill time	WATER AVAILABLE WHEN USING DRIP NOZZLES ONLY	WATER AVAILABLE WHEN USING DRIP, SPRAY OR MIST NOZZLES, OR SPRINKLERS
up to 14 seconds	1800 litres per hour	1500 litres per hour
15 to 19 seconds	1700 litres per hour	1400 litres per hour
20 to 24 seconds	1300 litres per hour	1000 litres per hour
25 to 29 seconds	1000 litres per hour	700 litres per hour
30 to 34 seconds	800 litres per hour	500 litres per hour
35 to 39 seconds	700 litres per hour	400 litres per hour
40 to 44 seconds	600 litres per hour	300 litres per hour
45 to 49 seconds	500 litres per hour	200 litres per hour
50 to 54 seconds	400 litres per hour	not recommended
55 to 60 seconds	300 litres per hour	not recommended
60 seconds or more	not recommended	not recommended

Calculating The Flow Rate Required

You can now calculate the flow rate required to run your desired irrigtion system. To help you do this we have included a table below that shows you how many litres of water per hour each drip, spray or mist nozzle or sprinkler uses.

PAGE	DESCRIPTION	FLOW RATE / LTR PER HOUR	QUANTITY TO USE	TOTAL FLOW RATE
10	In-line Drippers 0-10 ltr Adjustable Drippers	0 - 10		
10	In-line Drippers 2 ltr Per Hour Drippers	2		
10	In-line Drippers 4 ltr Per Hour Drippers	4		
11	End-line Drippers 0-10 ltr Adjustable Drippers	0 - 10		
11	End-line Drippers 2 ltr Per Hour Drippers	2		
11	End-line Drippers 4 ltr Per Hour Drippers	4		
15	Small Area Spray Nozzles - 90° Spray Nozzles	45		
15	Small Area Spray Nozzles - 180° Spray Nozzles	95		
15	Small Area Spray Nozzles - 360° Spray Nozzles	120		
16	360° Micro Mist Nozzles	15		
17	Adjustable Spray Nozzles For Small Areas - End-line	40		
17	Adjustable Spray Nozzles For Small Areas - In-line	40		
17	6 Pattern Adjustable Spray Nozzles	35		
17	360° Micro Roto Sprinklers	85		

Add up the total flow rate for your required system and write it here

Will Your Planned System Work Successfully?

Option One

If the total flow rate required (which you have written above) is the same or less than the water available to you (which you calculated on the previous page) then your planned irrigation system will work.

You can then choose the Master Unit you need. You can use the total flow rate for your required system to find out whether you will need to use either the Standard Master Unit or the Large Master Unit (pg 7) at the start of your irrigation system in order for it to operate successfully.

Option Two

If the total flow rate required is higher then you now have two possible choices:

Take Another Look At Your Plans . . .

Review your layout.

Is it possible for you to use less drip nozzles, spray nozzles, mist nozzles or sprinklers?

Or, as drip nozzles have a much lower flow rate per hour, could you exchange some of your spray or mist nozzles or sprinklers to be drip nozzles instead ?

Split Your System Into Smaller Areas . . .

Why not separate your layout into more than one area and water one area at a time?

For example if you watered the whole area and needed a flow rate of 2500, by splitting it into two areas you'd only need a flow rate of 1250.

You can still automate a system with smaller areas, watering one area at a time, by incorporating a Water Distributor (pg 25) into your plans.

How To Water Hanging Baskets

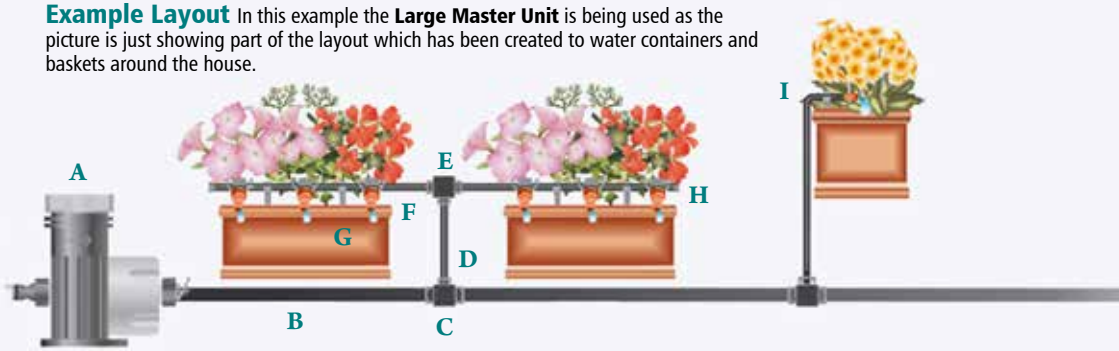
Hanging baskets look good when packed full of plants but as they only contain a limited amount of compost they rely heavily on you to provide them with the water and fertiliser they need to keep looking good through the summer months.

Make this simple and efficient by creating a layout using this micro drip system. Use the **½" Supply Tube** to carry the water from your outside tap to your hanging basket, using **½" Plastic Clamps** to hold it secure against your house wall. You can then connect branch tube to carry water around the hanging basket.

Create a loop around the basket using the **3/16" Branch Tube**, holding it in place with **3/16" Tube Pegs**. Depending on the size of the baskets, Gardena suggest using up to five **2 ltr per hour In-line Drippers** to steadily deliver water to your plants.

Add the **Fertiliser Dispenser** (pg 19) to the layout at the start to automatically feed your plants as they are watered.

Example Layout In this example the **Large Master Unit** is being used as the picture is just showing part of the layout which has been created to water containers and baskets around the house.



Shopping List These are the parts you'd need to order for the layout above:

- ✓ **A Large Master Unit** for 1000 up to 2000 ltrs per hour
- ✓ **B ½" Supply Tube** forms the central supply line
- ✓ **C ½" to 3/16" Connector** joins Supply to Branch Tube
- ✓ **D 3/16" Branch Tube** carrying water to your containers
- ✓ **E 3/16" T Connector** directs the tube in multiple directions
- ✓ **F 2 ltr per hour In-line Drippers** for precise watering
- ✓ **G 3/16" Tube Pegs** holds tube securely in soil / compost
- ✓ **H 3/16" Plug** to seal the end of the branch tube
- ✓ **I 2 ltr per hour End-line Drippers** fitting into end tube.

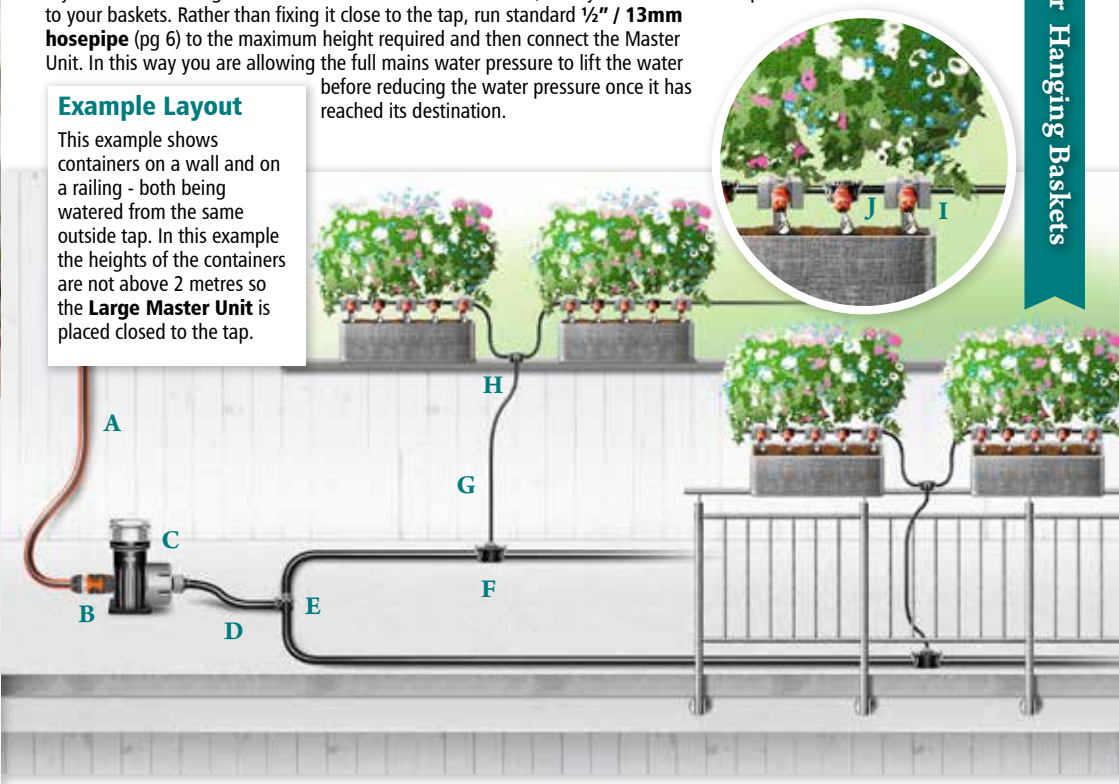
How High Will The Micro Drip System Work Successfully ?

To operate the Micro Drip System a **Master Unit** (pg 7) is used to regulate the water pressure so that it does not exceed 1.5 bar / 21 p.s.i. As a result Gardena recommends that their irrigation system will water hanging baskets which are up to 2 metres / 6ft 6in higher than the position of the Master Unit. Anything higher and it could be unreliable - the only way of knowing would be to try but other factors could affect it, such as the water flow could be less during the height of summer when demand is higher.

If your baskets are higher than 2 metres from the Master Unit, then you could move the position of the unit to be closer to your baskets. Rather than fixing it close to the tap, run standard **½" / 13mm hosepipe** (pg 6) to the maximum height required and then connect the Master Unit. In this way you are allowing the full mains water pressure to lift the water before reducing the water pressure once it has reached its destination.

Example Layout

This example shows containers on a wall and on a railing - both being watered from the same outside tap. In this example the heights of the containers are not above 2 metres so the **Large Master Unit** is placed closed to the tap.



Shopping List These are the parts you'd need to order for the layout above:

- ✓ **A** ½" **Hose** transferring the water to the irrigation system
- ✓ **B** ½" **Water Stop** when disconnected stops water flow
- ✓ **C** **Large Master Unit** for 1000 up to 2000 ltrs per hour
- ✓ **D** ½" **Supply Tube** forms the central supply line
- ✓ **E** ½" **T Connector** branches the Tube in multiple directions
- ✓ **F** ½" **to** 3/16" **Connectors** to join Supply Tube to Branch Tube
- ✓ **G** 3/16" **Branch Tube** carrying water to your plants
- ✓ **H** 3/16" **T Connector** directs the Tube in multiple directions
- ✓ **I** 3/16" **Tube & Nozzle Pegs** securely retains tube and drippers
- ✓ **J** **2 ltr per hour In-line Drippers** for precise watering

Top Tip . . .

When is the best time to water a hanging basket ?

Plants absord water faster during the morning, so ideally you should water your hanging baskets or containers early in the day so they will have sufficient time to soak up the water before the temperature increases as the day progresses.

Hanging baskets need to be watered frequently - aim to water your baskets at least once a day during the summer, sometimes twice if temperatures are high.

To make it easy and convenient for you to do both of the above we recommend adding a Water Timer / Computer (pg 20-24) to control your irrigation system - this will allow you to water your plants when you're still in bed or away from home - so all you need to do is admire the colourful blooms produced by your plants as a result of them being kept well watered.

Ways To Water Plants Growing In Containers, Troughs and Hanging Baskets

Containers, pots and troughs are a colourful addition to any garden, patio, courtyard or balcony. But they require regular watering to maintain their colourful blooms.

You can make this quick, easy and efficient by setting up a Micro Drip Irrigation System complete with water computer so this will happen even when you're not at home!

Routing The Pipework To Your Planters

Use the **½" Supply Tube** to carry the water from your outside tap behind your containers, troughs, pots and planters.

Make branches off the Supply Tube with **3/16" Branch Tube** to carry the water to each indiviual pot, planter, container etc.

To ensure the branch tube remains in place use the **3/16" Tube Pegs** to grip the tube and push their spike into the compost to prevent it moving.

For Square And Rectangular Planters

When installing drip or spray nozzles into the pipework to deliver the water to your plants, you can install a nozzle every 8" / 20cm.

When watering plants with similar requirements choose to use 2 ltr or 4 ltr per hour drip nozzles.

If you have a range of plants and shrubs that you need to provide with varying amounts of water then using the **Adjustable Drippers** would be the most efficient, cost effective method.

For Round Pots And Containers

For individual plants in pots using an **End-line Dripper** positioned at the base of the plant will deliver water effectively and efficiently.

For larger containers create a loop of **3/16" Branch Tube** around your pot or basket, using the **3/16" Tube Pegs** to hold it in place. **In-line Drippers** can then be fitted into the loop as required.

You could water larger shrubs or individual plants in your garden using a similar 'loop' of tube around the base to hold multiple drippers.

Independent Watering When You're Away

Using the Micro Drip System will not only make your watering easy and efficient, by including a Water Computer in the layout will make you independent from your neighbours help during holidays or absense.

There is no longer the need to give watering instructions or worry that your plants aren't getting the best care. Simply set up your system a few weeks before you are due to be away and check everything is working correctly and you have your timer set to suit your plants.

Then you can go away knowing your plants are going to be efficiently watered.

Add this . . .

Flex Water Computer

£44.99

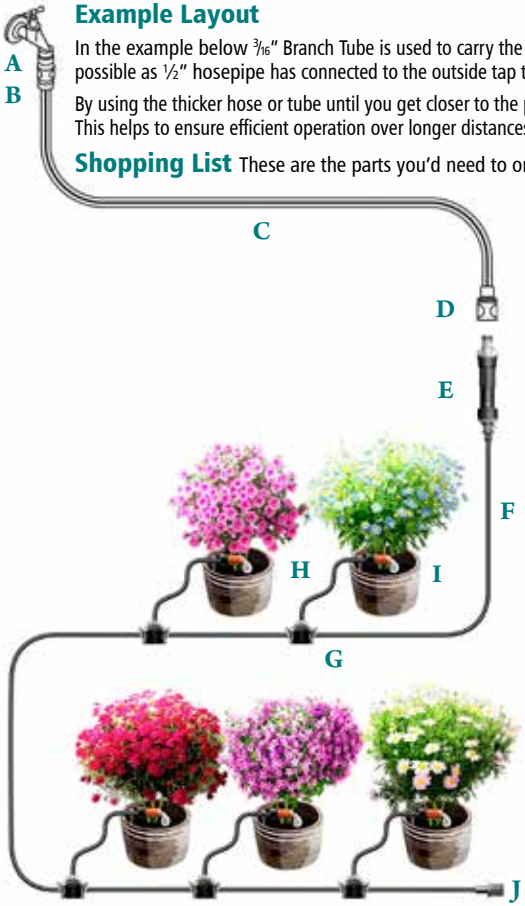
With this computers **extra-short watering duration** in seconds and the possibility of **activation up to six times a day**, it is ideal when you are watering plants growing in pots, troughs and containers.

See page 21 for full details.

Example Layout

In the example below 3/16" Branch Tube is used to carry the water from the **Standard Master Unit** to each of the pots. This is possible as ½" hosepipe has connected to the outside tap to take the water close to where the pots are situated.

By using the thicker hose or tube until you get closer to the pots it helps to maintain a quick flow of water, without restrictions. This helps to ensure efficient operation over longer distances.



Shopping List These are the parts you'd need to order for the layout below:

- ✓ **A One Outlet Tap Connector** to click to hose connector
- ✓ **B ½" Hose Connector** secures hose to tap connector
- ✓ **C ½" Hose** transferring the water to the irrigation system
- ✓ **D ½" Water Stop** when disconnected stops water flow
- ✓ **E Standard Master Unit** for up to 1000 ltrs per hour
- ✓ **F 3/16" Branch Tube** carrying water to your plants
- ✓ **G 3/16" T Connector** branching tube to pots / containers
- ✓ **H 3/16" Tube Pegs** hold tube securely in the pots
- ✓ **I 2 ltr Per Hour Drippers** at the base of the plant
- ✓ **J 3/16" Tube Plug** to seal the end of the Branch Tube.

Top Tip . . .

To encourage healthy root growth . . .

When watering plants in pots it is important to water deeply. This means that water needs to be allowed to reach the bottom of the pot. This is because you want the roots of the plants to grow and branch out through the soil towards the base and sides of the pot - deep watering will then provide all the roots with water. Shallow watering encourages roots to remain near the surface of the soil where they are more susceptible to heat and drought and will absorb less nutrients.

How To Water Plants Growing In Beds, Borders and Vegetable Plots

When watering flower borders, beds or whole vegetable plots, it can be easier to use **Sprinklers** or **Spray Nozzles** instead of using lots of individual drip nozzles.

Spray nozzles can be used together, positioned throughout flower beds or borders, to build up good coverage over the whole area. You can easily add **Extension Pipes** to lift the spray nozzles above your plants when required. Whilst **Control Valves** can be fitted to allow you to reduce the spray distance of the nozzles when watering smaller spaces.

Example Layout

The illustration above shows you the Small Area End-line Spray Nozzles fitted into the wall of the ½" Supply Tube. They are then being used in a line to water a range of plants in a large flower bed, which is why the Large Master Unit has been chosen.

Shopping List

These are the parts you'd need to order for the layout above:

- ✓ **A One Outlet Tap Connector** fits ½" or ¾" taps
- ✓ **B ½" Hose Connector** joins Tap Connector to ½" hose
- ✓ **C ½" Hose** transferring the water to the irrigation system
- ✓ **D ½" Water Stop** when disconnected stops water flow
- ✓ **E Large Master Unit** for 1000 up to 2000 ltrs per hour
- ✓ **F ½" Supply Tube** forms the central supply line
- ✓ **G ½" Tube & Nozzle Pegs** hold Tube above the compost
- ✓ **H ½" T Connector** branching the Supply Tube
- ✓ **I Small Area End-line Spray Nozzles** in Supply Tube
- ✓ **J ½" Plug** to seal the end of this section

Top Tip . . .

To effectively water beds and borders . . .

We recommend watering your beds, borders and vegtable plots for a prolonged period at least twice a week. This is to ensure water is able to reach the lowest roots of your plants.

On average spray noxzzles used within the Gardena Micro System distribute approximately 5 litres of water per square metre per hour. This corresponds to a seeping depth of approximately 5cm per hour, depending on the type of soil in your garden.

Orders & Advice **01246 451077** | Shop online at **www.twowests.co.uk**

Gardena Provides Maximum Flexibility

When it comes to watering Gardena have thought through the design of their Micro Irrigation System so that it provides you with maximum flexibility.

This is easily illustrated by looking at just one of their spray nozzles and how you can use it to water different plants within your garden.

From The Ground Up . . .

The **6 Pattern Adjustable Spray Nozzle** (pg 17) can be screwed directly into the wall of the **½" Supply Tube** (shown opposite). Or, to ensure the nozzle remains in an upright poistion, it can be screwed into a **½" Nozzle Joint** (pg 14) first before the joint is fitted into the Supply Tube (image below).

Lift Above Your Plants . . .

Just like in the photograph below, using an **Extension Pipe** you can lift the Spray Nozzle higher so that even taller plants can be easily irrigated.

In the photograph two extension pipes are joined together before the nozzle has been screwed into the top one for maximum height.

Ways To Water Plants In Your Greenhouse

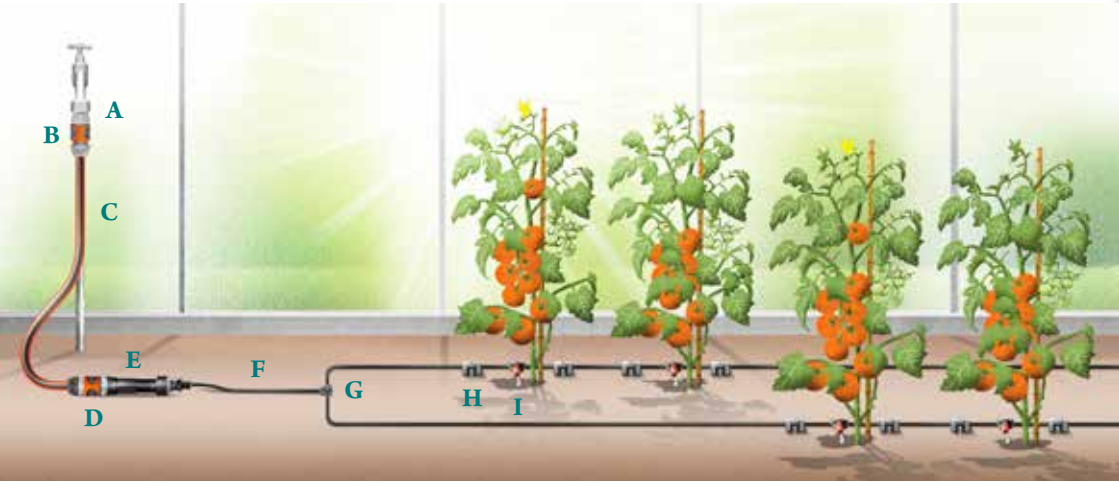
You can use this Micro Drip System to help improve the growing conditions in your greenhouse, polytunnel or cold frame.

Delicate plants such as seedlings can be watered from above by a very fine mist, whilst drip heads can be used to water larger individual plants such as tomatoes or cucumbers.

Example Layout

In the example below the two litre per hour drip nozzles have been positioned at the base of each plant to ensure that the tomatoes remain correctly watered. These same drip nozzles can be used in this way to supply plants such as cucumbers or peppers which you are growing in the ground within your greenhouse.

As these two litre drip nozzles have been connected into the 3/16" / 4.6mm Branch Tube then you are limited to a total of twenty nozzles which can be run successfully in a total length of fifteen metres of tube. Therefore, in the example layout you could have ten plants successfully watered on each of the two different branches of tube.



Shopping List These are the parts you'd need to order for the layout above:

- ✓ **A One Outlet Tap Connector** to click to hose connector
- ✓ **B ½" Hose Connector** secures hose to tap connector
- ✓ **C ½" Hose** transferring the water to the irrigation system
- ✓ **D ½" Water Stop** when disconnected stops water flow
- ✓ **E Standard Master Unit** for up to 1000 ltrs per hour
- ✓ **F 3/16" Branch Tube** carrying water to your plants
- ✓ **G 3/16" T Connector** sending the Tube in multiple directions
- ✓ **H 3/16" Tube Pegs** to hold the tube in soil to stop movement
- ✓ **I 2 ltr per hour In-line Drippers** for precise watering.

Top Tip . . .

How to make sure your tomato plants are well watered . . .

There is a lot of advice available online, in magazines and books on growing tomatoes correctly to ensure bumper crops. One of the most important factors is keeping them well watered, especially when grown in a greenhouse where they are relying on you to provide all their water. Generally you should provide each tomato plant with just over one litre of water every day - more when its hot and sunny, less when its cooler and cloudy. For best growth provide a light watering throughout the day rather than drenching them once a day and to prevent wastage, drip water at the base of the plants rather than getting water on their leaves.

When things go wrong . . .

This picture illustrates blossom-end rot, the result of forgetting to water your tomato plants regularly. This type of irregular watering can also result in the fruit splitting, stunted growth and root loss - that can mean you have reduced crop production and the fruit formed may be of poor quality.

This makes it important to plan your watering in advance, especially if you work or are going to be away on holiday.

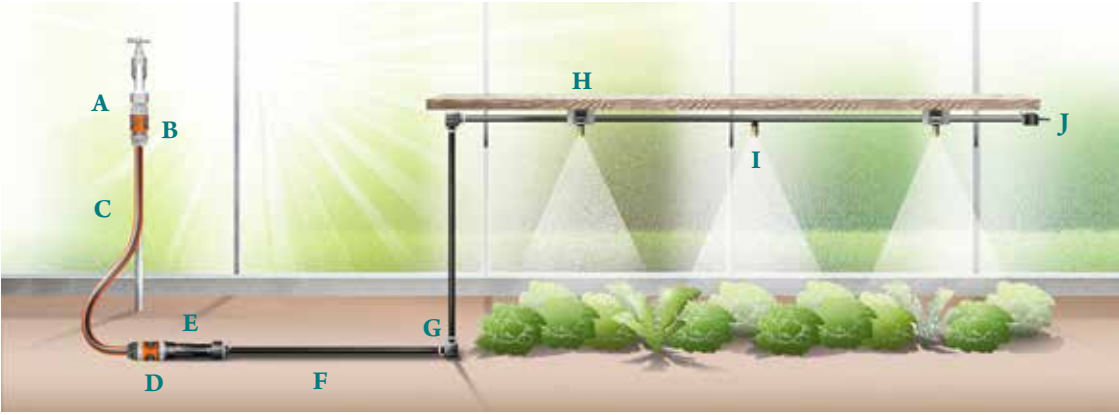
Micro Mist Nozzles give a very fine mist and are perfect for watering seedlings or damping down in hot weather.

Simply run ½" / 13mm Supply Tube along the roof of your greenhouse or cold frame. You can then install the Micro Mist Nozzles directly into the Supply Tube - we recommened spacing them approximately 50cm apart.

Example Layout

In the example below the Micro Mist Nozzles are being used in Supply Tube that has been secured to the underside of some greenhouse benching / shelving.

The nozzles are being used to provide a fine mist of water over the crops being grown directly in the soil in the greenhouse.



Shopping List These are the parts you'd need to order for the layout above:

- ✓ **A One Outlet Tap Connector** to click to hose connector
- ✓ **B ½" Hose Connector** secures hose to tap connector
- ✓ **C ½" Hose** transferring the water to the irrigation system
- ✓ **D ½" Water Stop** when disconnected stops water flow
- ✓ **E Standard Master Unit** for up to 1000 ltrs per hour
- ✓ **F ½" Supply Tube** carrying water to your plants
- ✓ **G ½" Elbow Connector** to direct the Tube through 90°
- ✓ **H ½" Tube Wall Clamps** for fixing to a hard surface
- ✓ **I 360° Micro Mist Nozzles** for a very fine mist of water
- ✓ **J ½" Tube Plug** to seal the end of the Supply Tube.

Regular and Seasonal Maintenance

Keep your irrigation system working efficienently by carrying out simple maintenance tasks throughout the year. You will find detailed advice within the product instructions. Here are our basic recommendations:

COMPONENT	SPRING	AUTUMN
MASTER UNIT	Re-fit at the start of the season. **Regularly check** the filter within the unit to prevent any build up of debris.	Remove, drain and clean before storing indoors away from frost. **Remember** to close off the Supply or Branch tube using a Tube Plug (pg. 10).
DRIPPERS AND SPRAY NOZZLES	Check for clogging. If necessary, disconnect from the tube and remove any scale or dirt by soaking in equal parts of vinegar and water. The drippers and nozzles can be dismantled for cleaning.	Both drippers and spray nozzles can be left in place - just take care to not damage them when cutting back plants.
WATER TIMERS / COMPUTERS	Insert new PP3 9 volt battery. Re-programme as required. **Regularly check** the filter within the unit to prevent any build up of debris.	Remove batteries. Drain and clean before storing indoors away from frost.
WATER DISTRIBUTOR	**Regularly check** the filter within the unit to prevent any build up of debris.	To ensure that no dirt has got into the unit which can affect the switch mechanism, it should be flushed through once a year. Remove and drain before storing indoors away from frost.