Micro/Drip Irrigation

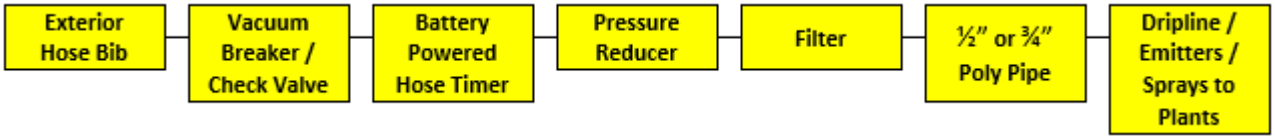
BEFORE BEGINNING

Determine your outside household water pressure and water flow. To determine pressure, Sharecost rents a water pressure gauge (Item **5912**) that attaches to any exterior faucet. Ensure that no water is running inside or outside of the home, attach the gauge to any outside faucet, open the faucet completely, read the gauge, and make note of the number. To determine water flow, use a measurable container (5 gallon bucket), ensure that no water is running inside or outside of the home, open the faucet completely, and time how long it takes to fill the container. To calculate gallons per hour (GPH) with a 5 gallon bucket: divide 18000 by the number of seconds required to fill the bucket – this is your flow rate in GPH. If the water pressure is below 30 PSI or the flow rate is below 360 GPH you may wish to talk to a qualified plumber to determine if your pressure can be safely increased to allow for efficient irrigation.

MICRO/DRIP IRRIGATION

Drip irrigation is a **low-pressure system (30 PSI or less)** that is very efficient in minimizing water loss / waste and is used to "point water" vegetable gardens, plant beds, trees, hedges, and shrubs. It is normally set up in one of the two following fashions:

Option #1



OR

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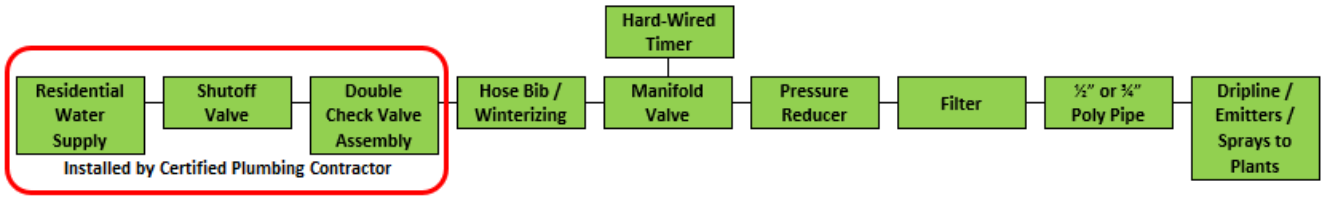
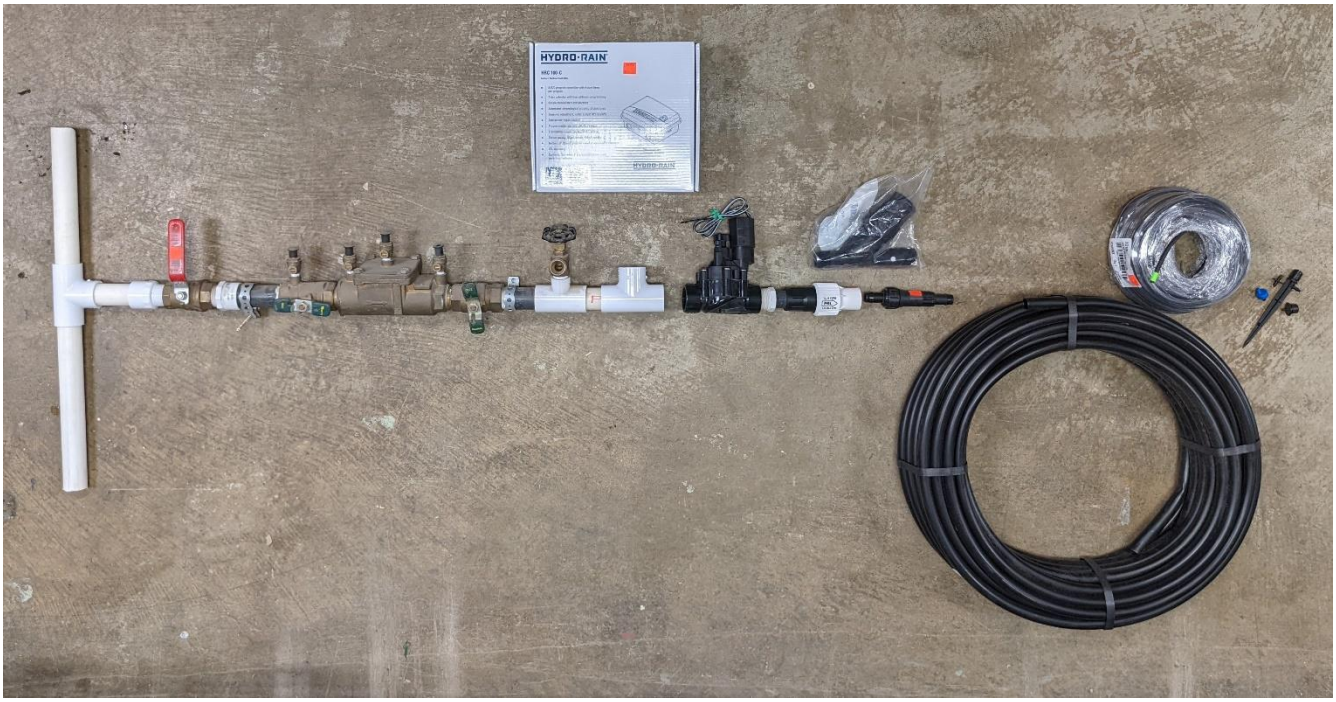
Option #2





BACKGROUND

The primary differences between Options #1 and #2 are **the amount of water available**, the method of control, the number of zones required per setup, and the cost. The second system is far more versatile and reliable due to the hardwired timer and higher volume of available water but will cost more than a basic setup. In addition, Option #2 will require a tie-in to the main water supply for the residence including a shut-off valve and a testable double check valve assembly to prevent backflow. The tie-in to the main water supply **MUST** be done to municipal building code and will need to be installed by a certified plumber. Backflow prevention is legally required on **ALL** irrigation systems to prevent irrigation water and possible contaminants from siphoning back into your residential water system. Backflow can be prevented in Option #1 with a more cost effective one-valve (Item **21184**) or a vacuum breaker (Item **22332**) that **MUST** be installed a minimum of 6" (150 mm) above the highest emitter in the system in order to work.

Water is typically delivered to your house in 1" pipe. To maximize the available water, delay reducing your supply pipe diameter until absolutely necessary. Actual water availability is reduced with pressure loss caused by emitters, distance from the water source, changes in direction, changes in elevation, and internal friction. The greater the number of emitters on a zone, the faster the water pressure drops; when the pressure drops to zero, no water will be emitted!

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Water Volume Reduction Chart Based on Theoretical Maximums				
Pipe Size	1"	3/4"	1/2"	1/4"
Available Pipe Diameter	100%	56%	25%	6%
Gallons per Hour	960	720	360	60

This chart is based on theoretical maximums in a straight level Class 200 PVC pipe in an irrigation system. The actual waterflow will be reduced due to distance, changes in direction and elevation, and internal friction. The greater the distance from the water source the lower the pressure and the lower volume of available water.

*** Pop-up Sprays and Rotors are rated in Gallons per Minute (GPM) not Gallons per Hour (GPH)**

To determine how many emitters can be used per zone refer to the chart below; the total volume emitted per zone MUST be lower than your MEASURED available water flow. Micro emitters cannot be used above 30 PSI and require in-line filtration; ensure you install a pressure regulator and filter upstream of your first emitter – combination units are also available.

Water Useage in GPH @ 15-30 PSI									
Sprinkler Head	**Item**	**360°**	**180°**	**90°**	**Sprinkler Head**	**Item**	**360°**	**180°**	**90°**
Fogger-Stake	21252	N/A	2.00	N/A	Micro Jet 90°	2925	N/A	N/A	31.00
Fogger-Barb	3036	N/A	2.00	N/A	Micro Jet 180°	2926	N/A	31.00	N/A
Fogger-Stake	21253	N/A	5.00	N/A	Micro Jet 360°	2924	31.00	N/A	N/A
Fogger-Barb	3035	N/A	5.00	N/A	Emitter-Blue	2858	0.50	N/A	N/A
Shrubbler-Stake	2898	13.00	N/A	N/A	Emitter-Black	2859	1.00	N/A	N/A
Shrubbler-Threaded	2896	13.00	N/A	N/A	Emitter-Red	2860	2.00	N/A	N/A
Shrubbler-Stake	2899	N/A	13.00	N/A	Spray-GREEN 10-pk	2861	N/A	N/A	3.00
Shrubbler-Threaded	2897	N/A	13.00	N/A	Spray-GREEN 10-pk	2862	N/A	3.00	N/A
Vortex-Threaded	2900	19.50	N/A	N/A	Spray-GREEN 10-pk	2863	3.00	N/A	N/A
Vortex-Stake	2901	19.50	N/A	N/A	Spray-BLACK 10-pk	2933	N/A	N/A	1.80
					Spray-BLACK 10-pk	2935	N/A	1.80	N/A
					Spray-BLACK 10-pk	2936	1.80	N/A	N/A

* Water consumption increases with increases in pressure / volumes noted are maximums for the emitters

When planning your zones, if possible, bring the water supply into the zone at the mid-point using a tee fitting; this maximizes available water pressure and flow. Where feasible, loop lines rather than using dead ends. All our dripline products indicate a maximum length of line that can be installed. For best results, keep lines below the maximum allowable lengths. Install pressure reducers as close as possible to low-pressure fittings to maximize water volume available for irrigation.

KEY COMPONENTS

Manifold is a valve or bank of valves that can be controlled electronically in a multi-zone irrigation system by hardwiring to a multi-zone controller. As a lower cost alternative with no timer, a system can be set up manually using a **Ball Valve** to control each zone, but each ball valve would need to be manually opened and closed to water the required zone(s). The larger the number of sprays/emitters in a zone, the less pressure, and therefore less water, is available to reach the end of the system. Zones are used to minimize pressure loss (limiting the number of sprays per valve) to ensure each emitter has enough water pressure to function properly.

Micro/Drip Irrigation

Pressure Reducer reduces the operating pressure from city / residential pressure down to 30 PSI for micro irrigation. This is a **MUST** to prevent drip fittings from losing connection with the ¼" barbed fittings.

Filter is used to filter the water and prevent clogging in small drip fitting outlets – even treated residential water may contain particles large enough to clog a drip outlet.

Poly Pipe is black flexible tubing used to distribute water in a drip irrigation line that can be punctured for drip fittings in a low-pressure setting. It is typically run on top of the ground but can be covered by garden mulch. Emitters and dripline should **NEVER** be covered as they could clog and stop functioning over time.

Drip Emitters are small fittings that release **0.5-4** G**allons per Hour** (1.9-15 litres) of water in a drip.

Micro-Jets/Foggers/Shrubblers/Vortex Sprays are small fittings that spray water 1-8 feet (0.3-2.4 meters) in radius that release **0-31 Gallons per Hour** (0-117.3 litres).

SETUP

Planning is key to an effective irrigation system. Prior to deciding on your required irrigation components, lay out the area to be watered on a scaled grid-paper drawing. Ensure you make note of each grouping of plants and make sure any changes in elevation (slopes) are detailed on your drawing. Water will naturally go to the lowest point in a system so ideally each zone will be installed at a consistent height. On a slope, if at all possible, run lines laterally so individual lines maintain one elevation.

When planning your irrigation system, ensure you include required fittings (elbows, tee, reducers, etc), pipe, and tubing. **In addition to standard ½" PVC fittings, please be aware that three types of tube fittings are also nominally referred to as ½". These are ½" funny pipe (12 mm), ½" poly (15 mm), and ½" drip tubing (brown 17 mm). The pipe, tubing, and fittings are NOT interchangeable, but adapters are available to move between each type. In addition, hose thread and pipe thread are NOT the same. To transition from hose fittings to pipe fittings, ensure you use an appropriate adapter.** Please refer to the bin labels in our irrigation aisle for appropriate item selection.

Water is delivered to the zone using UV resistant poly tubing (Item **2854** for ½" or Item **2974** for ¾"). The system is held together using barbed fittings secured by stainless steel hose clamps (Item **2981** or **2983** or **3409**). Individual areas off the main line are serviced using low pressure ¼" poly tubing (Item **2923**) and ¼" micro fittings. Tubing should be staked down every few feet using garden pins (Item **20411** or **20412**) to prevent it from wandering. Any areas that use ¼" tubing and fittings **MUST** have a pressure reducer and filter (Item **3024** or **10068 and 10150**) installed upstream of the ¼" tubing at the manifold.

To install a ¼" line off of the main poly tubing, use a yellow punch key (Item **2849**) to puncture a hole in the desired location, install a barbed coupling (Item **2885**) into the hole, and insert the other end of the barb into the desired length of ¼" line. The ¼" line is run to the final location and completed using a drip emitter or spray fitting. If the water is required at height, micro risers (Item **2851** for 12" or Item **2852** for 18") can be installed using a threaded adapter (Item **2931** or **2932**), an asta stake, and a threaded micro-jet, shrubbler, or fogger fitting. If a hole in the irrigation line is placed incorrectly or is no longer required, cut the line at the hole and insert a barbed coupler. Do **NOT** bury dripline or emitters or they will not function.

To water lines of trees, hedges, shrubs, or plants, ¼" or ½" dripline with pre-set drip spacing can be used. For runs exceeding 20' be sure to use ½" dripline (Item **22681** with 12" drip spacing). To install the ½" dripline, use a poly tee

with a threaded centre fitting plus a ½" poly drip adapter fitting (Item **2973** plus Item **2962** if using ½" poly tubing or Item **2975** and Item **2962** if using ¾" poly tubing). For smaller areas ¼" dripline can be used (Item **20643** for 6" spacing or Item **19792** for 12" spacing). **Once all the lines are in place and PRIOR to installing any emitters, briefly turn on the system to blowout any dirt or debris that accumulated in the system during installation.**

Please note – the system **MUST** be closed (all ends capped) in order to function properly. Looped runs are generally preferable to dead ends. To close a dripline, a tee fitting can be used; insert one arm of the tee fitting into the line, insert an additional segment of line into the other arm, then bring the end of the line back in a gentle loop to the centre arm of the tee. The cap or plug furthest from the water source should be removable for winterization.

WINTERIZATION

It is important that the lines are cleared or "blown out" prior to the end of season freeze cycle. Sharecost rents air compressors to winterize your system – please inquire at the Rental Desk. Alternately, there are many irrigation contractors that can perform this service for a fee.

OTHER SUPPLIES

To create your irrigation system, Sharecost offers rentals of all the equipment you will need:

- Sod cutters
- Trenchers
- Mini Excavators
- Wheelbarrows (including ride-on and walk-behind gas units)

We produce our own nutrient rich soils and carry vegetable, herb, flower, and lawn seeds for your garden. All of our proprietary soil blends are created from locally sourced light, humus-like soil, certified organic compost, and coarse sandy loam. Please review our **Bulk Organics** handout for complete details.

- **Growmix** is a nutrient dense soil that is ideal for vegetable gardens, flower beds, and hanging baskets
- **Turf Soil** is built specifically for new turf installations and starting a new lawn from seed
- **Bed Builder** is a good quality sandy loam with a lower organic content that is a good choice for building up beds or a more economical choice for larger installations
- **Dark Bark Mulch** is a rich chocolate brown soil topper for increasing moisture retention and weed control
- **Fir Bark Mulch** is tan/brown in colour and is used for increasing moisture retention and weed control

A large selection of vegetable, flower, herb, grass, and lawn alternative seeds are available in store from West Coast Seeds and select other suppliers. Dolopril lime and pelletized fertilizers are also available.

Micro/Drip Irrigation

COMMON ITEM ORDER SHEET - MICRO IRRIGATION

Qty	Item	Name	Bin		Qty	Item	Name	Bin
	22543	Micro, 1/4" 4-Outlet Manifold	A3O08			20168	Timer, One Station, Hose Outlet	A3H
	2885	Micro, 1/4" Coupling BxB (10-pack	A3O04			22332	Brass Hose Bib Vacuum Breaker	A3G
	2886	Micro, 1/4" Elbow BxB (10-pack)	A3O05			22552	Brass Shut-off Coupling	A3G
	2930	Micro, 1/4" Tee BxBxB (10-pack)	A3O05			21184	Check Valve, 3/4" TxT	A3Q51
	2923	Micro, 1/4" Tubing, 100' Roll	A3H			18184	Hose Adapt., 3/4"FHT(SW)xPoly B	A3Q07
	2872	Micro, 1/4" Valve - BxB	A3O20			22329	Hose Adapt., 3/4"FHT(SW)xPoly B	A3Q08
	19792	Micro, 1/4" x 12" Dripline, 100' rol	A3H			2892	Hose Adapt., 3/4"MIPTx3/4"FHT (S	A3Q12
	20643	Micro, 1/4" x 6" Dripline, 100' roll	A3H			2891	Hose Adapt., 3/4"MIPTx3/4"MHT	A3Q14
	2962	1/2" POLY Adapter Male, Bx1/2" M	A3P71			2736	Coupling, 1/2" TxT	A3P25
	2966	1/2" POLY Adapter Male, Bx3/4" M	A3P72			2737	Coupling, 3/4" TxT	A3P41
	18106	1/2" POLY Ball Valve, B x B	A3P73			2725	Cap, 1/2" T	A3P23
	2964	1/2" POLY Coupling, BxB	A3P69			2727	Cap, 3/4" T	A3P39
	2967	1/2" POLY Elbow, BxB	A3P74			22547	Filter, 3/4" AMIAD TxT	A3H
	2969	1/2" POLY Tee, BxBxB	A3P76			3024	Pressure Regulating Filter, 30 PSI	A3H
	2979	3/4" POLY Adapter Male, Bx3/4" M	A3P87			10068	Pressure Regulator, 30 PSI	A3J
	2980	3/4" POLY Coupling, BxB	A3P85			22681	1/2"x100' NDS Dripline 12" Spacin	BW
	2978	3/4" POLY Elbow, BxB	A3P88			2854	1/2" POLY Tubing per Foot	BW
	2977	3/4" POLY Tee, BxBxB	A3P92			2974	3/4" POLY Tubing per Foot	BW
						2981	Clamp, 1/2" Oetiker	A3O25
	20411	Garden Pins, 20 Pack	EC1			2983	Clamp, 3/4" Oetiker	A3O25
	20412	Garden Pins, 50 Pack	EC1			3409	Clamp 7/16" to 1" Predator	A3O26

EMITTER ORDER SHEET - MICRO IRRIGATION

	2898	Micro, Shrubbler Full-Stake	A3012			2925	Micro, 1/4" Micro Jet 90°	A3O19
	2896	Micro, Shrubbler Full-Threaded	A3010			2926	Micro, 1/4" Micro Jet 180°	A3O19
	2899	Micro, Shrubbler Half-Stake	A3011			2924	Micro, 1/4" Micro Jet 360°	A3O19
	2897	Micro, Shrubbler Half-Threaded	A3010			2861	Micro, Spray 90° GREEN 10-pack	A3O02
	2900	Micro, Vortex-Threaded	A3O13			2862	Micro, Spray 180° GREEN 10-pack	A3O02
	2901	Micro, Vortex - w/ Stake	A3O14			2863	Micro, Spray 360° GREEN 10-pack	A3O02
	2858	Micro, Emitter, 0.5 GPH (blue)	A3O01			2933	Micro, Spray 90° BLACK 10-pack	A3O03
	2859	Micro, Emitter, 1.0 GPH (black)	A3O01			2935	Micro, Spray 180° BLACK 10-pack	A3O03
	2860	Micro, Emitter, 2.0 GPH (red)	A3O01			2936	Micro, Spray 360° BLACK 10-pack	A3O03
	21252	Micro, Fogger 2GPH-Stake	A3021			21253	Micro, Fogger 5GPH-Stake	A3023
	3036	Micro, Fogger 2GPH-Threaded	A3022			3035	Micro, Fogger 5GPH-Threaded	A3022

ADDITIONAL ITEMS - MICRO IRRIGATION

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