Orbit Sprinkler System Designer™
INSTALLATION GUIDE
for PVC-Lock®
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WELCOME

Thank you for using ORBIT SPRINKLER SYSTEM DESIGNER™. In the following pages you will find:

- Step-by-Step Installation Guidelines
- Personalized Sprinkler System Maps
- Assembly and Installation Drawings
- Personalized Parts List

Please use the provided Checklist below as you go through the installation process to ensure you have an irrigation system you will be proud of and enjoy for many years to come.

If you have any questions or concerns please call us at 1-800-651-0686.

CHECKLIST

1  ☐ Become Familiar with the Installation Guide
2  ☐ Consult a Local Expert and Check Local Codes
3  ☐ Call Utility Providers to Mark Utility Lines
4  ☐ Purchase Additional Materials
5  ☐ Install Backflow Prevention Device and Shut-off Valve
6  ☐ Mark Sprinkler, Trench and Manifold Locations
7  ☐ Dig Trenches
8  ☐ Install Valve Manifolds
9  ☐ Install PVC Mainline Pipe
10  ☐ Install Pipe and Fittings for Sprinkler Zones
11  ☐ Install Auto-Drains (Freezing Areas only)
12  ☐ Install Sprinkler Timer
13  ☐ Install Sprinkler Wires
14  ☐ Turn Water Source On
15  ☐ Check PVC Mainline and Manifolds for Leaks
16  ☐ Test Each Zone
17  ☐ Install Heads and Nozzles and Adjust Patterns
18  ☐ Install Valve Boxes and Backfill Trenches
19  ☐ Fine Tune Nozzles and Patterns
20  ☐ Set Sprinkler Timer
BEFORE YOU BEGIN

1. BECOME FAMILIAR WITH THE INSTALLATION GUIDE

We recommend that you read through the entire Installation Guide before you begin. Keep track of the items not provided and make a list of those things you will need to purchase or gather. This will help minimize trips to the store.

2. CONSULT A LOCAL EXPERT AND CHECK LOCAL CODES

Before you begin, consult a local sprinkler expert to learn the best practices for sprinkler installation in your area.

It is important that you check with your city, county, state and municipal water agencies to learn the local codes and permit requirements for sprinkler systems.

3. CALL UTILITY PROVIDERS TO MARK UTILITY LINES

Call before you dig – in most areas dial 8-1-1. We recommend you call well in advance to give the utility companies time to mark their lines on your property.

The following table shows what each color represents in most areas. Please consult the marking service provider or your utilities to better understand the color code used in your area.

<table>
<thead>
<tr>
<th>UNIFORM COLOR CODE</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>Electric power lines, cables, conduit, and lighting cables</td>
</tr>
<tr>
<td>ORANGE</td>
<td>Telecommunication, alarm or signal lines, cables or conduit</td>
</tr>
<tr>
<td>YELLOW</td>
<td>Natural gas, oil, steam, petroleum, or other gaseous or flammable material</td>
</tr>
<tr>
<td>GREEN</td>
<td>Sewers and drain lines</td>
</tr>
<tr>
<td>BLUE</td>
<td>Drinking water</td>
</tr>
<tr>
<td>VIOLET</td>
<td>Reclaimed water, irrigation and slurry lines</td>
</tr>
<tr>
<td>PINK</td>
<td>Temporary survey markings, unknown/unidentified facilities</td>
</tr>
<tr>
<td>WHITE</td>
<td>Proposed excavation limits or route</td>
</tr>
</tbody>
</table>
4. PURCHASE ADDITIONAL MATERIALS

Check that you received all the materials listed on the packing list that came with your delivery. Check the packing list against the Installation Guide Parts List to determine what you need to buy at your local Home Depot.

Following is a list of the additional items that you will need to install your system. Please check your personalized parts list at the back of this guide for the section titled ADDITIONAL REQUIRED SUPPLIES and add them to this list.

- 4" or 5" Trenching Shovel
- Trenching Machine (optional)
- Round-nosed Shovel
- PVC Pipe
- PVC-Lock® Fittings (or Slip fittings if PVC-Lock® is unavailable)
- PVC-Lock® Removal Tool
- PVC Primer (if not using PVC-Lock®)
- PVC Cement (if not using PVC-Lock®)
- PVC Pipe Cutters
- 100’ Measuring Tape
- Sprinkler Flags
- Marking Paint
- Poly Pipe Cutters
- PTFE Pipe Tape
- Marking Pen
- Latex-dipped Work Gloves

5. INSTALL BACKFLOW PREVENTION DEVICE AND SHUT-OFF VALVE

Check your local code to determine the backflow prevention requirements for your area. You may need to hire a professional to do the installation. Following are a few examples of backflow prevention devices.

- Pressure Vacuum Breaker
- Atmospheric Vacuum Breaker / Anti-Siphon Valve
- Double Check Valve Assembly
- Reduced Pressure Backflow Preventer
5. INSTALL BACKFLOW PREVENTION DEVICE AND SHUT-OFF VALVE (CONT’D)

We recommend that you install a 1” Slip Ball Valve immediately following the backflow prevention device.

⚠️ If you are using an atmospheric vacuum breaker or anti-siphon valve, you must place the shut-off valve before the backflow prevention.

For areas where freezing conditions are a concern we recommend you install a QCV (Quick Coupling Valve) as well. This will make winterizing your sprinkler system much simpler. A QCV provides an easy way to connect an air compressor to blow out your system. The QCV also acts as a garden valve. See WINTERIZATION in the appendix for more details.

⚠️ You should not use a QCV with an atmospheric vacuum breaker or anti-siphon valve.
6. MARK SPRINKLER, TRENCH AND MANIFOLD LOCATIONS

Before you begin this step you should study the maps carefully and make adjustments to head placement, sprinkler zones, piping, and manifold placement as necessary.

Please note that the maps provided are for guidance only and can and should be adjusted based on actual conditions (i.e. utilities, window wells, trees, etc.).

Use sprinkler flags to mark each head location. Use a measuring tape to help ensure even spacing between heads in the same zone.

Once the flags are all placed, use marking paint to outline the location of each manifold and all trenches. Remember the 24" safety zone for utility lines and adjust your trenches and manifolds accordingly.

- **Manifold Caution**: Do not place manifolds near stairwells, window wells, utilities, or in areas with a downward slope to the house; avoid areas where the manifolds will be an annoyance or hazard, such as walkways or the middle of play areas.

- **Trench Caution**: Trench at least 2' away from any structures, foundations, window wells, stair wells, utilities or any other areas which are highly susceptible to water damage in the event of broken sprinkler lines or equipment.

Double check your trenching lines with your plan to make sure you have minimized the trenching and that no trenches or manifolds were forgotten.

7. DIG TRENCHES

Before you dig it is important that you check with your city, county, state and water municipality agencies to ensure you are installing in compliance with local code and permit requirements.

You may chose to dig the trenches by hand or you can hire a professional to do it for you using a trenching machine. This is usually the best route if significant trenching is required or if the ground is hard. You may also consider renting a trenching machine and do it yourself if local code permits.

Trenches that will have more than four pipes in them need to be widened to accommodate all the pipes. Trenches should not be less than 8" deep. If freezing is a concern then trenches should be at least 12" deep. If you are installing anti-siphon valves please reference section 8 for placement guidance.
8. INSTALL VALVE MANIFOLDS

For each valve box, dig a 26" x 20" hole to the recommended depth (shown below). For best installation the valve box should run parallel to the pipe trench as shown to the right.

Add 2" of crushed rock to serve as a drainage base for the valve manifold.

Place the valve box base and valve box on the layer of crushed rock. Lay a 2 x 4 across the hole to ensure the top of the valve box is level with the ground (as shown below).

Assemble all the manifolds called out on the MAINLINE MAP - example [A2] - [A4]. Match the assembly call out with one of the following assembly drawing pages. Use the assembly drawings as your guide.

Do not make any PVC pipe or glued connections at this point. We will walk you through that in another step.

If [A6] is called out on a SPRINKLER ZONE MAP then reference assembly [A6] in the following pages for instructions on creating a drip zone valve.

Prepare the valve box base for the manifold by removing one front knockout for each valve in the manifold. Remove the side knockout that is closest to the water source connection. Place each manifold in its respective valve box base.
1 VALVE MANIFOLD

A 1" PVC-Lock® Coupling 38676
B 1" Slip Swivel Adapter 57202
C 1 Port Manifold 57181
D 1" MPT Swivel Adapter 57199
E 1" FPT JTV 57461
F 1" Slip Transition Adapter 57191
G Cap 57197

1" Sch 40 PVC
Outlet to next manifold (only applicable if there is another manifold after this one)

See Section 9 Install PVC Mainline Pipe

1" Sch 40 PVC
From source connection
2 VALVE MANIFOLD

1" Sch 40 PVC
Outlet to next manifold (only applicable if there is another manifold after this one)

A 1" PVC-Lock® Coupling 38676
B 1" Slip Swivel Adapter 57202
C 2 Port Manifold 57182
D 1" MPT Swivel Adapter 57199
E 1" FPT JTV 57461
F 1" Slip Transition Adapter 57191
G Cap 57197

See Section 9 Install PVC Mainline Pipe

1" Sch 40 PVC
From source connection
3 VALVE MANIFOLD

A 1" PVC-Lock® Coupling 38676
B 1" Slip Swivel Adapter 57202
C 3 Port Manifold 57183
D 1" MPT Swivel Adapter 57199
E 1" FPT JTV 57461
F 1" Slip Transition Adapter 57191
G Cap 57197

1" Sch 40 PVC
Outlet to next manifold (only applicable if there is another manifold after this one)

See Section 9 Install PVC Mainline Pipe

From source connection
ORBIT SPRINKLER SYSTEM DESIGNER™ INSTALLATION GUIDE

4 VALVE MANIFOLD

Outlet to next manifold (only applicable if there is another manifold after this one)

1" Sch 40 PVC

A 1" PVC-Lock® Coupling 38676
B 1" Slip Swivel Adapter 57202
C 2 Port Manifold 57182
D 1" MPT Swivel Adapter 57199
E 1" FPT JTV 57461
F 1" Slip Transition Adapter 57191
G Cap 57197
H Swivel Double Union 57184

See Section 9 Install PVC Mainline Pipe

1" Sch 40 PVC

From source connection
DRIP ZONE ASSEMBLY

Step 1: Remove valve from manifold

Step 2: Remove adapter from valve

Step 3: Put 5 complete turns of tape around the threads of each end of the Filter Pressure Regulator

Step 4: Thread the Filter Pressure Regulator into the valve until snug

Step 5: Thread 1" FPT x 3/4" FPT Reducer Coupling onto the Filter Pressure Regulator until snug. Then attach a 3/4" MPT x 3/4" PVC-Lock® Adapter (37778).

Step 6: Reattach valve to manifold
9. INSTALL PVC MAINLINE PIPE

Starting from the Water Source Connection, lay and connect the PVC pipe going to the manifolds (see “Working with PVC” in the appendix of this guide for additional information).

As the mainline passes in front of a manifold complete the following steps to connect the mainline to the manifold as shown. Cut the water source pipe about 2" past the wall of the manifold hole. Attach the PVC-Lock® coupling to the manifold and the PVC-Lock® tee to water source connections. Adjust the two joints such that the PVC pipe lays flat in the bottom of the trench and the manifold sits level and is lined up to the outlets on the valve box platform.

If two manifolds need to be placed next to each other, follow the instructions above for the first manifold and then attach the two manifolds using two PVC-Lock® couplings and a length of PVC pipe.

After each manifold, insert PVC pipe into the open connection on the PVC-Lock® tee and continue to the next manifold.

Connect the last manifold to the mainline as shown. Follow the instructions above, but instead of a tee, you will use an elbow. It is important that the mainline pipe be as deep as possible in the trenches in order to provide room for the pipes coming from each valve to the sprinkler zones.

**Note:** If you are not using PVC-Lock®, follow the instructions above while using primer and glue at every connection.

It is important that the mainline pipe be as deep as possible in the trenches in order to provide room for the pipes coming from each valve to the sprinkler zones.
8. INSTALL VALVE MANIFOLDS

It is important to note that anti-siphon valves must be a minimum of 12" higher than the highest head in the entire system as shown here. If it is not 12" higher you will need to add a PVC coupling and PVC pipe to the assembly at the location marked by the * in the illustration below.

For each manifold location, dig a 26" x 20" hole at least 8" deep. For best installation, the valve manifold should run parallel to the pipe trench as shown to the right.

Assemble all the manifolds called out on the MAINLINE MAP - example A2-A4. Match the assembly callout with one of the following assembly drawing pages. Use the assembly drawings as your guide.

Before you prime and glue any connections you need to place the manifold in the hole to ensure that the anti-siphon is at least 12" above the highest head on the system. Add the coupling and pipe if needed.

Only prime and glue the two connections shown to the right for each valve plus the additional coupling and pipe (see “Working with PVC” in the appendix of this guide for additional information). All other PVC connections will be covered in another step.

If A6 is called out on a SPRINKLER ZONE MAP then reference assembly A6 in the following pages for instructions on inserting a drip zone valve in a manifold.
1 VALVE ANTI-SIPHON MANIFOLD

A 3/4" Anti-Siphon Valve 57626
B 3/4" Transition Adapter 57187
C Anti-Siphon Manifold Nipple 57192
D 1" PVC-Lock® Coupling 38676
E 1" PVC Pipe
F 1" PVC Slip Coupling
G 1" Slip Swivel Adapter 57202
H 1 Port Manifold 57181
I Cap 57197
J Swivel Double Union 57184

See Section 9 Install PVC Mainline Pipe

Outlet to next manifold (only applicable if there is another manifold after this one)

From source connection

1" Sch 40 PVC

Questions? 1.800.651.0686  orbit.homedepot.com
2 VALVE ANTI-SIPHON MANIFOLD

A 3/4" Anti-Siphon Valve 57626
B 3/4" Transition Adapter 57187
C Anti-Siphon Manifold Nipple 57192
D 1" PVC-Lock® Coupling 38676
E 1" PVC Pipe
F 1" PVC Slip Coupling
G 1" Slip Swivel Adapter 57202
H 2 Port Manifold 57182
I Cap 57197
J Swivel Double Union 57184

See Section 9 Install PVC Mainline Pipe

1" Sch 40 PVC

From source connection

Outlet to next manifold (only applicable if there is another manifold after this one)
3 VALVE ANTI-SIPHON MANIFOLD

A 3/4" Anti-Siphon Valve 57626
B 3/4" Transition Adapter 57187
C Anti-Siphon Manifold Nipple 57192
D 1" PVC-Lock® Coupling 38676
E 1" PVC Pipe
F 1" PVC Slip Coupling
G 1" Slip Swivel Adapter 57202
H 3 Port Manifold 57183
I Cap 57197
J Swivel Double Union 57184

Outlet to next manifold (only applicable if there is another manifold after this one)

See Section 9 Install PVC Mainline Pipe

From source connection

1" Sch 40 PVC
4 VALVE ANTI-SIPHON MANIFOLD

A 3/4” Anti-Siphon Valve 57626
B 3/4” Transition Adapter 57187
C Anti-Siphon Manifold Nipple 57192
D 1” PVC-Lock® Coupling 38676
E 1” PVC Pipe
F 1” PVC Slip Coupling
G 1” Slip Swivel Adapter 57202
H 2 Port Manifold 57182
I Swivel Double Union 57184
J Cap 57197

Outlet to next manifold (only applicable if there is another manifold after this one)

See Section 9 Install PVC Mainline Pipe

From source connection

1” Sch 40 PVC

Questions? 1.800.651.0686 orbit.homedepot.com
DRIP ZONE ASSEMBLY

A 3/4" Anti-Siphon Valve 57626
B 3/4" Transition Adapter 57187
C 1" FPT x Swivel Adapter
D Anti-Siphon Manifold Nipple 57192
E Filter Pressure Regulator
F 1" FPT x 3/4" FPT Reducer Coupling
G 3/4" MPT x 3/4" PVC-Lock® Adapter (37778)
H 1" PVC Slip Coupling
I 1" Slip Swivel Adapter 57202
J 1 Port Manifold 57181
K Swivel Double Union 57184
L Cap 57197

See Section 9 Install PVC Mainline Pipe

Outlet to next manifold (only applicable if there is another manifold after this one)

1" Sch 40 PVC

From source connection
9. INSTALL PVC MAINLINE PIPE

Starting from the Water Source Connection, lay and connect the PVC pipe going to the manifolds (see “Working with PVC” in the appendix of this guide for additional information).

As the mainline passes in front of a manifold complete the following steps to connect the mainline to the manifold as shown. Cut the water source pipe about 2" past the wall of the manifold hole. Attach the PVC-Lock® coupling to the manifold and the PVC-Lock® tee to water source connections. Adjust the two joints such that the PVC pipe lays flat in the bottom of the trench and the manifold sits level and is lined up to the outlets on the valve box platform.

If two manifolds need to be placed next to each other, follow the instructions above for the first manifold and then attach the two manifolds using two PVC-Lock® couplings and a length of PVC pipe.

After each manifold, insert PVC pipe into the open connection on the PVC-Lock® tee and continue to the next manifold.

Connect the last manifold to the mainline as shown. Follow the instructions above, but instead of a tee, you will use an elbow. It is important that the mainline pipe be as deep as possible in the trenches in order to provide room for the pipes coming from each valve to the sprinkler zones.

Note: If you are not using PVC-Lock®, follow the instructions above while using primer and glue at every connection.

It is important that the mainline pipe be as deep as possible in the trenches in order to provide room for the pipes coming from each valve to the sprinkler zones.
10. INSTALL PIPE AND FITTINGS FOR SPRINKLER ZONES

We will now walk you through the process of installing the PVC-Lock® and Eco-Lock® pipe from the heads to the valve for each sprinkler zone (see "Working with PVC-Lock®" and "Working with Eco-Lock®" in the appendix of this guide for additional helpful information).

Start with one sprinkler zone and install the PVC-Lock® and Eco-Lock® pipe and fittings for that zone using the map as a guide. It is important that you finish one zone before you start another to avoid confusion. Adjust the sprinkler zone pipe and head placement to actual conditions (i.e. utilities, window wells, trees, etc.).

As we walk you through this section we will use the zone layout shown here to help you better understand each step. Install all zones following these steps, then go on to the next section.

1. Dig trenches for heads as needed to place the head as close as possible to the outside edges of the sprinkler zone.

For heads located along sidewalks, driveways, or curbs, plan on spacing heads 1" to 2" from the edge or according to local code.

Use 3/4" SCH 40 PVC Pipe for sprinkler lines and drip lines to Drip Stub (see A22).

Use 1/2" Eco-Lock® Pipe for sprinkler heads.

Use 1" SCH 40 PVC Pipe to bring water into valves.

Use 1" SCH 40 PVC Pipe to carry water out of valve to sprinkler lines (except in case of drip zone which uses 3/4" pipe).
10. INSTALL PIPE AND FITTINGS FOR SPRINKLER ZONES (CONT’D)

2. Lay ¾” SCH 40 PVC pipe in the trench and install end head fittings as shown.

3. Cut the pipe at the next head location and install the fittings as shown.

4. Repeat for all remaining head locations on this zone.

5. Install ½” Eco-Lock® pipe at head location. Lay pipe in head trench and cut pipe to ground level at head location.

6. Repeat step 5 for all remaining heads on this sprinkler zone.

7. Connect ¾” lines using 1” PVC-Lock® tees and ¾” x 1” PVC-Lock® reducer couplings.
10. INSTALL PIPE AND FITTINGS FOR SPRINKLER ZONES (CONT'D)

8. Install 1" PCV-Lock® tee and 1" pipe at the location of the trench that leads from this zone back to the manifold.

9. Cut pipe in line with the edge of the valve to which it will connect.

Do not install heads at this time. We will install heads in another section.

10. Install 1" elbow and cut and install pipe. Stagger the pipes from the valves so there is room for all the zones (see below).
10. INSTALL PIPE AND FITTINGS FOR SPRINKLER ZONES (CONT'D)

Here are two examples of different zones and how they are installed. Do not install heads at this time. We will install heads in another section.
PIPE AND FITTINGS ASSEMBLY

- **A9**: 1" PVC-Lock® Pipe and Coupling
- **A11**: 1" PVC-Lock® Tee
- **A10**: 3/4" PVC-Lock® Elbow
- **A13**: 1" PVC-Lock® Tee and 3/4" x 1" PVC-Lock® Reducer Couplings
SPRAY HEAD ASSEMBLY

INLINE ASSEMBLY WITHOUT HEAD

A16 A17 A18

Step 1: Cut 3/4" PVC Pipe at spray head assembly location
Step 2: Insert 3/4" PVC Pipe into both sides of 3/4" PVC-Lock® tee
Step 3: Thread 1/2" MPT Elbow into Tee
Step 4: Insert 1/2" Eco-Lock® Pipe into Elbow
Step 5: Cut 1/2" Eco-Lock® Pipe at length to match spray head position
⚠️ Do not install heads at this time.

END OF LINE ASSEMBLY WITHOUT HEAD

A19 A20 A21

Step 1: Insert 3/4" PVC Pipe into 3/4" PVC-Lock® Elbow
Step 2: Thread 1/2" MPT Elbow into Elbow
Step 3: Insert 1/2" Eco-Lock® Pipe into Elbow
Step 4: Cut 1/2" Eco-Lock® Pipe at length to match spray head position
⚠️ Do not install heads at this time.

A 3/4" SCH 40 PVC Pipe
B 3/4" x 1/2" PVC-Lock® Tee
C 1/2" MPT x Eco-Lock® Elbow
D 1/2" Eco-Lock® Pipe, Cut to proper length

A 3/4" SCH 40 PVC Pipe, Cut to proper length
B 3/4" x 1/2" PVC-Lock® Elbow
C 1/2" MPT x Eco-Lock® Elbow
D 1/2" Eco-Lock® Pipe, Cut to proper length
DRIP STUB FITTING

See www.orbitonline.com/lib/media/DripMasterInstallationGuide.pdf for drip design options

A 3/4" x 1/2" FPT PVC-Lock® Elbow
B 3/4" PVC Pipe
C 3/4" PVC-Lock® Elbow

Drip System starts here

This part of the fitting should be buried below ground
11. INSTALL AUTO-DRAINS (FREEZING AREAS ONLY)

Where freezing is a concern we recommend you install auto-drain valves at the low spots in the system and on the downhill ends of sloping pipes. The auto drains must be at the lowest points in the line.

⚠️ Do not install auto-drains on the PVC mainline.

12. INSTALL THE TIMER

The timer provided can be mounted indoor or outdoor. For indoor installation refer to the diagram below and the next page. For outdoor installation use a licensed professional electrician.

**INDOOR INSTALLATION**

**OUTDOOR INSTALLATION**

A Sprinkler Wire
B 1/2" Conduit Nipple
C Conduit
D Junction Box
E Elbow

⚠️ Use a licensed professional electrician for outdoor installations.
12. INSTALL THE TIMER (CONT’D)

Use the mounting template (included) to mark the mounting screw location on the wall. See Figure 1

Install a No. 8 screw (included) into wall in the upper template location. Leave the screw head protruding 1/8” (3mm) from wall. Use expanding anchors (included) in plaster or masonry, if necessary, for a secure hold.

Slip the timer over protruding screw (using keyhole slot in back of timer). See Figure 2

Drive a No. 8 screw through one of the two pre-formed holes located in lower back cabinet to secure timer to the wall. See Figure 2

Figure 1: Use Mounting Template (included)  
Figure 2: Hang timer on screw using keyhole
13. INSTALL SPRINKLER WIRES

Run the wire from the timer to each manifold using the existing trenches. Use the WIRING MAP and the diagrams below as a guide. The wire provided is rated for direct burial but you may chose to run the wire inside a conduit to prevent future damage to the wire.

1. Lay sprinkler wire as deep as possible in trenches from the timer to each manifold.

2. At the manifold, remove 4” to 5” of the outer insulation and about 1” of insulation from each individual wire (Figure 1).

3. Use a wire nut to connect one wire from each valve and the white wire from the sprinkler wire (Figure 2).

4. Use a wire nut to connect the remaining wire on the first valve to one of the colored wires from the sprinkler wire. Repeat this step until all valves in the manifold are connected (Figure 3).

5. Insert each wire nut into the corresponding cavity inside the “Easy Wire” organizer, slide the mounting bracket onto the organizer and attach to the manifold (Figure 4).

6. At the timer, remove 4” to 5” of the outer insulation and about 1” of insulation from each individual wire (Figure 1).

7. Connect the wires from the valves to the timer by inserting the white wire(s) into the common terminal and each one of the colored wires into one of the station terminals labeled 1, 2, 3, etc.

8. To release a wire from a terminal push the tab upward then gently pull the wire out.
14. TURN THE WATER SOURCE ON

Make sure the bleed screw on all the valves is in the closed position (turn clockwise to close). Slowly turn the mainline water source on. Make sure all shut-off points prior to the valves are in the on position.

Some of the valves may come on briefly. If they do not shut off in a few seconds check that the bleed screw is turned clockwise until it stops. If the valve remains open shut off the water source and check that the valves are installed correctly. Check to make sure the arrows on the valves point in the direction of flow.

15. CHECK PVC MAINLINE AND MANIFOLDS FOR LEAKS

Once the valves have pressure behind them and they are all off, check the manifold connections and the PVC pipe for leaks.

16. TEST EACH ZONE

Using the timer, manually test each sprinkler zone. Check the valves, pipes, and fittings for leaks. This is also the step in which you flush any debris (i.e. dirt and rocks) out of the system. Make sure each head location is flowing freely.

17. INSTALL HEADS AND NOZZLES AND ADJUST PATTERNS

Install the heads, fittings and nozzles one zone at a time using the SPRINKLER ZONE MAPS and the following assembly pages as a guide. Match the nozzles called out on the maps to the nozzle tables on the following page. For instance, the map may show A19 | 10H; this tells you to look at assembly A19 on the next page and the 10H nozzle, which is blue. Make preliminary adjustments to the nozzles then turn on that sprinkler zone manually to check for leaks around the heads and to make additional adjustments to the nozzle spray patterns.
Match the nozzle called out on the maps to the corresponding head nozzle chart.

Step 1: Insert MPT elbow into spray head and tighten until snug.

Step 2: Insert street elbow into MPT elbow.

Do not overtighten.
Do not use pipe tape.

---

**A16**  
**A19**  

<table>
<thead>
<tr>
<th>Nozzle</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>4Q, 4H, 4T, 4F</td>
<td>Yellow</td>
</tr>
<tr>
<td>8Q, 8H, 8T, 8F</td>
<td>Green</td>
</tr>
<tr>
<td>10Q, 10H, 10T, 10F</td>
<td>Blue</td>
</tr>
<tr>
<td>12Q, 12H, 12T, 12F</td>
<td>Brown</td>
</tr>
</tbody>
</table>

---

**A17**  
**A20**  

Plan was designed using specific nozzles. Heads come with a pre-installed 3.0 GPM nozzle. Change nozzle to the one specified on your plan to ensure adequate flow and coverage.

<table>
<thead>
<tr>
<th>Nozzle</th>
<th>GPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>V2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>V3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>V4.0</td>
<td>4.0</td>
</tr>
</tbody>
</table>

---

**A18**  
**A21**  

Plan was designed using specific nozzles. Heads come with a pre-installed 3.0 GPM nozzle. Change nozzle to the one specified on your plan to ensure adequate flow and coverage.

<table>
<thead>
<tr>
<th>Nozzle</th>
<th>GPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>S0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>S1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>S1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>S2.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>
A16, A19 PATTERN ADJUSTMENT INSTRUCTIONS

1. Lift stem up using the pull tab. Hold stem in place using pop-up tool. Rotate flush cap counterclockwise to remove.

2. Insert grey nozzle filter into stem and install the correct nozzle turning it clockwise.

3. Hold the base of the nozzle with your left hand. With right hand gently turn nozzle top clockwise until it stops.

4. Rotate the ratcheting stem until the round dot (highlighted here in red) is lined up with the right edge of the desired spray pattern.

5. Hold the nozzle as shown in step 3 and gently turn the top counterclockwise until the round dot lines up with the left edge of the desired spray pattern.
A17, A18, A20 AND A21 PATTERN ADJUSTMENT INSTRUCTIONS

Set the Pattern Before Installation:

Gear drive sprinklers can be set to rotate between 40° and 360° (preset at 180°).

Turn the top of the head all the way to the left until it stops and then all the way to the right. This is the starting point for the rotation (Figure 1). Insert the plastic end of the key into the pattern adjustment hole (Figure 2). Turn clockwise to increase rotation; counterclockwise to decrease rotation. Each full turn increases/decreases rotation by 90° (Figure 3).

Remove and Replace the Nozzle:

1. To access the nozzle, remove stem from canister by unscrewing the cap and lifting the stem assembly out of the canister.
2. Rest bottom of stem assembly on a hard surface or against your hand and press firmly down on the cap to compress the spring. 
   **Note:** The spring inside the canister is very strong.
3. Firmly grip the sprinkler stem.
4. Insert the hex (metal) end of the key into the distance adjustment slot (Figure 2).
5. Turn the screw counterclockwise until it is just clear of the nozzle. 
   **Caution:** DO NOT turn the adjustment screw too far in either direction—screw may come free of threads.
6. The nozzle can then be removed by prying outward under the nozzle.
7. Insert the correct replacement nozzle (see tables 1 and 2) and align vertically, then turn the screw back into place.
8. Replace stem assembly into canister and screw cap on tightly.
9. Adjust distance if necessary (see Set the Spray Distance).

Set the Spray Distance After Installation:

Set the spray distance while water is running under system’s normal operating pressure.

Insert the hex (metal) end of the key into the distance adjustment slot (Figure 2). Turn clockwise to decrease distance; counterclockwise to increase distance.

**Caution:** DO NOT turn the adjustment screw too far in either direction—screw may come free of threads.

!!! Plan was designed using specific nozzles. Heads come with a pre-installed 3.0 GPM nozzle. Change nozzle to the one specified on your plan to ensure adequate flow and coverage.!!!
18. INSTALL VALVE BOXES AND BACKFILL TRENCHES

Once you have verified there are no leaks, install all the valve boxes for the system and backfill the trenches.

⚠️ When backfilling trenches make an effort to ensure there are no large rocks resting on or against the pipes and fittings. As your soil settles with time large rocks can cause premature failure.

⚠️ Be careful not to cut or damage the sprinkler wires when backfilling. It is very difficult to find and repair bad wiring after the system is buried.

19. FINE TUNE NOZZLES AND PATTERNS

After filling in the trenches, manually turn on each sprinkler zone one at a time and fine tune the nozzle spray patterns. Refer to the nozzle adjustment pages as needed.

20. SET THE TIMER

Using the recommended run times and watering interval at the end of this guide in conjunction with the timer quick start guide instructions booklet included with your timer, set the desired program.
WATERING SCHEDULE

Based on the information you entered into Orbit Sprinkler System Designer™, we have created the following Watering Schedule (“Schedule”) to guide you in programming your sprinkler timer. This Schedule is unique to the specific sprinkler system design contained in your personal Installation Guide (if non-US user, this page should not print). You should use this Schedule as a guideline only, since the application cannot take into account site specific factors such as slope, soil type, vegetation type, local climate, current weather, or property peculiarities. You will need to adjust your schedule based on your actual system installation and conditions specific to your property.

HOW IT WORKS

Your Schedule is based on three main factors:

• Historical “ET” (Evapotranspiration) data for your zip code—this is an estimate of how much water turf grass requires each week in your geographic location

• Sprinkler precipitation rate by zone—this is an estimate of the amount of water your system applies to each area of your property

• Predominant soil type of your property—different types of soil take in water at different rates and are an important consideration in how long to water

The Schedule uses the monthly water requirement for your area as a starting point, calculates the sprinkler precipitation rate for each zone on your sprinkler system, checks to make sure that the sprinkler precipitation rate will not exceed the ability of the soil to take in water, and then recommends the number of start times (what time of day to water), run times (how long to water), and intervals (how many times a week) for each zone or “station.”

• Start Times—number of times each day you need to water; in most cases this will be one time, but could be more depending on your soil type

• Run Times—number of minutes to run your sprinklers each time you water in order to apply 0.5 inches of water (more than this can exceed the soils ability to take in the water)

• Intervals—number of days between watering in order to replenish the water lost from the soil due to plant transpiration and soil evaporation (“ET”)
WATERING SCHEDULE

INITIAL PROGRAMMING OF YOUR ORBIT® SPRINKLER TIMER

1. Turn dial to Set Clock position. Set to current time.

2. Turn dial to Set Date position. Set to current date.

3. Turn dial to Start Time position. Press Program Button until display shows “PROGRAM A.” Set preferred start time(s) for Program A. In most cases only one start time is required. However, if your guide indicates multiple start times, press > to advance to Start Time 2 and enter your second start time. Repeat this process if more start times are needed.

NOTE: Only one start time is required for all of your zones on that program to run. Multiple start times are used to reduce run-off and allow time for the soil to absorb water.

Refer to the Total Watering Time number on the Schedule and add it to the last start time in your program to make sure that the resulting watering end time is not an hour of the day that violates watering restrictions in your area. If you are using more than one start time, remember that each start time must wait until watering from the previous start time finishes.

For example, Bountiful, Utah limits watering to between the hours of 6:00PM and 10:00AM, so if the Total Watering Time were 6 hours, the latest Start Time would need to be 4AM or earlier so that watering would conclude before 10AM.

Orbit’s Easy-Set Logic® Sprinkler Timers are equipped with three independent programs for maximum flexibility. Once you have entered the start times for PROGRAM A, press the Program Button until display shows “PROGRAM B.” Set preferred start time(s) for PROGRAM B using the steps outlined above. Use separate programs to make sure that your system meets all unique water frequency requirements.

For example, you may have turf grass, flowerbeds, and a garden that all need to be watered, but they all have different watering needs. You can use the three programs to accommodate those needs. Here is a sample schedule that uses three independent programs:

<table>
<thead>
<tr>
<th>Area to Water</th>
<th>Program</th>
<th>Interval</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lawn</td>
<td>A</td>
<td>3 (Every three days)</td>
<td>All stations assigned to this program will run on the interval specified</td>
</tr>
<tr>
<td>Flower Beds/Garden</td>
<td>B</td>
<td>1 (Every day)</td>
<td>All stations assigned to this program will run on the interval specified</td>
</tr>
<tr>
<td>Trees</td>
<td>C</td>
<td>7 (Every seven days)</td>
<td>All stations assigned to this program will run on the interval specified</td>
</tr>
</tbody>
</table>

4. Turn dial to Run Time position. For each individual station (starting with Station 1) input the recommended “Run Time” from the Schedule.

5. Turn dial to How Often position. Press > button until INT is blinking and then press the + or – button until the “Every Days” numbers matches “Every Days” from the Schedule.

6. Starting with Step 3 above, repeat steps 1-5 for any additional programs (B, C) as which may be noted on the Schedule.

7. Turn Dial to AUTO position. Initial programming is complete.
WATERING SCHEDULE

ADJUSTING PROGRAMMING FOR SPECIFIC CONDITIONS OF YOUR PROPERTY

After you have set up the initial program on your timer, observe the conditions in each area of your yard. Check for underwatering and overwatering. Characteristics of underwatering are excessive dry spots. Telltale signs of overwatering are squishy spots, visible runoff, greenish-yellow leaf color, mushrooms, and fungus. Typically overwatering is more damaging to lawn than underwatering, so any adjustments to apply more water (as described below) should be done in small, gradual increments.

ADJUSTMENTS FOR SYSTEM EQUIPMENT PROBLEMS

The Orbit Sprinkler System Designer™ output should provide the most uniform water coverage possible. However, the output is only as good as the information entered in the design phase and the quality of the installation. Before making any adjustments to the sprinkler timer program, first conduct a thorough observation of each zone in your system. Using the Manual mode on your timer, run a short test cycle of each zone on your system and observe the behavior of the sprinklers. Check to ensure that water from every sprinkler head is reaching to the sprinkler head next to it. If just one head in a zone seems to have poor coverage (ability to reach to the sprinkler head next to it):

1. Make sure the head is standing straight
2. Verify that the correct nozzle size is installed
3. Check to see that the nozzle and nozzle filter are free from any debris
4. Ensure that the coverage pattern is correct, and that the diffuser screw is set correctly

If many sprinkler heads on a zone are not reaching the sprinkler head next to each, check the overall pressure of the system. Causes of low pressure may include:

1. Time of day (pressure is often lowest in the morning when neighborhood water usage is highest)
2. Simultaneous household water use (showers and appliances)
3. Clogged system filter screens (including filters in pressure regulators)
4. Inaccurate measurement of available system pressure at the time of initial design

Possible fixes of system pressure problems include cleaning filters, changing the watering start times to a lower water use time of day or night, and changing to nozzles with lower precipitation rates (note that all nozzles on a zone may need to be changed to keep the system balanced). In rare cases more complicated solutions like splitting zones or adding pressure boosters may be required, but before taking such actions you should consult with a professional. For drip zones, run a full program cycle and then use a shovel to check the wetted patterns in problem areas. Be careful not to cut drip lines with the shovel. Typical drip equipment problems include plugged emitters, dirty filters, and excessively long tubing runs. It is important to perform routine maintenance on drip systems to keep them at peak performance.
WATERING SCHEDULE

ADJUSTING FOR SLOPE

When watering on a slope, you are more likely to lose water to runoff. To prevent this, time how long it takes before water begins running off your slope. Divide your total water time by the amount of time it takes before water begins to runoff. The result will be the number of cycles you should run to allow your soil sufficient time to soak up the provided water.

*As an example, if your total watering time is 48 minutes and the time you can water your slope before water begins running off is 12 minutes, then you would divide 48 by 12 and the result would be 4 run cycles. On your sprinkler system timer, you would then set that zone to run for 4 cycles (four separate start times) at 12 minutes each for a total of 48 minutes.*

ADJUSTING FOR SOIL TYPE

The soil you have in your yard will affect your watering schedule, so determine (as closely as possible) what soil type you have.

**Sand**—Sandy soils are extremely porous and allow the rapid flow of water. Water in multiple cycles to give plants sufficient time to absorb the water they need before the water is filtered away.

**Loam**—Loam soils are porous but hold water well. They allow for a consistent flow of water and retain nutrients better than other soil types.

**Clay**—Clay soils are not as porous as other soil types and therefore take longer to absorb water; however, clay soils retain more water than other soil types. Where excessive runoff is observed, try cutting the “Run Time” for each zone in half and adding an additional start time with those new run times so that the soil has sufficient time to absorb water.

ADJUSTING FOR PLANT TYPE

The water requirement for each zone is based on the requirements of established (mature) turfgrass for your area. Depending on the type and stage of turf and plants in each zone, you may need to increase or decrease the “Run Time,” “Start Times,” or “Interval” for a specific zone. For instance, warm season grasses require less water (have a lower “ET” requirement) than cold season grasses, allowing for a reduction in run time and (potentially) an increase in the days between watering. On the other hand, newly planted grass and transplanted flowers, which have undeveloped root systems, require constant moisture for their small root zone. This may entail an increase in start times and a decrease in the days between watering during the planting phase and then a gradual return to the recommended schedule in your plan when the plants are established. Careful monitoring of plant health will be your best guide to making these important adjustments.

ADJUSTING FOR SHADED AREAS

It is important that you do not overwater in shaded areas. Due to lack of sunlight, it takes shaded areas longer to absorb water and excessive dampness can make your plants susceptible to disease. For areas with full to mostly shade, water less often.
WATERING SCHEDULE

ADJUSTING FOR SUNNY AREAS

Areas that receive more sunlight will most likely require more water due to evaporation. Be observant and adjust your watering times as needed. Remember that it is more beneficial to give your plants deeper watering, spaced over multiple days, than to give a shallow watering every day.

ADJUSTING FOR WINDY AREAS

It is best to water at times with less wind, such as the early morning hours. However, if you live in an area that experiences wind on a consistent basis, you will need to adjust your watering times to accommodate for this factor as plants are less likely to receive the water they need.

ADJUSTING FOR CLIMATE

The watering interval for your zip code does not take into account factors such as elevation change (i.e. cooler temperatures for higher altitudes) in a given zip code. In addition, it is based on historical data. Current weather conditions should always be factored in to your watering interval. If you are having a particularly wet year, you may need to reduce the run times using the BUDGET feature on the timer, adjust the watering interval, or use the RAIN DELAY button on the timer to cease watering for a specified time. A rain gauge or moisture sensor can also be installed to automatically adjust watering based on current weather conditions.
WORKING WITH PVC

Orbit Sprinkler System Designer™ specifies PVC for all mainline pipe and connections after the source connection up to and including the valve manifolds (the valves control water flowing to the individual areas or “zones” in your yard).

PVC has many good qualities. It is inexpensive, relatively easy to work with, and has a very long useful life. We recommend PVC for the constant-pressure mainline part of your system (the part going from your water source to your sprinkler valves). However, we recommend our environmentally friendly Eco-Lock® for all lateral sprinkler lines (the pipes coming out of your valves that go to your sprinklers). In a typical system lateral lines are over 80% of the total pipe used, so your system will be very “green.”

Your PVC Options:

**PVC-Lock®**

PVC-Lock® is the fastest way to install a PVC sprinkler system. With PVC-Lock® there is no need for messy primers and glues. Simply mark the pipe 1” (25mm) from the end, press the pipe into the specialty fitting (making sure the pipe is inserted to your mark), and go. Each PVC-Lock® fitting contains a stainless steel retainer ring and an O-ring seal, which create a connection strong enough to hold up under constant (mainline) pressure. In addition, each PVC-Lock® fitting swivels 360° after installation to make directional adjustments easy.

**PVC Slip Fittings**

If you are not using PVC-Lock® fittings, PVC pipe and fittings are joined by applying primer and solvent cement to both pieces. The primer and solvent soften and melt a thin layer of PVC. Seconds after joining the pieces, the PVC hardens, forming a permanent, waterproof seal. A few cautions involved with using PVC: 1) avoid breathing the fumes; 2) avoid letting the primer and cement come in contact with your skin; and, 3) join the pieces quickly after priming and gluing them, since the glue sets quickly.
APPENDIX

JOINING PVC PIPE AND FITTINGS

<table>
<thead>
<tr>
<th>Measure and Cut</th>
<th>PVC-Lock®</th>
<th>Slip Fittings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most fittings for a sprinkler system do not require super-precise measurements. Mark the spot on the pipe where the center of the fitting will be and cut at that point with PVC cutters.</td>
<td>Most fittings for a sprinkler system do not require super-precise measurements. Mark the spot on the pipe where the center of the fitting will be and cut at that point with PVC cutters.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prime</th>
<th>PVC-Lock®</th>
<th>Slip Fittings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not use primer with PVC-Lock®</td>
<td>Use the swabbing ball on the primer to spread primer over the outside of the pipe and the inside of the fitting where they will join. Be careful not to spill primer on your hands.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Glue</th>
<th>PVC-Lock®</th>
<th>Slip Fittings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not use glue with PVC-Lock®</td>
<td>While the primer is still wet (seconds after applying it), apply cement to the primed areas on the outside of the pipe and the inside of the fitting where they will join. Be careful not to spill primer on your hands.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Push and Twist</th>
<th>PVC-Lock®</th>
<th>Slip Fittings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twisting slightly, push the pipe into the fitting until you feel it snug against the bottom of the fitting (about 1”). PVC-Lock® is a 360° adjustable fitting, so once the fitting is installed you can swivel the fitting to match the correct orientation.</td>
<td>Push the pipe into the fitting until you feel it snug against the bottom of the fitting. Turn the pipe ¼ turn in the fitting. This will spread the glue evenly and ensure a good fit. For fittings such as tees and elbows, make sure that the end of the fitting at the 90° angle is going in the right direction. If you do not orient it in the right direction, you will have to cut out the fitting and start over with a new fitting. Hold the fitting in place against the pipe for 30 seconds after joining it to ensure a good weld.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cure</th>
<th>PVC-Lock®</th>
<th>Average Joint Cure Times (Pressure Test to 180 PSI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is no need to cure your joints with PVC-Lock®</td>
<td>Temperature</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature</th>
<th>60°-100° F</th>
<th>40°-60° F</th>
<th>20°-40° F</th>
<th>0°-20° F</th>
</tr>
</thead>
<tbody>
<tr>
<td>60% or less Humidity</td>
<td>1 Hr</td>
<td>2 Hrs</td>
<td>6 Hrs</td>
<td>8 Hrs</td>
</tr>
<tr>
<td>60% or more Humidity</td>
<td>1.5 Hrs</td>
<td>3 Hrs</td>
<td>9 Hrs</td>
<td>12 Hrs</td>
</tr>
</tbody>
</table>

Source: http://www.oatey.com/Plumber/FAQ.html#Q10
JOINING PVC THREADED FITTINGS

Tools and Materials Required: Fittings, pipe tape, channel locks

The most common way to join PVC threaded fittings is with PTFE or “Teflon” tape. You should never use oil-based pipe dope (typically comes in a tube) to join sprinkler fittings. Some sprinkler fittings are made of a material called ABS and oil-based pipe dope causes an adverse chemical reaction with it, leading to premature failure of the fitting or part. PTFE tape is a clean and simple way to join pipe:

Step 1. Hold the tape correctly. Always hold the tape so that the tape ribbon is going away from you and under the roll. This is not intuitive your first time, but with a little practice you will find that it makes a lot of sense.

Step 2. Wrap. Place the front piece of the tape ribbon on the second thread from the end of the fitting or pipe and hold it with your finger. Wrap the tape away from you and down and around the pipe at least two times and then start the third wrap with a 50% overlap of the previous wrap and so on until you reach the end of the threads furthest from the end of the pipe.

Step 3. Insert taped fitting into female connection and tighten until hand tight. Do not overtighten as this may damage the fitting.

Step 4. Always pressure-test all fittings prior to use. A small leak will not seal itself and over time can cause water damage.

Note: The ½" and ¾" Eco-Lock® fittings that connect to the sprinkler heads do not require PTFE tape. NEVER use oil-based pipe dope on Eco-Lock® fittings.
WORKING WITH PVC-LOCK®

Tools and Materials Required: PVC-Lock® Fittings

PVC-Lock® is the fastest way to install a PVC sprinkler system. With PVC-Lock® there is no need for messy primers and glues. Simply press the pipe into the specialty fitting and go. Each PVC-Lock® fitting contains a stainless steel retainer ring and an O-ring seal, preventing leaking at both low and high pressures. With PVC-Lock® you’ll leave your project with clean hands and a clear conscience knowing that you and the environment are being protected from harmful chemicals.

JOINING PVC-LOCK® FITTINGS

PVC-Lock® fittings are designed to be used exclusively with PVC pipe. NEVER use another pipe with PVC-Lock® fittings. To install PVC-Lock®, follow these simple steps:

Step 1: Cut pipe using a PVC pipe cutter (make sure ends are clean and straight).

Step 2: Mark pipe 1” (25mm) from end with a marker.

Step 3: While twisting slightly, push the pipe into the fitting up to the mark you made on the pipe.

Step 4: All PVC-Lock® fittings swivel 360 allowing for easy directional adjustment.

Please note the following warning which applies to all PVC-Lock® fittings and pipe:

WARNING: For non-constant pressure, valve-out, cold water, outdoor direct burial irrigation connections only. PVC-Lock® fittings contain a sharp, stainless steel retainer ring. Do not insert fingers into fittings. Keep fittings and bags away from children.

REMOVING PVC-LOCK® FITTINGS

PVC-Lock® fittings are designed with a release ring that allows the fitting to be released. This is another advantage that PVC-Lock® has over normal PVC fittings. In order to release the fitting, follow these steps:

Step 1: Holding the pipe firmly, slip the release tool around the PVC pipe.

Step 2: Insert the release tool between the pipe and the PVC-Lock® fitting.

Step 3: Pull the release ring and pipe firmly away from each other until the fitting separates from the pipe.

Step 4: Cut off scored end of the pipe prior to reusing (you will see teeth marks on the pipe from the fitting and these will prevent a proper reseal).
REMOVING ECO-LOCK® PIPE AND FITTINGS

Most ½" Eco-Lock® fittings are designed with a release ring that allows the fitting to be reused. This is another advantage that Eco-Lock® has over PVC. In order to release the fitting, follow these steps:

Step 1. Hold the pipe firmly in one hand and place the fore- and index fingers of your other hand over the black release ring.

Step 2. Pull the release ring and pipe firmly away from each other while rotating the pipe in a clockwise direction until the fitting separates from the pipe.

Step 3. Cut off scored end of the pipe prior to reusing (you will see teeth marks on the pipe from the fitting and these will prevent proper reseal).

JOINING 1/2" ECO-LOCK® PIPE AND FITTINGS TO RISER FLEX PIPE

Eco-Lock® pipe and fittings are designed to be used exclusively together. In the event that your store does not carry 1/2" Eco-Lock®, we have provided five 1/2" x 1/2" Barb Eco-Lock® Adapters for your convenience. This allows you to adapt Eco-Lock® to the riser flex pipe carried at your store.

To add Riser Flex Pipe to Eco-Lock®:

Step 1: Use 1/2" x 1/2" Barb Eco-Lock® Adapter 37586F.

Step 2: Cut desired amount of Riser Flex Pipe.

Step 3: Firmly insert barbed end of Eco-Lock® Adapter into Riser Flex Pipe until fully seated.

Step 4: Locate end of Eco-Lock® pipe.

Step 5: Mark pipe 1" (25mm) from end.

Step 6: Push pipe into fitting until mark on pipe is even with end of fitting.
JOINING 3/4" AND 1" ECO-LOCK® PIPE AND FITTINGS TO POLY PIPE

3/4" and 1" Eco-Lock® pipe have the same internal dimensions as 3/4" and 1" poly pipe. However, you should never use Eco-Lock® fittings with another manufacturer's poly pipe. In the event that your store does not carry 3/4" or 1" Eco-Lock® Pipe, you may use standard poly insert barbs and clamps, which are available at your local store, to join 3/4" and 1" Eco-Lock® Pipe to poly pipe.

To add additional poly pipe to EcoLock®:

Step 1: Use poly insert fitting and correct number of clamps for each connection.
Step 2: Firmly insert barbed end of poly insert fitting into Eco-Lock® pipe until fully seated.
Step 3: Slip pipe clamp over joint and tighten firmly.
Step 4: Slip remaining clamps on barbed ends of fitting.
Step 5: Firmly insert barbed end of poly insert fitting into additional poly pipe until fully seated.
Step 6: Slip pipe clamp over joint and tighten firmly.
Step 7: Repeat steps 5 and 6 as many times as needed to add desired additional poly pipe.
ASSEMBLY KEY QUICK REFERENCE

A1  Point of Connection Assembly (pg. 6)

A2  1 Valve Manifold (pg. 9)

A3  2 Valve Manifold (pg. 10)

A4  3 Valve Manifold (pg. 11)

A5  4 Valve Manifold (pg. 12)

A6  Drip Zone Assembly (pg. 13)

A7  1" PVC-Lock® Elbow (pg. 14)

A8  1" PVC-Lock® Tee (pg. 14)

A9  1" PVC-Lock® Elbow (pg. 19)

A10 3/4" PVC-Lock® Elbow (pg. 19)

A11 1" PVC-Lock® Tee (pg. 19)

A12 3/4" PVC-Lock® Tee (pg. 19)

A13 1" PVC-Lock® Tee and 3/4" x 1" PVC-Lock® Reducer Couplings (pg. 19)

A14 4" Spray Head Inline Assembly (pg. 20, 26, 27)

A15 3/4" Gear Drive Head (Voyager II®) Inline Assembly (pg. 20, 26, 28)

A16 1/2" Gear Drive Head (Saturn IV™) Inline Assembly (pg. 20, 26, 28)

A17 4" Spray Head End of Line Assembly (pg. 20, 26, 27)

A18 3/4" Gear Drive Head (Voyager II®) End of Line Assembly (pg. 20, 26, 28)

A19 1/2" Gear Drive Head (Saturn IV™) End of Line Assembly (pg. 20, 26, 28)

A20  Drip Stub Fitting (pg. 21)
ASSEMBLY KEY QUICK REFERENCE

A1
Point of Connection Assembly (pg. 6)

A2
1 Valve Manifold (pg. 9)

A3
2 Valve Manifold (pg. 10)

A4
3 Valve Manifold (pg. 11)

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Drip Zone Assembly (pg. 13)

A7
1" PVC-Lock® Elbow (pg. 14)

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3/4" Eco-Lock® Elbow (pg. 19)

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1" Eco-Lock® Tee (pg. 19)

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3/4" Eco-Lock® Tee (pg. 19)

A13
1" PVC-Lock® Tee and 3/4" x 1" PVC-Lock® Reducer Couplings (pg. 19)

A16
4" Spray Head Inline Assembly (pg. 20, 26, 27)

A17
3/4" Gear Drive Head (Voyager II®) Inline Assembly (pg. 20, 26, 28)

A18
1/2" Gear Drive Head (Saturn IV™) Inline Assembly (pg. 20, 26, 28)

A19
4" Spray Head End of Line Assembly (pg. 20, 26, 27)

A20
3/4" Gear Drive Head (Voyager II®) End of Line Assembly (pg. 20, 26, 28)

A21
1/2" Gear Drive Head (Saturn IV™) End of Line Assembly (pg. 20, 26, 28)

A22
Drip Stub Fitting (pg. 21)
Orbit Sprinkler System Designer™
MAPS, PARTS LIST, AND WATERING SCHEDULE