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System Checks

In the initial stages of installing a drip irrigation system, it is important to familiarize yourself with the different components and their uses. This section will cover all of the drip irrigation terminology, component models, and how to systematically inspect your new system to ensure your drip system is a success!

What We Will Cover

- Initial System Check
  - Checking Your Head Assembly
    - AC Valve, DC Valve, Backflow Device, Filter, Pressure Regulator and Injectors
- Flushing the System
- Emitters and Micro Sprinklers
  - Drippers and Micro Sprinklers
- Checking for Leaks

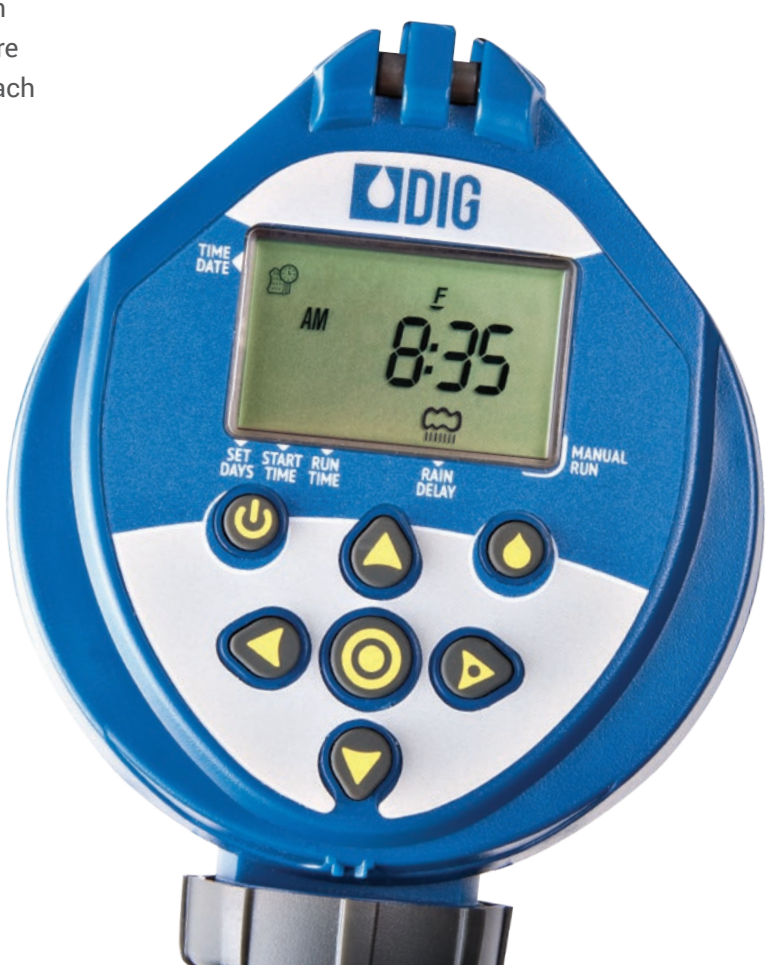
System Checks

Head Assembly

Checking the components of the head assembly is vital to ensuring correct operation and longevity of any drip system. There are many different components to a head assembly and each system can be different, so we will talk about all possible components here and you may choose the information for the parts you have. In general, all components need to be free of debris. If your assembly has been stored in a garage, it is a good idea to take it apart and rinse out each part. This may seem like more work than is necessary, but by reassembling it you will ensure each part is newly sealed and tight to prevent leaks. It is much harder to tighten up parts on a head assembly once it has been reinstalled into a system. Beyond that, here are the finer points on each component. Check each individual component of the system.

Valves

The AC, DC valve, or battery operated controller with valve should only need to be rinsed out/off and have the components on each side reattached. Make sure to use only Teflon tape on threads going into the valve. There should not be any Teflon tape hanging into the water flow or off the threads being screwed into the valve. Even small pieces of tape in the valve could compromise its correct operation. See arrow on side of the valve for water direction.



Controller Valve

If you are using valves that are controlled by an external control unit, make sure the manual ON/OFF lever on the solenoid is in the upright or “automatic” position. The controller can only operate the valve in the auto position. If you are using a hose end timer, check to be sure the inlet side is free of debris and the screen washer is properly seated in the swivel. Attach the water treatment devices (backflow, filter, pressure regulator, and etc), making sure each hose thread device has seat washers.

Battery Operated Solenoid Assembly

Relieve the water pressure on the valve by using the manual run on the controller and then take off the solenoid by gently unscrewing it a quarter of a turn. Be careful when you lift it off as there is an “O” ring (#1) which fits between the solenoid and the bayonet (#3) that it screws into. This “O” ring can sometimes stay in the bayonet, but most of the time it stays on the bottom of the solenoid. Make sure to keep this “O” ring clean.

Look inside the bayonet (the part of the solenoid that came off) and you will see a small round yellow piece (the “puppet” #2). Using tweezers or a very small pair of needle nosed pliers, take this piece out and hold onto it!

Some bayonets have small colored (green or yellow) pieces in slots on each side of the round yellow puppet; these should be taken out first and can be discarded. They are there to keep the yellow puppet in place during the assembly process at the factory.

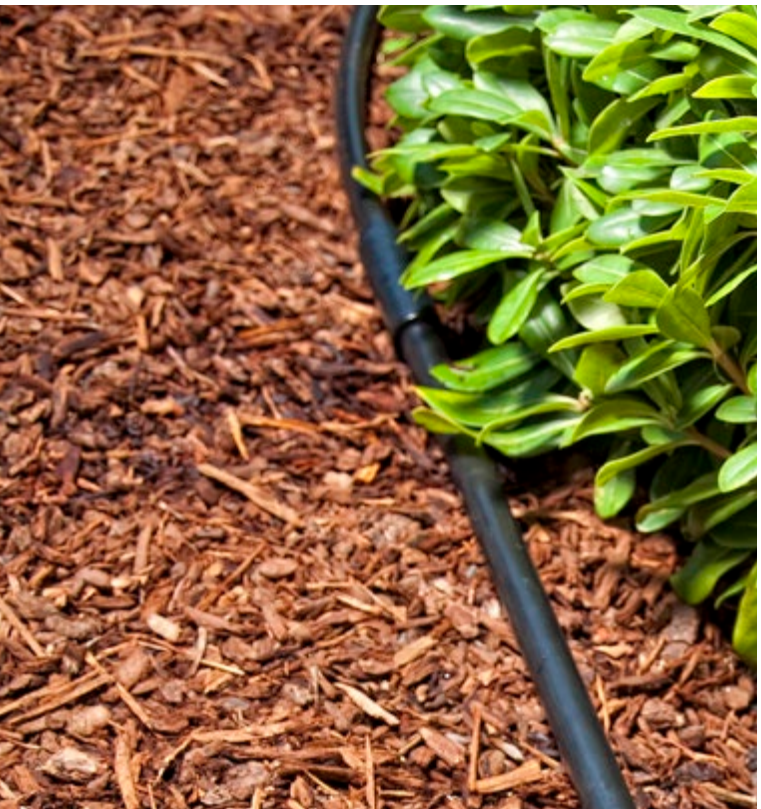
With all this done, slowly turn on the water to the valve. It should shoot up from where the puppet was installed and should be a smooth round stream of water. If the water sprays out all over, something is blocking the water passage. Normally, just running the water with the valve open will dislodge any debris, but it might need some help using a pin. Turn off the water and check if you can see and dislodge the blockage. Try the water test again and if the stream is smooth the blockage is gone and you can reassemble the parts.

If the blockage cannot be cleared surgery is needed! Start by unscrewing the bayonet from the valve. Be careful when doing this! The bayonet can become brittle from exposure to sunlight, so try to only use your hand. Once you unscrew the bayonet, lift it off gently and look for the small “O” ring (#4) in the bottom of the bayonet (it may stay in the valve). Hold onto this because the valve will not work and can leak without it. Now try blowing through the bayonet to clear any blockage. Look at the two openings to see if you can spot anything. Also try turning on the water to the valve again. This might clear any debris from inside the valve. Reassemble and test. Do not use any glue or Teflon tape on the thread, as the “O” ring will seal the connection. To reassemble, put the parts back together reversing the above instructions.

Note
The spring on the round yellow puppet faces downward toward the valve. The “O” ring is easiest to keep in place by installing it on the bottom of the solenoid; if it will not hold in place, use a LITTLE Vaseline to make it stick. Now put the solenoid back into the bayonet. Take note which way the manual on/off lever is facing so it is easy to get to. If it faces the body of the valve it is harder to turn. Face it outward away from the valve.

Backflow

The ¾” backflow preventer keeps contaminated water from re-entering the household/municipal water supply lines. Look out for any debris which might hamper its operation. You may also test it by blowing air into the water inlet side; air should pass through freely. Blowing into the water outlet side should not allow any air through. If it does, there is a chance the backflow is broken or the diaphragm is not seated. Try shaking it back and forth and blowing again. If it still lets air through from the water outlet side, consider replacing it to safeguard your drinking water supply.



Filter

The screen filter protects the water passages of drip emitters and micro sprinklers from particles that may enter the irrigation system. Take the filter apart and remove the screen. Use an old soft toothbrush to clean the screen under clean water. Try to make sure no debris is hanging loosely on the screen as it may come off and enter the drip system. You can use soap if you like, but rinse it thoroughly to get rid of any soap residue before reinstalling. Also take the flush cap off the bottom of the filter body and rinse both sections completely. Sediment can lodge itself on the inside of the flush cap and body so look carefully. Do the same with the upper body part. On the “Y” style filters, there should be an “O” ring on the top filter body piece just below the threads in a slot. Sometimes this “O” ring will dry out and make it hard to screw the filter body parts back together. If it does, place a LITTLE Vaseline around the “O” ring and it will screw together! Both ends of the screen also have “O” rings. These help to seal the screen inside the filter body. When placing the screen inside the filter body, push the screen gently in until you feel it slip into the screen slot, if installed correctly the screen should stay in place without any help. Now screw the two body parts together. Try to take off any old Teflon tape from the threads on the water inlet and outlet. Then wrap new Teflon tape before reinstalling into the head assembly. See arrow on the filter for the correct installation.

Did you know

Irregular wetting patterns in the soil are sometimes caused by the soil itself, not the irrigation! Differences in soil type and density can cause uneven water absorption into the plant root zone.

Pressure Regulator

The hose and pipe thread preset pressure regulators are used to reduce and regulate the incoming pressure of the household's water entering a drip irrigation or micro sprinkler system to the appropriate operating pressure. There is no standard test which can be done on this part without it being installed so just make sure it is rinsed out and clean. Unless you have drippers and fittings coming apart the regulator should be fine. If water is streaming from the small hole on the side of the regulator, it will need to be replaced.

Fertilizer Injector

Make sure the property or the system is equipped with a Backflow Prevention Device. Installing your injector system improperly can cause risk of water contamination and pose health risks. Do not connect your unit to a sprinkler or drip line that is not protected by a backflow device that separates the sprinkler or drip system from the water systems.
The EZ-FLO System requires water pressure to operate, but does not produce pressure. Thus, the system is considered a venture-driven "Proportional", not an "Injector System" when defined for backflow requirements. Do not install if pressure exceeds 80 PSI.

The proportioning cap of the unit must be above the highest level of the irrigation system in order to create sufficient pressures to draw fertilizer out of the tank. Zones with elevation above the unit may require the use of a special ball valve in order to compensate for the weight of the water going to that elevated zone. Excessive tees, elbows in the irrigation system and the use of volume reducers, except those specified by EZ-FLO, may cause the unit to flow improperly.

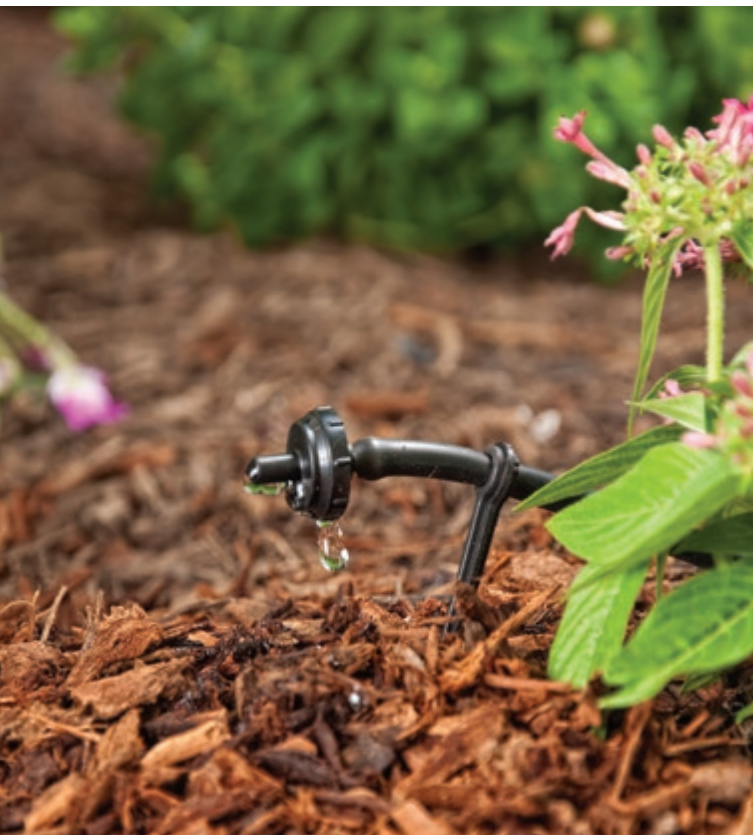
To make sure that the system will work correctly, first remove the cap and wash the fertilizer tank with clean water. Second, use an old soft toothbrush to clean the inside of the fertilizer tank. Make sure no debris or dirt is left inside the tank. Third, remove the micro tube from each side of the cap and also wash with clean water. You can use soap if you like, or fill the tank with water and add 2% chlorine solution, let it sit for a few hours, then rinse it thoroughly to get rid of any residue. Fourth, after cleaning the tank, place the threaded cap on the tank and make sure that the cap is sitting tight. Lastly, reattach the micro tube to the cap and pressurize the system.

Swivel Adapter

Swivel Adaptors come in many styles so just make sure they are not cracked and the threads are not stripped. Also make sure the washer is properly seated.

Flush the System

Once you have the head assembly checked and installed in the system you need, flush out the lines in case any dirt has gotten into them. Go to all the line ends on any 1/2" or larger poly tube and open the ends. If you have flush valves on the line ends, unscrew the valve part and take it off. Make sure not to lay it in the dirt. It may get clogged and defeat the whole purpose of having the flush valve on a line. With all the line ends off, turn on the water to the system and let it run for a moment. While the water runs, look for the line end where most of the water comes out and check to make sure it looks clear. Then close off this line end and find the next one with the most flow, repeat the process until all the line ends are closed off. The reason for doing this with multiple line ends is that water always takes the path with least resistance.



Emitters and Micro Sprinklers

Once the system is flushed out and sealed back up, take a walk along all the lines and look at each of the drippers and micro sprinklers to make sure they are all working.

Drippers

Drippers should be flowing water at their relative flow rate (usually 1-2 gallons per hour). If a dripper seems clogged try covering the water outlet with a finger to stop the flow and then release. Repeat this a few times and check the flow. Normally this will work, but if not you may need to replace the dripper. Drippers that flow either too much or too little water should be removed. Use a goof plug to repair the hole and punch a new hole to install the replacement dripper.

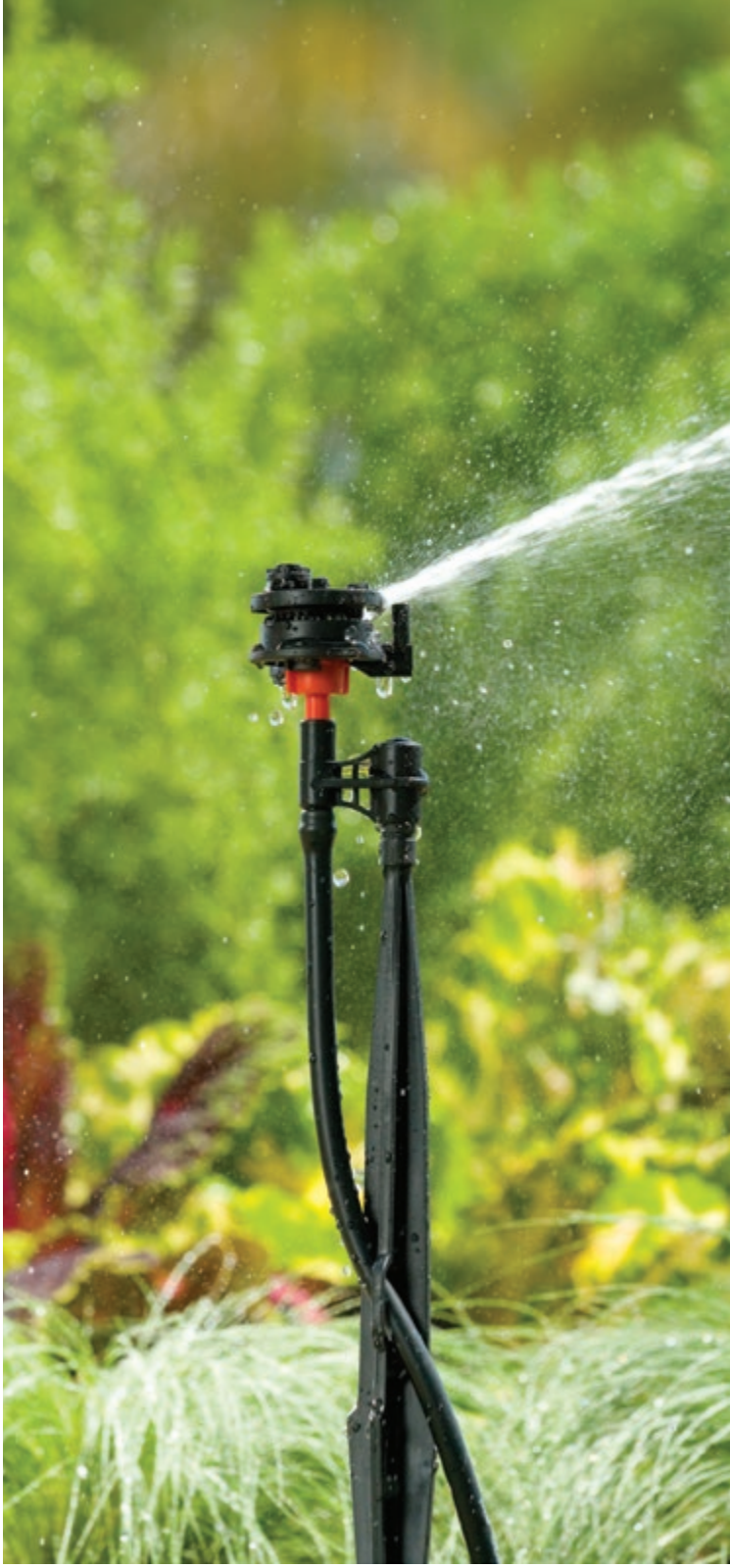
Make sure to always check the flow of a dripper against one of the same model and flow rate.

Flag drippers and some adjustable drippers can be taken apart and cleaned. Button drippers in compensating and non-compensating styles can be taken out of the poly tube and blown through from both sides and then replaced. This may or may not clear the blockage. Make sure to check the water inlet side of the dripper for any debris. This is a common reason for water blockage. In fact, it is the number one reason for starting up a new system.

Micro Sprinklers

Avoid installing new micro sprinklers until after the initial flushing. Visually inspect all existing sprinklers for functionality. You have a few alternatives for fixing sprinklers that are not flowing properly, depending on the sprinkler type. For adjustable flow sprinklers, move the adjustment from off to full and then see if the flow is correct. If not, some adjustable micro sprinklers can be taken apart; this is advised.

For fixed flow micro sprinklers, first check if any deflectors are missing or knocked loose. Then try running your finger over the water outlet; sometimes the blockage is just external and only needs to be cleaned off. If the sprinkler is still not working correctly, turn off the water to the system and try to blow into the sprinkler. If the micro sprinkler is still not working correctly, turn off the water to the system and remove the micro sprinkler head by twisting it counter clockwise. Check and see if anything is blocking the micro sprinkler orifice; if debris has accumulated, try to blow into the sprinkler. Install the head back by twisting it clockwise and turn the system back on. If the micro sprinkler works fine for a few seconds and then quits, it proves that dirt is inside the line. Flush the 1/2" line again to make sure that all debris are out of the line and then turn the water on for a few seconds to make sure that the micro sprinkler is working correctly. If none of these solutions work it may be the time to replace the micro sprinkler.



Did you know

The first sprinkler was implemented in 1871, used to water the lawns of European royalty.

Check for Leaks

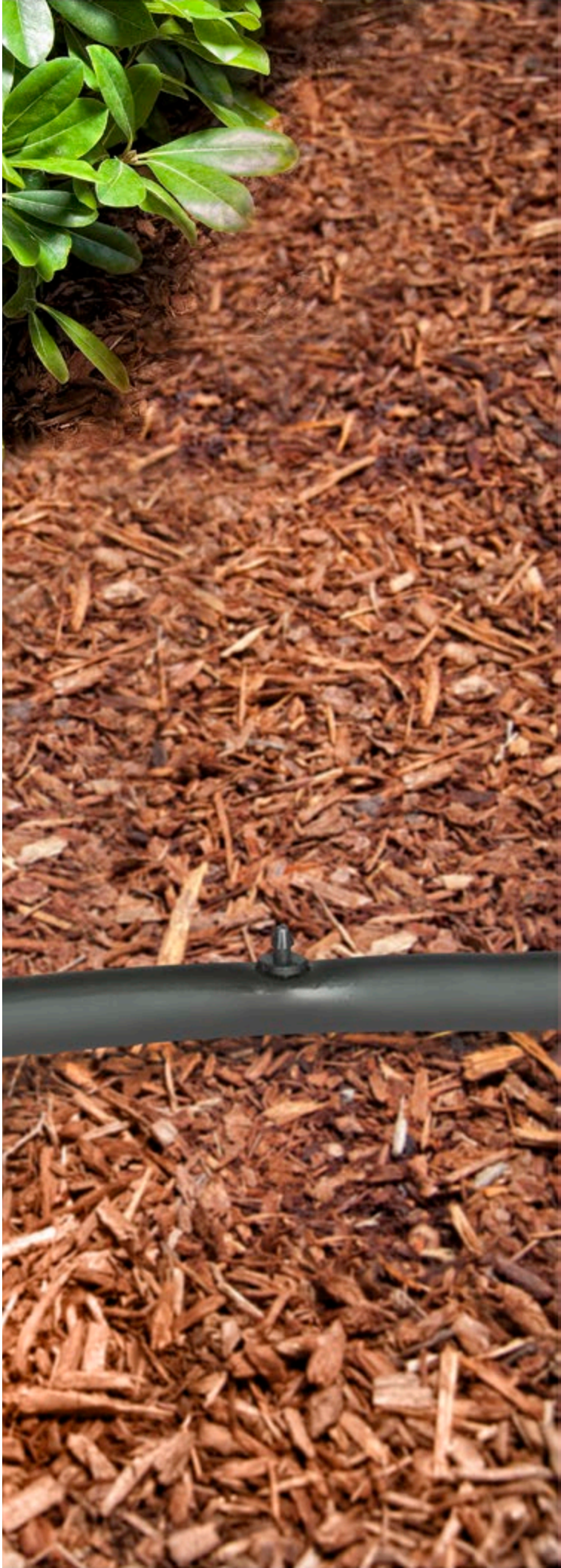
Once the system is turned on, flushed, and everything seems to be flowing correctly, it is time to check for leaks that can be caused by animals or garden tools. We have waited until now with the system running for a little while because if any of your lines are located under mulch or buried in shallow dirt, some good sized wet spots will show up.

Leaks located above ground can easily be seen, but leaks in the buried poly tube are more difficult to locate. Hopefully the simple fact that the poly tube is buried will protect it from any damage.

- If you find a leak in a 1/2" poly tube it may just be a hole and the first thing to try is a goof plug. Always try the small side of the goof plug first. If this does not work, take it out and turn it around to the large side and insert it. This should seal the hole.

- If you have a larger hole or the poly tube is damaged, you will need a coupling.

- If any of the leaks are at the threaded fittings, like LF013 line ends, just try to tighten them, making sure that the washers inside are not cracked or broken.



Repair Using the Coupling

Most of the time you can cut the damaged section out and then use a coupling to reconnect the two pieces. If the piece you are forced to cut out is longer than the coupling, use some spare poly tube and two couplings to fix the section. If you have leaks at the fittings, check to make sure that the poly tube is pushed in enough. Make sure to use the correct size fittings that will fit your drip tube.

How do micro sprinklers work

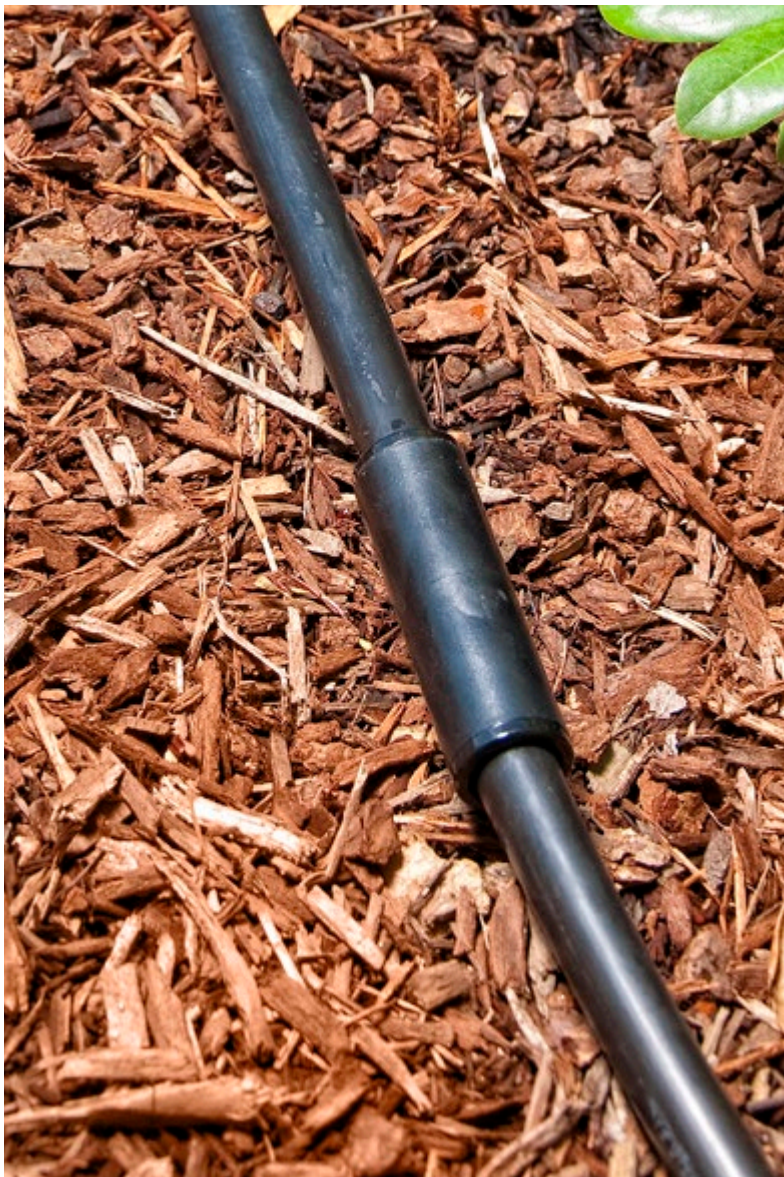
Do they all look like they have adequate water supply and a nice firm stream and uniformity? If the flow seems anemic at the end of the line, check to make sure some other valves are not open at the same time, which might cut down on the flow available. If the uniformity from the last micro sprinklers on the line is not sufficient, you may have too many micro sprinklers on the poly tube. Review the maximum flow allow on the 1/2" poly tube.

Repair With 1/4" Fitting

Leaks at the connections where 1/4" barbs or tees are inserted into 1/2" poly tube may just need to be pushed in or turned around in the hole. If this does not solve the problem, remove barb or tee and seal the hole with a goof plug. Then reinsert the barb into a new hole using the punch.

Check Water Flow

Now it's time to step back from the close-up inspections and take an overall look at the performance of the system. Do you see any large puddles running off from an area? This could be a leak you have missed.



Irrigation Controller Check

The first thing to check on an AC or Battery Operated Controller is the batteries. The AC models use batteries as a backup in case of a power outage. The battery operated controller uses batteries as a main power source. Both models use 9-volt batteries and have a “Low Battery” display on the LCD screen.

The “Low Battery” display is the first thing to check, followed by a visual check. Make sure there is no leakage out of the batteries and no corrosion at the connections. Also check for moisture or water in the battery compartment. If there is, check the “O” ring around the battery compartment cover. If the “O” ring is there, try rubbing a little Vaseline around it before replacing the cover. Make sure to dry out the battery compartment before closing it.

Next, check the actual programming and working condition of the controller. Looking at the LCD screen, make sure that you are at the screen which displays the current time and day.

Change it to reflect the correct time if needed. Move on through the programming by pushing the left button and check each of the settings: Watering Duration, Watering Frequency, Start time, and Number of Daily Starts per Day. Depending on the type of programming your controller offers, there will be a “ON” and “OFF” display. Turn the controller ON using this function and make sure the valve turns on, then turns off the system. This will check your valve and the connections to it.

Note

Remember that there is a flow control on most valves, which may need to be adjusted. If the flow control is completely or mostly closed, the controller may not operate the valve correctly. Make sure the flow control is always open.

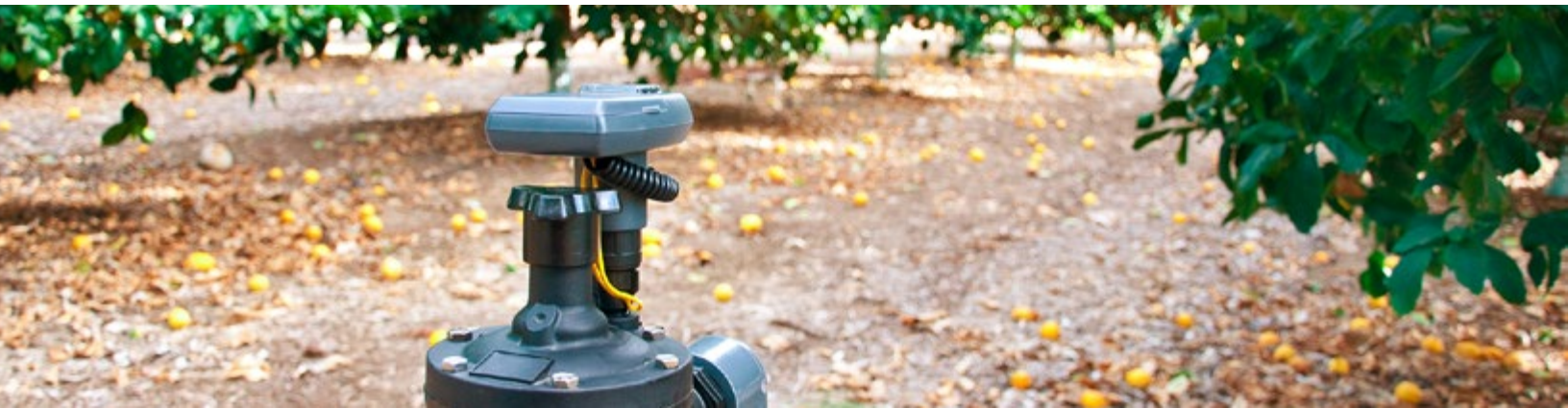
Next, visually check the wires from the controller to the solenoid for any bare spots and fix as needed. If you have any problems with the battery-operated controller valve, check the manual ON/OFF lever on the solenoid. Straight up is in the auto position. The controller will only operate the valve if this lever is in the auto position.

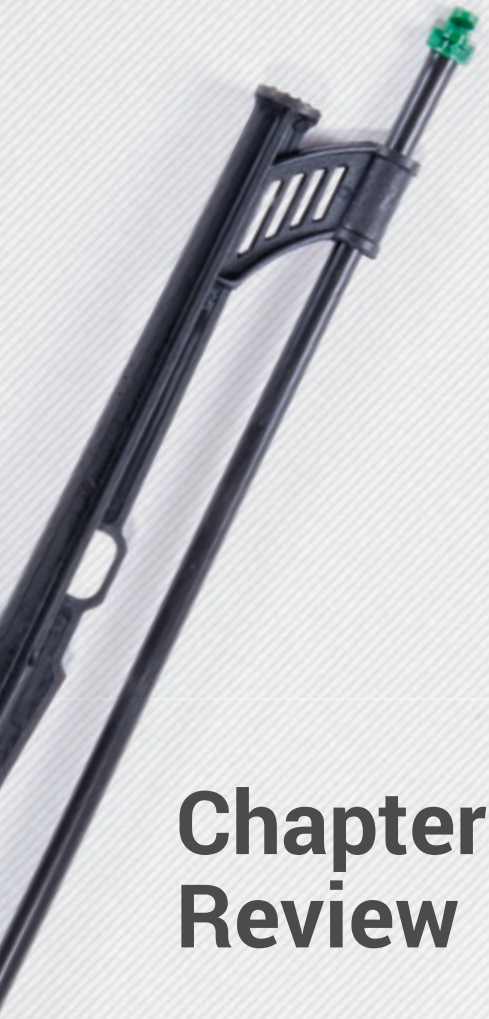
Pressure Check

This is an optional test you can do to make sure you have enough pressure at the end line. The minimum pressure for a drip system at the end of the line should be 10 PSI, and for micro sprinklers, 25 PSI.

After inspecting the system, make sure to run the system using a manual run via the controller, to review the duration and start time (water early morning). Basic Drip Irrigation Components and Installation Suggestions:

- When installing your system, you may select from various start-up options, different types of connections, and several methods of installation. Choose the option that best suits your needs.





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Chapter in Review

System Checks

To insure an efficient and sediment free drip irrigation system, it is important to inspect your system before planting. In this chapter learned how to systematically inspect and flush your old or new system, understand the different areas of your drip irrigation system, and preassemble before beginning a new year of gardening. Use the check list on the right to insure that you have flushed and inspected each area of your system thoroughly.

If you ever have any questions regarding system checks or which products to use, you can always call our Customer Care team at The Drip Store. We're available Monday through Friday, 7 a.m.-4 p.m. (PST) at 760-597-1669 or toll free at 877-597-1669.

System Checklist

1) Filter

2) Drip line

3) Drippers

4) Timer