



**Sprinkler
Systems**

FREE!
Toro Sprinkler Design Service
See page 23



Do-It-Yourself
Planning & Installation Guide

TORO AUTOMATIC SPRINKLER SYSTEMS

An automatic sprinkler system gives you the landscape you've always wanted. A thicker, greener lawn. Beautiful gardens. It adds beauty and value to your home while saving time and water.

How many times have you forgotten to water your lawn, then over watered — only to end up with brown spots and muddy puddles? Like many homeowners, you could be using up to 50% more water than your landscape needs, which isn't good for your lawn or your pocketbook. The solution isn't to use more water, but to water more precisely. An automatic sprinkler system can give you a healthy, green lawn — and more free time to enjoy the beautiful results.

An automatic sprinkler system takes the work and worry out of watering your lawn. You can forget about tripping over hoses or sprinklers, fixing leaky faucets and hauling hoses around the yard. While you're enjoying the ball game, your lawn enjoys the right amount of water, in the right spots, at the right time.

Your Toro system can be hard at work even before the paper carrier is up, when your grass receives the most benefit. It adjusts for the different needs of new grass, trees and shrubs. And it can even turn itself off when it rains. So go ahead, take an afternoon nap. Your Toro automatic sprinkler system will take care of your beautiful green lawn. Automatically.



Sprinklers installed with head-to-head spacing for complete and even coverage deliver precise coverage without gaps or runoff. Toro lawn sprinklers are available in several specially engineered designs for residential applications.

Fixed-spray sprinklers are ideal for small lawns and concentrated areas like ground cover and shrubs. Rotary sprinklers cover medium-to-large lawn areas very efficiently.



Valves control water flow to the sprinklers. Toro valves are rigorously tested under extreme pressures and the worst possible water conditions. They're made to deliver years of smooth, trouble-free performance.



Timers are the brain of your system, telling your sprinklers what day, what time and exactly how much to water. Toro timers are as easy to program as an alarm clock

FREE DESIGN SERVICE

Let us design your automatic sprinkler system for you — for FREE!

Just follow these easy steps:

1. Gather Required Information

- Draw your property
- Section your yard
- Determine the water capacity and working pressure for your home.

2. Fill out the Sprinkler Design Questionnaire (page 24)

3. Mail or fax the completed information to the Toro Design Center.

We'll provide you with a customized sprinkler system design AND a complete list of products for FREE!

SEE
PAGES
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CHECK LOCAL CODES AND PERMITS

Call your local water company or the proper municipal authority for information on building codes or permits required for the installation of underground sprinkler systems. They can also tell you about local codes for the backflow prevention required to protect your water supply from contamination, as well as advise on where to locate the backflow device in the system. In addition, check with your local utility companies before you dig to identify any buried cables or natural gas lines.

WARNING



Personal injury may result from trenching over buried power lines or gas lines. Before digging or trenching, check with your local utility companies to identify any buried cables, pipe or gas lines!

INSTALLATION ACCESSORY CHECKLIST

During installation, you will need several accessories and a variety of pipe fittings. Other materials you may need during installation include:

- PVC pipe cutter
- Screwdriver
- Pipe wrenches
- Hammer
- Trenching shovel
- Line marking paint
- 1" pipe clamps (poly only)
- Teflon tape
- Tape measure
- Solvent, primer, rags (PVC only — do not use pipe dope on plastic-threaded fittings.)
- Toro flow and pressure gauge
- Marking flags
- Grease caps

HOW TO BEGIN DESIGNING YOUR SYSTEM

There are two ways you can begin designing your automatic sprinkler system:

- Follow the instructions in this guide and use the property plan graph on page 25 to design your sprinkler system.
- Let Toro do the sprinkler design for you! See page 23 for more information on Toro's FREE Sprinkler Design Service.

When designing your system, we suggest you use the following planning tools: pencil, scratch paper, drawing compass, 50' tape measure, straight edge or ruler, line marking paint for marking trenches, Toro Flags for marking sprinkler locations and a Toro Flow & Pressure Gauge.

If you do not own a flow & pressure gauge, ask your local Home Center if they have one in their rental center.

1 DRAW YOUR PROPERTY FROM A BIRD'S EYE VIEW

Use the property plan graph on page 25 of this guide.

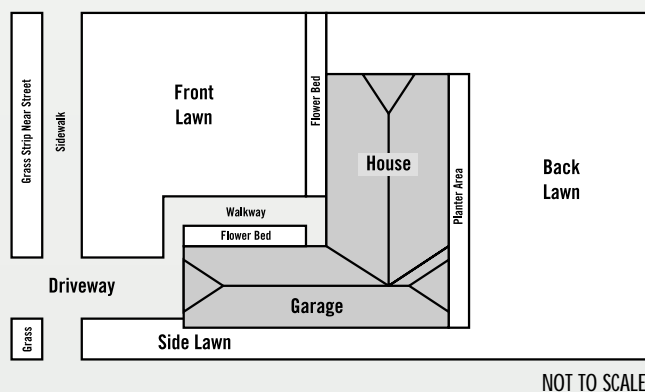
Each small square on the graph should represent one square foot of actual property or use the scales provided. Using your tape measure, outline and measure your property accurately according to scale, laying out the locations of your home, sidewalks, grass, etc. The drawing below shows an example.

CONSIDER THESE WHEN DRAWING YOUR PROPERTY:

- Outline your house, garage and other structures.
- Show walks, drives, slabs, patios and surfaces.
- Locate and identify trees and major obstacles.
- From the outside of your house, measure outward to define your perimeters.
- Identify any slopes on your property.
- Locate ground cover, grass, flower beds and landscaping.
- Identify the size and location of the water meter (or pump) and main line.
- Re-check your measurements at several different points.
Make sure your drawing accurately indicates the true dimensions.

2 SECTION YOUR YARD

Divide your yard into areas according to type of plant material (grass versus shrubs) and sun exposure (shade versus full sun). Create as many large rectangles as you can, saving small and odd-shaped areas for last.



Gather Required Information

3 MEASURE YOUR HOME'S WATER CAPACITY AND WORKING PRESSURE

Water pressure can vary from home to home, even on the same street. So it's important that you take a measurement at your own home. If you push your system beyond its capacity, the danger is that it can create water hammer and costly damage to your piping system. Also, if you exceed the pressure or water flow (GPM) you have available, your system will not function or work efficiently. Following are two reliable ways of determining your home's water capacity. We recommend using the flow and pressure gauge method because it's fast and easy.

YOU CAN USE EITHER METHOD A OR B

DETERMINE THE DIAMETER OF THE WATER SUPPLY LINE

Call your local water company or measure your supply line (the pipe leading from the water meter to your house). Wrap a piece of string around the pipe once, then measure the string. Use this chart to determine the supply line diameter.

_____ inches

LENGTH OF STRING	2 ³ / ₄ "	3 ¹ / ₄ "	3 ¹ / ₂ "	4"	4 ³ / ₈ "	5"
Copper Service Line	¾"	-	1"	-	1¼"	-
Galvanized or PVC	-	¾"	-	1"	-	1¼"

A DETERMINE YOUR WATER CAPACITY & WORKING PRESSURE USING A TORO FLOW & PRESSURE GAUGE



The Toro Flow and Pressure Gauge is a dual purpose device designed to measure water pressure to 160 PSI and water flow to 13 GPM. This flow and pressure gauge is not intended for use on lines larger than 1 inch. The gauge will only measure flow through the outside faucet—not in the line.

STEPS TO USING THE TORO FLOW & PRESSURE GAUGE

1. Make sure no water is being used inside or outside the home.
2. Attach flow gauge to outside faucet nearest to where the main line enters the house (See Y on diagram, page 9).
3. Make sure the flow gauge is closed by completely turning the handle clockwise.
4. Open the outside faucet slowly to avoid damage to flow gauge.
5. When the outside faucet is fully opened, read the system static pressure and record below.
NOTE: "Static pressure" is when no water is running.
6. Open the flow gauge slowly by turning the handle counter-clockwise. As the flow gauge opens, pressure will drop from the static reading and the gallons per minute (GPM) reading will rise. Continue to open the flow gauge until pressure drops to 50 PSI. Record the gallons per minute reading on the chart below. Continue to close the gauge to 45 PSI and 40 PSI and record readings.
NOTE: "Dynamic or working pressure" is when water is running. The working pressure will determine how far your sprinklers will spray.
7. If pressure does not drop to 40 PSI after opening the flow gauge all the way, then take the flow and pressure reading at the full open position. If rapid fluctuation occurs on the flow gauge, record the average reading. Additional reading of pressure and flow may be helpful for further design information. Do not exceed recommended flow for your service and sprinkler lines as shown.

Record static pressure here.

Static PSI _____

Record the GPM indicated on your flow and pressure gauge here.

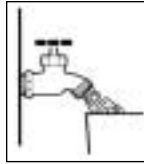
_____ GPM at 40 PSI

_____ GPM at 45 PSI

_____ GPM at 50 PSI

NOTE: When designing your own system, use the highest GPM of these three readings. If you are using the Toro Free Design Service, please make sure to record all three GPM readings on page 24.

B DETERMINE YOUR WATER CAPACITY & WORKING PRESSURE USING A 5-GALLON BUCKET AND STANDARD PRESSURE GAUGE



1. Locate the outside faucet that is closest to your water supply line (we'll call this Faucet 1 – See Y on diagram, page 9).
2. Locate another faucet on your house and attach a pressure gauge (we'll call this Faucet 2 – see X on diagram, page 9). Open Faucet 2 all the way and record the static water pressure below.
3. With Faucet 1 open all the way, check the pressure reading on the gauge at Faucet 2. If it is less than 40 PSI, turn down the water flow from Faucet 1 until the reading reaches 40 PSI. If it is greater than 40 PSI, record the dynamic pressure reading below and go to step 4.
4. Place a five-gallon bucket under Faucet 1 and time how long it takes to fill it. Use the chart below to convert to gallons per minute (GPM). This test tells you what your home's water capacity is measured in GPM at 40 PSI.
5. Repeat this procedure at 45 PSI and 50 PSI. Record these three results on the chart below.

TIME TO FILL BUCKET	GALLONS PER MINUTE
15 seconds	20 GPM
20 seconds	15 GPM
25 seconds	12 GPM
30 seconds	10 GPM
40 seconds	7.5 GPM

This is how much water is available with a working pressure of 40 PSI or the higher reading that you recorded. (Minimum operating pressure for most sprinklers is 35 PSI.)

Record static pressure here.

Static PSI _____

Record the GPM here (dynamic pressure).

_____ GPM at 40 PSI

_____ GPM at 45 PSI

_____ GPM at 50 PSI

If you use a different size bucket, time how long it takes to fill it. Convert this to gallons per minute using the following formula:

$$60 \div \text{Seconds} \times \text{Gallons}$$

For example: A two-gallon bucket that fills in 15 seconds means the available flow is 8 gallons per minute.

$$60 \div 15 \times 2 = 8 \text{ GPM (gallons per minute)}$$

4 FLOW RATES FOR SERVICE LINES AND SPRINKLER LINES

Maximum Recommended Flow through PVC (Plastic) Pipe:

PVC Pipe Size	Maximum GPM
3/4" Schedule 40	8 GPM
1" Schedule 40	13 GPM
3/4" Class 200	10 GPM
1" Class 200	15 GPM

Maximum Recommended Flow through New Galvanized Pipe:

Galvanized Pipe Size	Maximum GPM
3/4" Galvanized Pipe	8 GPM
1" Galvanized Pipe	13 GPM

Maximum Recommended Flow through Type K Copper Pipe:

Copper Pipe Size	Maximum GPM
3/4" Copper Tube	6 GPM
1" Copper Tube	12 GPM

Maximum Recommended Flow through Polyethylene Pipe:

Poly Pipe Size	Maximum GPM
3/4" Poly Pipe	8 GPM
1" Poly Pipe	13 GPM

NOTE: In freezing areas, poly pipe should be used downstream of zone valves.

LET TORO DESIGN YOUR SPRINKLER SYSTEM FOR FREE!

SEE PAGES 23-25

Fill out our Sprinkler Design Questionnaire, draw your property and fax or mail us your information. We'll provide you with a customized sprinkler system design AND a complete list of products for FREE!

TORO[®]

Placing Your Sprinklers

1 SPRINKLER PLACEMENT PLANNING

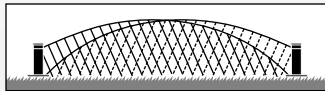
Place sprinklers within each area on your plan, one area at a time, using sprinklers with a greater radius for larger areas.

Stay within the allowable spacing range (radius) of sprinkler selected, and remember to space them head-to-head. Spacing sprinklers too far apart will produce dry spots. Always place sprinklers in a way to avoid spraying the side of your house, walls, fences, etc. Also, minimize spraying onto sidewalks, driveways and streets.

Place ◐ half-circle sprinklers on sides and borders; ◑ quarter-circle sprinklers in corners; and ● full-circle sprinklers in the middle.

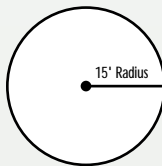
HEAD-TO-HEAD SPACING

For proper coverage, place sprinklers so that the spray from one sprinkler reaches the next, as shown below. For windy areas (winds regularly stronger than 8 mph), place sprinklers closer — at 90% of spray radius or more depending on local wind direction and speed.

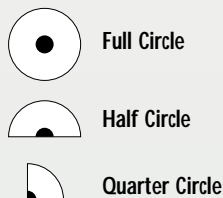
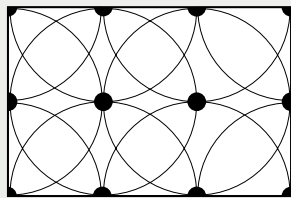


RULE OF THUMB

Determine spacing by sprinkler radius. For example, if you are using Toro 570™ Series sprinklers with a radius of 15', place your sprinklers no more than 15' apart; or closer together if you are in a windy area.



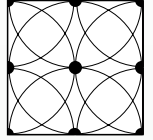
To make sure you have proper head-to-head spacing, use a compass to draw circles, semi-circles and quarter-circles representing sprinkler coverage, as shown below.



2 TWO WAYS TO PLACE SPRINKLERS IN SMALL AREAS

A SQUARE SPACING

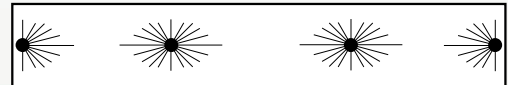
This layout is best suited for well-defined, geometric spaces such as small, square or rectangle-shaped yards, or sites divided by sidewalks and other paved areas.



B SPECIAL-PATTERN SPACING

You can use Toro 570™ Series special-pattern sprinklers for end-strip and center-strip watering, as shown in the diagram below.

Center-strip sprinklers spray in two directions, end-strip sprinklers spray in one direction only. Both are designed for precise watering of small, rectangular areas.



NOTE: When special pattern nozzles are unavailable, use the Toro Adjustable Pattern Nozzle.

3 PLACING SPRINKLERS IN ODD-SHAPED AREAS

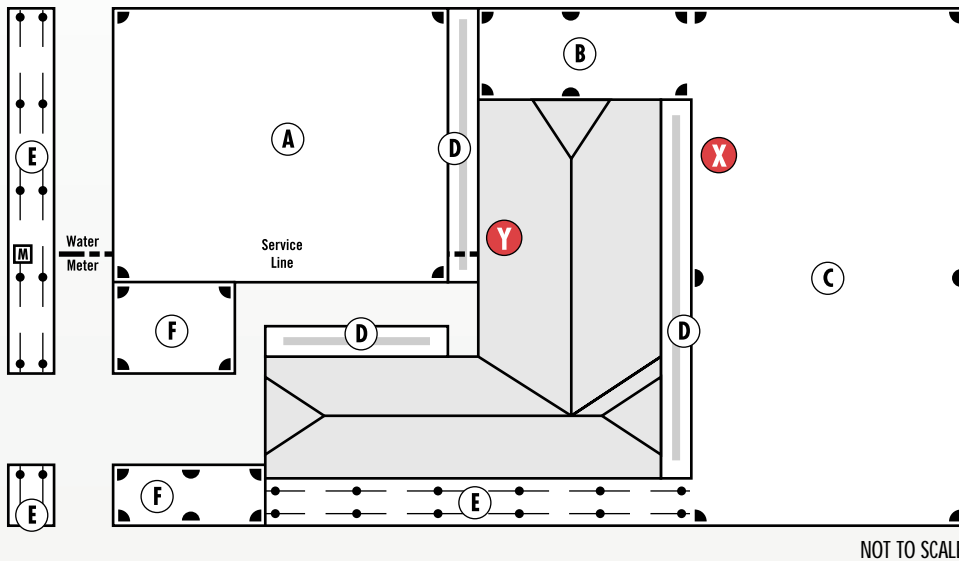
After placing your sprinklers in large, rectangular areas, you can now place sprinklers in small, non-rectangular areas. Although each site is different, following are some handy guidelines.

1. Choose the area on the perimeter with the smallest radius.
2. Place a sprinkler with a small radius at that point.
3. Place sprinklers along the border starting from that area.
4. Adjust the radius of each sprinkler according to the size and shape of the area.
5. If coverage is incomplete, adjust sprinkler location.

When you have defined and placed all of your sprinklers, use a compass to double check your layout.

4 EXAMPLES OF TYPICAL SPRINKLER PLACEMENT

The diagram below illustrates the following examples of typical sprinkler placement.



- Ⓐ Rotary sprinklers, with their large radius range, cover this 34' x 34' lawn area using only four sprinklers, as opposed to needing up to nine smaller-radius fixed-sprays. That means you use a lot less pipe, accessories and trenching.
- Ⓑ 570™ Series fixed-spray sprinklers with 12' (brown) radius nozzles are used in this area.
- Ⓒ MultiStream sprinklers with the adjustable nozzle provide the most efficient watering pattern for this 28' x 57' area. In addition, the MultiStream delivers even watering to this home's backyard slopes.
- Ⓓ Use Blue Stripe Drip Hose with Factory-Installed Emitters to efficiently water planter or ground cover areas.
- Ⓔ 570™ Series fixed-spray sprinklers with center strip (orange) nozzle pattern next to the house and sidewalks keep spray off of surfaces. They are very effective for small planter beds and shrub areas too.
- Ⓕ In this area, 570™ Series fixed-spray sprinklers with 8' (green) radius nozzles are used.

NOTE: When designing your system, see page 21 for Toro recommended operating pressures.



Selecting Your Products

1 SELECT THE RIGHT SPRINKLERS

No matter how simple or complex the landscape, Toro has the sprinkler family to cover every angle.

Select sprinklers with a greater spray radius for large areas so you can use fewer sprinklers and valves, which means you also use less pipe with less trenching and fewer timer zones.

A 570™ SERIES FIXED-SPRAY SPRINKLERS

Radius: 5'-15'



Toro 570™ Series fixed-spray sprinklers produce a tight, constant fan of water that's ideal for small lawn, shrub and ground cover areas. Pop-up models pop up above grasses and disappear when not in use. Shrub sprays are mounted above foliage to water ground cover and shrubs. True matched precipitation rates and color coding by radius are just a few of the exciting features of 570™ matched precipitation rate spray nozzles. Toro has more than 35 different interchangeable nozzles to choose from to give you maximum flexibility.

B FLOOD BUBBLER

Radius: 0'-2'



Use the Toro Flood Bubbler for slow, deep watering around trees, shrubs, vegetable and flower gardens. Fully adjustable from off to 5 GPM.

C MULTISTREAM SPRINKLER

Radius: 18'-27'



Toro's unique gear-driven, MultiStream sprinklers are recognized by their graceful "fingers of water" that slowly rotate to effectively penetrate medium-sized lawns, shrubs and ground cover — especially on slopes.

D SINGLESTREAM SPRINKLER

Radius: 34'-48'

The Toro SingleStream Sprinkler is perfect for medium-to-large lawn areas. Its gear-driven design provides years of smooth, quiet operation.



E SIMPLESET™ LAWN SPRINKLER

Radius: 27'-47'

The Toro SimpleSet Lawn Sprinkler offers full and part-circle operation in a single unit. This closed-case rotary sprinkler is ideal for large lawn areas and it's simple to set!

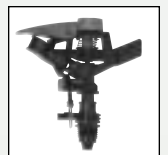


F UNIVERSAL IMPACT SPRINKLERS

Radius: 25'-45'

Toro Universal Impact Sprinklers are perfect for medium-to-large lawn areas. These impacts are adjustable from 20°-340° for part circle operation or 360° for full circle operation.

Toro Impact Sprinklers are heavy-duty and will offer years of reliable operation.

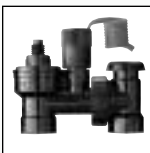


2 SELECT THE RIGHT VALVES

There are two types of valves: anti-siphon and in-line. Please check your local codes to determine which is appropriate in your area.

A ANTI-SIPHON VALVES

Anti-siphon valves are always installed above ground usually 6" to 12" above the highest sprinkler or according to local codes.



Anti-siphon valves have backflow prevention built into each individual valve to keep the water from the sprinkler system (and any contaminants) from re-entering the clean potable water supply.

B IN-LINE VALVES

In-line valves are installed below ground for out-of-sight operation and must be installed with an additional backflow prevention device. Check local codes.



C PRESSURE VACUUM BREAKER (PVB)

A pressure vacuum breaker can be used with in-line valves to prevent the backflow of contaminated water into your potable water supply. Check local codes.



3 SELECTING DRIP PRODUCTS

Save time, save money and save water with Toro Blue Stripe Drip irrigation products.

A BLUE STRIPE™ DRIP WATER SOURCE INSTALLATION KIT

The Toro Blue Stripe Drip Water Source Installation Kit contains everything you need to hook-up landscape drip from a valve, riser or faucet.



B BLUE STRIPE™ DRIP 1/2" HOSE WITH FACTORY-INSTALLED EMITTERS

Use Toro Blue Stripe Drip 1/2" Hose with factory-installed emitters for a quick and easy way to get the benefits of drip irrigation in half the time. Just drop and roll!



C BLUE STRIPE™ DRIP 1/2" HOSE

Easy-to-install Toro Blue Stripe Drip 1/2" Hose resists cracking, chemicals, equipment abrasion, and heat better than any other hose on the market.



D BLUE STRIPE™ DRIP 1/2" FITTINGS KIT

Use Toro 1/2" Loc-Eze® Fittings with Toro Blue Stripe Drip 1/2" Hose. These fittings are easy-to-install and reusable. The kit includes couplings, elbows, tees, end clamps (5 each) and 2 hose swivels.



NOTE: Toro offers a wide variety of Blue Stripe Drip irrigation products. Visit your local home center for more information.



Selecting Your Products

4 SELECT THE RIGHT TIMER

When selecting a timer, there are two things to consider — number of zones (valves) and number of programs. It's important to choose a timer that can adapt to your growing needs. The additional programs allow you to water the different areas of your landscape (lawn, shrubs, flower beds) separately.

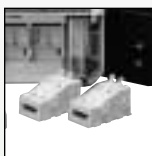
A ECx® TIMERS

4, 6 or 8 Zones

This is an easy-to-use timer that expands as your landscaping needs grow.

The Toro ECx® Outdoor Sprinkler Timer comes in its own cabinet for convenient outdoor installation.

Toro's ECx® 2-zone expansion module lets you expand your 4 or 6-zone timer up to 8 zones and your outdoor timer up to 12 zones.



B WEATHER-RESISTANT TIMER CABINET

Rainproof, lockable outdoor cabinet is available to protect your timer when installed outdoors.



C LAWN MASTER 12-ZONE TIMER

This feature-packed hybrid timer does it all. With 12 zones, 3 programs and 3 start times, it's flexible enough to accommodate sophisticated landscape designs in residential irrigation applications.



D RAIN SWITCH®

Attaches easily to roof eaves or 3/4" PVC pipe. Conserves water by interrupting watering during rainfall.



5 SELECT TORO FUNNY PIPE®

WHAT IS TORO FUNNY PIPE?

Funny Pipe is a high-strength poly tubing that solves tough sprinkler installation & replacement problems. Put simply, Funny Pipe acts as a flexible extension cord between sprinkler line and sprinkler head, allowing you to easily position sprinklers where you need them, even in hard-to-reach areas!

One of the most useful and time-saving sprinkler installation aids is Toro Funny Pipe. Whether you are installing a new system or replacing an old sprinkler head, Toro Funny Pipe can make your job quicker and easier.

TORO FUNNY PIPE 50' Roll



TORO FUNNY PIPE 100' Roll



TORO FUNNY PIPE 24" Stick



TORO FUNNY PIPE FITTINGS



1/2" Male Elbow



3/8" x 3/8" x 3/8" Tee



3/4" Male Elbow



3/4" Male Adapter



1/2" Female Elbow

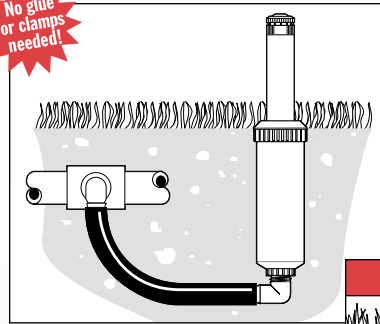


1/2" Male Adapter



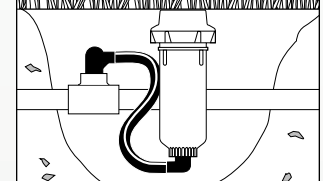
3/8" Coupling

No glue
or clamps
needed!



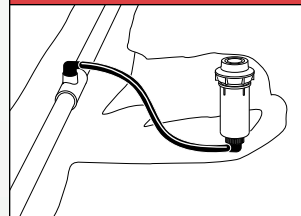
POSITIONING

NOTE: *Do not use more than 4' of Toro Funny Pipe with each sprinkler head.*



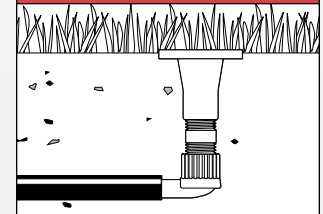
Flexible Toro Funny Pipe lets you install heads at the correct depth without cutting and gluing existing water lines.

INSTALLATION



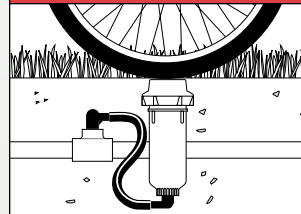
Use 12"-24" of Toro Funny Pipe per sprinkler head on new installation or replacements. Just place the sprinkler head on either side of your water line and adjust as necessary.

REPLACEMENT



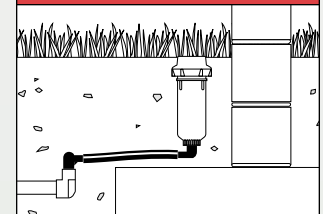
Toro Funny Pipe and fittings can be used with any sprinkler with 3/4" or 1/2" male or female NPT (National Pipe Thread) inlet.

PROTECTION



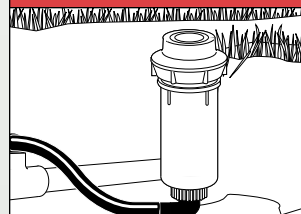
In high traffic areas, Toro Funny Pipe prevents damage by allowing sprinklers to flex instead of break when walked on or driven over. Ideal for installation near driveways and sidewalks.

HARD-TO-REACH PLACES



Installing in hard-to-reach places is easy with Toro Funny Pipe.

RELOCATION



It's easy to position pop-up sprinkler heads at ground level using Toro Funny Pipe.

TORO

1 DIVIDE YOUR SYSTEM INTO ZONES

WHAT IS A ZONE?

A zone is a group of sprinklers that operate together using one common valve. Your system timer controls zones independently (one after the other). The capacity of any zone must not exceed the safe design capacity of your home's water system (see page 6).

A Write down the flow capacity (GPM) of each type of sprinkler on your grid layout.

NOTE: *GPM is shown in your sprinkler performance chart on the back of your grid.*

B Next, divide similar sprinklers into groups as shown on page 15.


- Different sprinkler types apply water at different rates so don't mix sprinkler types within a zone. For example, fixed-spray sprinklers should not be grouped with rotary sprinklers.
- Separate lawn and shrub areas.
- Separate shady and sunny areas.

C Add up the sprinkler flow (GPM) for each zone. If the total flow exceeds the safe design capacity, you must split the zone into more zones or put some of the sprinklers into another zone with available capacity. Remember to split zones based on slope, sun, shade or GPM.

2 COUNT YOUR ZONES

Determine the number of valves that you will need, based on the number of zones you have designed. In the example on page 15, we will need eight valves because we have eight zones.

3 LOCATE YOUR VALVES ON THE PLAN

We recommend grouping the valves. For example, one valve location is needed to operate front yard zones, and one to operate the backyard and/or side-yard zones. This symbol  represents a valve location.

Locate the first set of valves in a convenient spot near the main water connection. A good location is where the service line enters your house. Also, place valves next to walks or in planters for easier access.

In the example on the next page, we show 2 valve manifold locations. The front valve manifold, near the garage, controls zones 1, 2, 3 and 4. The backyard valve manifold controls zones 5, 6, 7 and 8.

The number of zones used on your automatic timer should match or exceed the number of zones in your system (plan for potential expansion). The Toro ECx® 8-zone timer or the Toro Lawn Master 12-zone timer would be ideal to use in this example.

4 LAY OUT YOUR PIPE

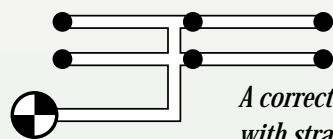
In this system, piping will run:

- Main line from the water source to the valves
- From the valves to the sprinkler heads (shown only for zones 1 and 4)
- ===== Under driveway and walkways

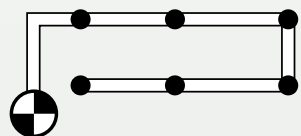
Draw these connecting pipes on your grid layout (as shown in zone 2) and follow these rules:

- Use as many straight runs as possible.
- Try to avoid turns, which result in loss of pressure.
- Avoid runs under sidewalks and driveways whenever possible.
- Make connections perpendicular to each other.

NOTE: *You can include more than one pipe in a trench. Depending on local codes and zone GPM, consider using 1" Schedule 40 PVC pipe upstream of control valves and at least 3/4" Class 200 PVC pipe or 3/4" poly pipe downstream.*



A correct piping system with straight runs.



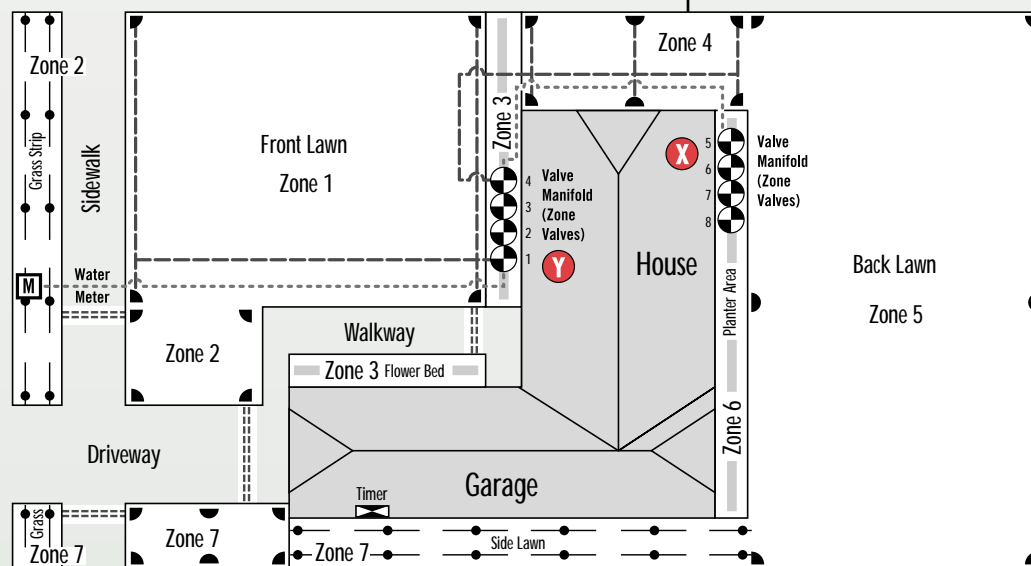
An incorrect piping system with too many turns in the pipe results in reduced flow and pressure to the last sprinkler on the line.

5 DETERMINE WHERE TO INSTALL YOUR TIMER

Install the timer inside your garage, or on an outside wall near a 120 V.a.c. outlet. If you install the timer outside, be sure to mount it in a weather-resistant timer cabinet such as the one available from Toro. Toro also offers the ECx® expandable outdoor timer, specially designed to be installed outdoors. Check local electrical codes for connection to outside plugs. Refer to, "Select The Right Timer", on page 12.

Place zone or valve wires in the same trenches as the pipe. Remember that valves will be wired to the timer, so place valve wires where they are easily accessible.

Toro recommends 18-gauge solid, multi-strand, direct-burial wire to connect valves to sprinkler timers. You will need one wire per zone, plus the common wire. This eight-zone system requires nine wires. Be sure to waterproof all of your connections using grease caps.



NOT TO SCALE

KEY:

- Zone Valve
- Timer
- Sprinkler Head
- Water Meter



CHECK LOCAL CODES AND PERMITS

Call your water company or the proper municipal authority to find out about any building codes or permits required for the installation of underground sprinkler systems. They can tell you about local codes for backflow prevention to protect your household water supply from contamination. They can also advise you on where in the system it should be located. In addition, check with your local utility companies before digging to identify any buried cables or natural gas lines.

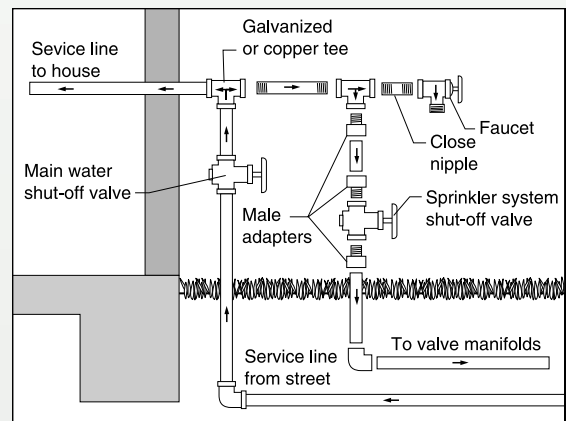
1 MARK YOUR SPRINKLERS, VALVES AND TRENCHES

Use Toro flags to indicate sprinkler locations according to your design. Use line-marking spray paint to mark the lines along the area where you'll trench and install pipe. Check your worksheet to make sure you mark the lines accurately. You will be digging your trenches along these lines (step 3).

WARNING
! Before digging any trenches, you must have all underground utilities marked to avoid any damage. Call your local underground locator service or the city for information.

2 TAP INTO YOUR SERVICE LINE

By cutting into your service line and slipping on a compression tee you can connect your sprinkler system to the water supply without soldering. You can avoid cutting the main line by attaching your system to the outside faucet connection (see diagram and note). In addition, PVC may be substituted for copper in non-freezing areas. Check local codes for backflow requirements.



TYPICAL INSTALLATION FROM A FAUCET

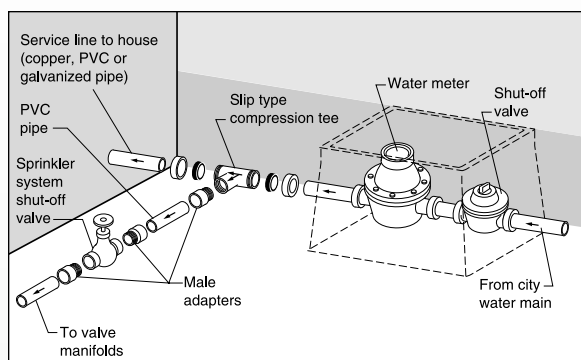
A SHUT-OFF VALVES

In systems with a pressure vacuum breaker (PVB), the PVB may be used as a shut-off valve.

In systems where a PVB is not used, we recommend installing a shut-off valve between the zone valves and the service line. This will allow you to easily turn off the water to your irrigation system if you need to make repairs or replace parts. Check local codes for the type of shut-off valve recommended.

A PVB should be installed 12" above the highest sprinkler, or according to local codes.


When you install your sprinkler system in the front yard with plans to install the backyard later, run your sprinkler main line and wire to an accessible location in the backyard and cap it off. Leave extra wire (more strands) to handle more valves as you expand in the future.



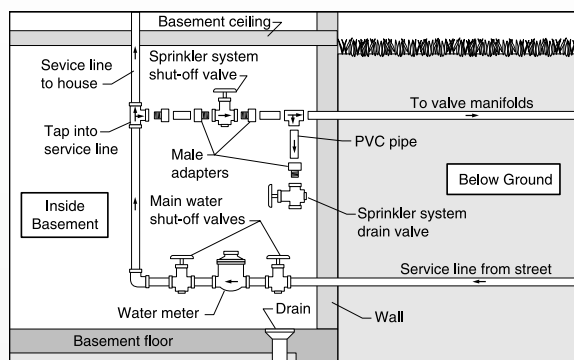
TYPICAL INSTALLATION IF THE METER IS IN YOUR YARD

B IF THE METER IS IN YOUR YARD:

1. Shut off your water supply at the meter (check with your water department first).
2. Dig to expose the service line.
3. Tie into the service line, between the water meter and the house.
4. Remove a section of pipe, leaving a gap large enough to slide on a compression tee.
5. Slip the tee over each end of the pipe.
6. Tighten the compression nuts. The rubber gasket will compress against the pipe, creating a seal to prevent leakage.
7. Install a close nipple with teflon tape on all threaded connections into the tee.
8. Attach a shut-off valve to this section of pipe. The shut-off valve allows you to turn off the system by hand, if necessary.
9. Keep this connection as clean as possible. This is your tap water supply.

WARNING
 *When sprinklers are running, the layout using an outside faucet connection may result in noise in your house as the water runs through the pipes. Also, lower pressure and gallons per minute not recommended.*

*If the supply line to your faucet is 1/2" pipe, it is **NOT** recommended to use this as a water source. Find a location where the supply line is 3/4" or greater.*



TYPICAL INSTALLATION IF THE METER IS IN YOUR BASEMENT

C IF THE METER IS IN YOUR BASEMENT:

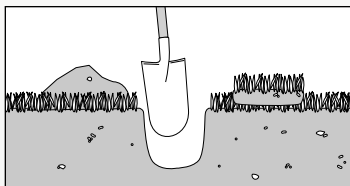
1. Shut off your water supply at the meter (check with your water department first).
2. Tap into the service line with a tee.
3. Drill a hole through the sill above the foundation, or drill or chisel a hole in the basement wall. Make a hole no bigger than needed to run a 1" pipe through it.
4. Install the piping, as shown above. Add a shut-off valve and drain cap. The drain cap should be in a low position to allow system drainage.
5. Run your connecting pipe out of the basement through the hole to the outside. Then run it to where the backflow preventer and first set of valves are on your planning worksheet (see page 11 for more information on backflow prevention).
6. To drain water from the system, close the shut-off valve, place a bucket under the drain cap and remove the cap.
7. After the connecting pipe is installed, seal the hole in the wall with caulking compound.

3 MAIN AND LATERAL LINE TRENCHING

The main line is the line that runs from your service line to your valve manifolds. Lateral lines run from the valve manifolds to the sprinkler heads.

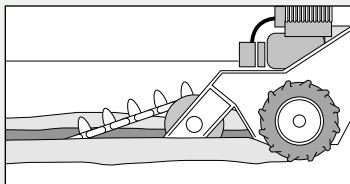
A TRENCHING BY HAND

To soften the soil, water the ground approximately two days before you dig. Dig trenches 8" to 12" deep or per local codes below the frost line in freezing climates. Put sod on one side of the trench and soil on the other.



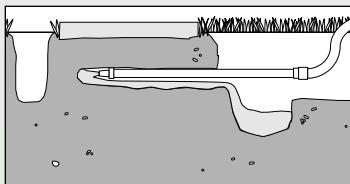
B TRENCHING WITH A TRENCHER

Trenching machines are an easier, faster alternative to digging with a shovel. They can be rented by the hour, day or week, usually from a lawn supply store or rental equipment dealer. The person you rent from can show you how to operate the machine properly and safely. Trenchers should not be used to dig through ground cover, flower beds, on steep slopes or near buildings. Be sure to verify all underground utilities before trenching.



C GOING UNDER OBSTACLES

To tunnel under brick and concrete walks, attach a piece of Schedule 40 PVC pipe to a hose with a hose-to-pipe adapter. Cap the end with a PVC cap and drill a 1/8" hole in the end of the cap. Point the end of the pipe to where you want to tunnel. Turn on the water and push the pipe under the concrete. The force of water will blast away the soil in front of it to form a tunnel. Tunneling requires care to avoid damage to walks and driveways.



4 INSTALL THE SPRINKLER SYSTEM MAIN LINE

Attach your sprinkler system main line to the service line. Run it along the bottom of the trench from the house to the first set of valves and if required, to the second set. Place your valve wire under the pipe whenever possible.

TIPS ON WORKING WITH DIFFERENT PIPES

A PVC PIPE

1. Cut pipe with a PVC pipe cutter.
2. Brush on a primer to clean the pipe surface and the inside of the fitting.
3. Brush glue on the outside end of the pipe and lightly inside the fitting.
4. Slip the pipe into the fitting and give it a quarter turn.
5. Hold in place for about 15 seconds so the glue can set.
6. Wipe off excess glue with a rag.



NOTE: Wait at least one hour before running water through the system. (Check manufacturer's recommendation).

B POLY PIPE

1. Cut pipe with a PVC pipe cutter.
2. Slip a stainless-steel clamp over the end of the pipe.
3. Insert the barbed fitting into the end of the poly pipe, past the barbs.
4. Slide the clamp over the barbs of the fitting.
5. Tighten the clamp.
6. Save time with no sawing, drilling or gluing – use the Toro Self-Tapping Saddle for poly pipe (80-100 PSI). Available at your local home center.



NOTE: To relax poly pipe, expose it to sunlight. Never expose poly pipe to open flame.

WARNING

Do not use poly pipe as the connecting pipe between the service line and the control valves. Surge pressure may rupture the poly pipe. Be sure to check local codes for correct type of pipe to use.

5 BUILD VALVE MANIFOLDS

A group of valves is called a manifold. We recommend grouping the control valves — for example, one control valve location to operate front yard zones, and one to operate backyard and/or side yard zones. Use flags to mark the location of the valves, as indicated on your worksheet.

A ANTI-SIPHON VALVE INSTALLATION

Anti-siphon valves are always installed above ground. With an anti-siphon valve, dig out an area large enough to accommodate your inlet and outlet pipes.

B IN-LINE VALVE INSTALLATION

In-line valves are installed below ground. Protect valves below ground by sheltering them in a valve box. Dig out the area where below-ground valves are to be installed. Install the valve box at or near grade level. When you buy a valve box, be sure to find out how many valves fit in each box so you can buy the correct amount. In some cases, you will need more than one valve box per manifold.

6 INSTALL LATERAL DOWNSTREAM PIPE

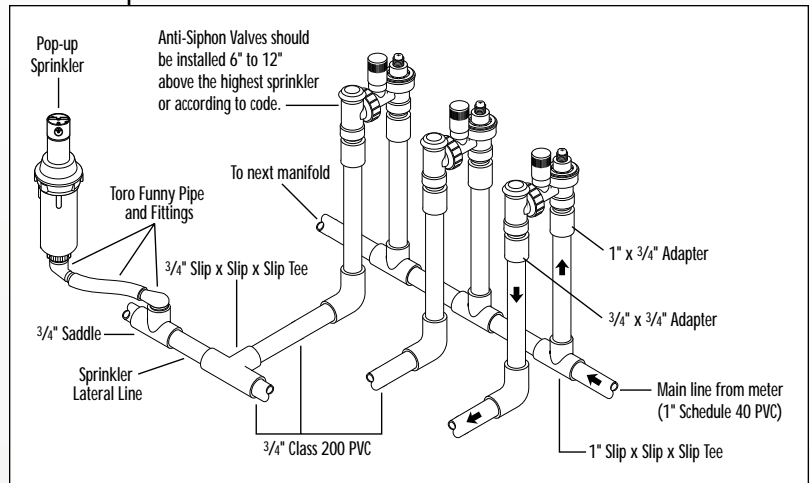
Start from the valves and move outward, laying the connecting pipe along the bottom of the trench. At each flag, install an appropriate fitting for sprinkler attachment. We recommend that you use Toro Funny Pipe® for all your sprinkler head installations. Please refer to page 13 for Toro Funny Pipe® information.

7 FLUSH THE SYSTEM TO CLEAR DEBRIS

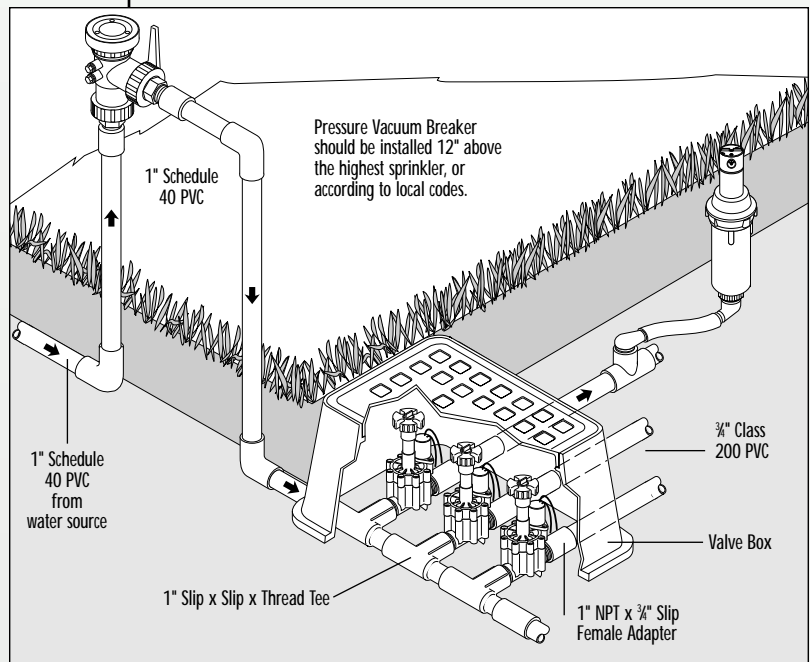
After the pipe has been connected and the glue has dried (PVC pipe only), turn on the water, open valves one zone at a time and flush until the water runs clear.

NOTE: Don't backfill your trenches until your final system operation check is complete.

NOTE: PVC pipe is shown in these illustrations. However, in areas where freezing occurs, poly pipe may be used downstream of valves instead of PVC. Always check local codes for proper pipe recommendations and before installing backflow prevention devices.



**AUTOMATIC ANTI-SIPHON VALVE ASSEMBLY
(3/4" VALVES SHOWN)**



**AUTOMATIC IN-LINE VALVE ASSEMBLY
(1" VALVES SHOWN)**

Installing Your System

8 INSTALL YOUR SPRINKLERS ZONE-BY-ZONE

Install one sprinkler zone at a time, using Toro Funny Pipe®. Remember to refer to your planning worksheet.

1. Placing a sprinkler in a trench as a guide, measure from the connecting pipe fitting to the bottom of the sprinkler and cut a length of Funny Pipe to fit. Place sprinklers at least 3" from sidewalks, curbs and 6" from fences and buildings.
2. Install the appropriate Funny Pipe elbow into the sprinkler and into the PVC or poly pipe fitting.
3. Connect one end of Funny Pipe to the sprinkler and the other end to the connecting pipe fitting.
NOTE: Do not use more than 4' of Toro Funny Pipe with each sprinkler head.
4. Position the sprinkler in the trench so that the top of the sprinkler is flush with ground level. Stabilize the sprinkler with soil without filling the entire trench.
5. Verify that the sprinkler is straight for optimum performance.

9 INSTALL YOUR TIMER

1. Install the timer in your garage or another convenient place. If an outdoor location is desired, plan to use an outdoor cabinet to protect the timer against the effects of weather. Make sure an adequate power supply is available. Toro timers require only a standard outlet (see instructions included with the timer for details).
2. Run wires along the trench, underneath the pipe and from the valves to the system timer.
3. Connect the valves to the timer.
 - a. Take one wire from each valve and connect them to a common wire (for ease of identification, use the white wire as the common).
 - b. At the timer, connect the common wire to the common terminal on the timer.
 - c. Take the other wire from each valve and connect them to the timer terminals in sequence.
4. Plug in the timer.

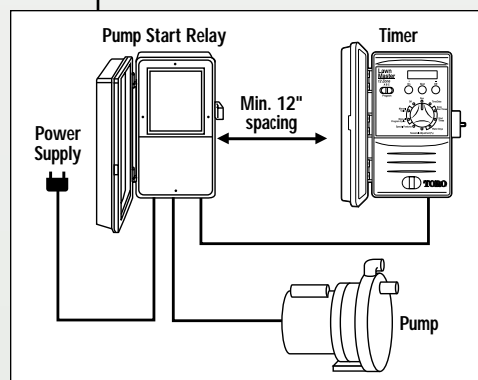
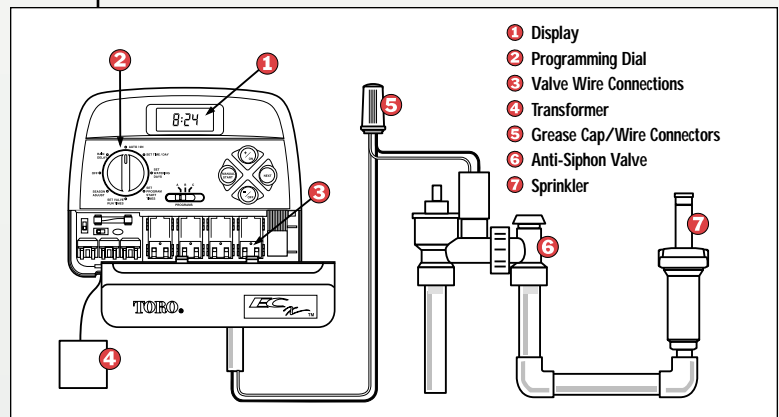
NOTE: All outdoor connections and splices must be waterproofed.

10 CONNECTING A PUMP START RELAY FOR A WELL, TANK OR POND

A pump start relay lets you automatically activate a pump if your water supply requires one. We recommend the Toro Pump Start Relay (53604). The timer must be at least 12 feet from the pump and 5 feet from the pump starter to prevent malfunctions.

11 CHECK YOUR SYSTEM OPERATION, ZONE-BY-ZONE

1. Slowly turn on the water and manually open the control valve.
2. Adjust the sprinklers to ensure proper coverage (see sprinkler installation instructions for details).
3. If your coverage is incomplete, follow the steps below:
 - a. Make sure the control valve and shut-off valve are fully open.
 - b. Turn off any water being used in the house (washers, showers, faucets, etc.).
 - c. Fine-tune sprinkler spray patterns to match your coverage area.
 - d. If coverage is still not complete, go back and check your system layout against the plans.
 - e. When you see that the coverage is satisfactory, fill in the trench.



CONGRATULATIONS!

When properly installed, your Toro automatic sprinkler system will help keep your landscape green and healthy for years of recreation and enjoyment.

SPRINKLER PERFORMANCE CHARTS

PSI: Pressure Per Square Inch (Working Pressure)
GPM: Gallons Per Minute

570™ SERIES NOZZLES

5' SERIES WITH 0° TRAJECTORY (RED)				8' SERIES WITH 5° TRAJECTORY (GREEN)				10' SERIES WITH 12° TRAJECTORY (BLUE)				12' SERIES WITH 23° TRAJECTORY (BROWN)				15' SERIES WITH 27° TRAJECTORY (BLACK)			
PATTERN	PSI	GPM	RADIUS	PATTERN	PSI	GPM	RADIUS	PATTERN	PSI	GPM	RADIUS	PATTERN	PSI	GPM	RADIUS	PATTERN	PSI	GPM	RADIUS
90° 	20	0.05	4'	90° 	20	0.17	7'	90° 	20	0.30	9'	90° 	20	0.40	11'	90° 	20	0.68	14'
	30	0.09	5'		30	0.24	8'		30	0.40	10'		30	0.50	12'		30	0.85	15'
	40	0.12	6'		40	0.26	9'		40	0.50	11'		40	0.60	13'		40	1.04	16'
	50	0.15	6'		50	0.29	9'		50	0.60	12'		50	0.63	13'		50	1.23	16'
120° 	20	0.07	4'	120° 	20	0.23	7'	120° 	20	0.42	9'	120° 	20	0.57	11'	120° 	20	0.95	14'
	30	0.12	5'		30	0.30	8'		30	0.52	10'		30	0.72	12'		30	1.10	15'
	40	0.16	6'		40	0.36	9'		40	0.65	11'		40	0.87	13'		40	1.30	16'
	50	0.20	6'		50	0.40	9'		50	0.75	12'		50	0.97	13'		50	1.45	16'
180° 	20	0.10	4'	180° 	20	0.37	8'	180° 	20	0.60	9'	180° 	20	0.95	11'	180° 	20	1.37	13'
	30	0.19	5'		30	0.50	8'		30	0.71	10'		30	1.09	12'		30	1.65	15'
	40	0.23	6'		40	0.58	9'		40	0.85	11'		40	1.30	13'		40	2.02	16'
	50	0.27	6'		50	0.65	9'		50	0.99	12'		50	1.55	14'		50	2.14	16'
240° 	20	0.15	4'	240° 	20	0.56	7'	240° 	20	0.71	9'	240° 	20	1.12	11'	240° 	20	1.78	14'
	30	0.25	5'		30	0.70	8'		30	0.97	10'		30	1.45	12'		30	2.20	15'
	40	0.30	6'		40	0.80	9'		40	1.10	11'		40	1.63	13'		40	2.66	16'
	50	0.35	6'		50	0.88	9'		50	1.19	11'		50	1.80	13'		50	2.84	16'
270° 	20	0.20	4'	270° 	20	0.63	7'	270° 	20	0.82	9'	270° 	20	1.05	11'	270° 	20	2.10	13'
	30	0.29	5'		30	0.76	8'		30	1.04	10'		30	1.55	12'		30	2.60	15'
	40	0.34	6'		40	0.86	9'		40	1.20	11'		40	1.65	13'		40	3.00	16'
	50	0.40	6'		50	0.93	9'		50	1.35	11'		50	1.80	13'		50	3.40	16'
360° 	20	0.25	4'	360° 	20	0.74	7'	360° 	20	1.11	9'	360° 	20	1.67	11'	360° 	20	2.85	13'
	30	0.38	5'		30	1.00	8'		30	1.49	10'		30	2.19	12'		30	3.60	15'
	40	0.45	6'		40	1.16	9'		40	1.61	11'		40	2.35	13'		40	4.20	16'
	50	0.53	6'		50	1.30	9'		50	1.85	11'		50	2.70	13'		50	4.58	16'

SPECIAL PATTERN (ORANGE)			
PATTERN	PSI	GPM	W x L
SIDE	20	1.00	9' x 18'
STRIP	30	1.20	9' x 18'
	40	1.38	9' x 20'
	50	1.55	10' x 22'
SIDE	20	0.65	4' x 24'
STRIP	30	0.90	4' x 30'
	40	1.04	4' x 32'
	50	1.16	5' x 33'
CENTER	20	0.75	3' x 24'
STRIP	30	0.90	4' x 30'
	40	1.04	4' x 30'
	50	1.16	4' x 31'
END	20	0.38	3' x 12'
STRIP	30	0.45	4' x 15'
	40	0.53	5' x 18'
	50	0.60	6' x 20'

ADJUSTABLE FLOOD BUBBLER		
MODEL #	PATTERN	FLOW
53692	360° 	0-5.0 GPM Adjustable

UNIVERSAL IMPACT SPRINKLER-40			
MODEL #	PSI	SPACING	GPM
53720	30	33'	2.0
	40	37'	2.2
	50	40'	2.5

UNIVERSAL IMPACT SPRINKLER-45					
MODEL #	PSI	SPACING	GPM	NOZZLE	PATTERN
53721	30	32'	1.5	Orange	90°
		33'	2.0	Red	120°
		35'	2.9	Black	180°
		38'	3.8	Blue	270°
		39'	5.8	Green	360°
40	35'	1.8	Orange	90°	
		2.2	Red	120°	
		3.6	Black	180°	
		4.2	Blue	270°	
50	43'	6.5	Green	360°	
		2.3	Orange	90°	
		2.5	Red	120°	
		4.0	Black	180°	
		5.1	Blue	270°	
45'	7.5	Green	360°		

UNIVERSAL IMPACT SPRINKLER			
MODEL #	PSI	SPACING	GPM
53722	25	38'	3.4
	30	39'	3.8
	35	39'	4.1
	40	40'	4.4
	45	40'	4.7
50	41'	5.0	

SINGLESTREAM SPRINKLER							
STD. NOZZLE	MODEL-PATTERN	25 PSI FLOW - SPACING	35 PSI FLOW - SPACING	45 PSI FLOW - SPACING	55 PSI FLOW - SPACING	65 PSI FLOW - SPACING	75 PSI FLOW - SPACING
Orange	53261 - 90°	1.0 GPM - 35'	1.3 GPM - 37'	1.5 GPM - 40'	1.7 GPM - 41'	1.8 GPM - 41'	2.0 GPM - 42'
Black	53262 - 180°	2.4 GPM - 34'	3.0 GPM - 38'	3.4 GPM - 41'	3.9 GPM - 42'	4.2 GPM - 43'	4.5 GPM - 43'
Green	53263 - 360°	4.4 GPM - 33'	5.3 GPM - 38'	6.1 GPM - 43'	6.8 GPM - 43'	7.5 GPM - 45'	8.1 GPM - 46'
Black	53264 - Adj.*	2.4 GPM - 34'	3.0 GPM - 38'	3.4 GPM - 41'	3.9 GPM - 42'	4.2 GPM - 43'	4.5 GPM - 43'

* Orange and green nozzles included in box.

SIMPLESET LAWN SPRINKLER				
MODEL #	PATTERN	PSI	SPACING	GPM
53674	90° 	30	36'	1.2
		40	37'	1.4
		50	36'	1.6
		60	38'	1.7
		70	37'	1.9
180° 	30	37'	2.3	
		40	40'	2.7
		50	42'	3.1
		60	43'	3.4
		70	42'	3.6
360° 	30	37'	4.2	
		40	37'	4.2
		50	44'	5.6
		60	47'	6.2
		70	47'	6.7

MULTISTREAM SPRINKLER — BASED ON FULL CIRCLE SPRAY PATTERN				
SPRINKLER MODEL NUMBER	PRESSURE	SPACING		
		18 FT.	21 FT.	24 FT.
53278 (Lawn) & 53279 (Shrub)	35 PSI	3.0 (GPM)	3.6 (GPM)	4.0 (GPM)
53278 (Lawn) & 53279 (Shrub)	50 PSI	3.2 (GPM)	3.9 (GPM)	4.7 (GPM)
				5.3 (GPM)

Note: The water flow in GPM (Gallons Per Minute) is based on a full circle (360°) spray pattern. The flow will vary depending on the spray pattern used. For example, the flow through a 180° pattern is about half of a 360° pattern, and a 90° pattern has roughly one quarter the flow of a 360° pattern.

NOTE: We recommend using the highlighted sprinkler performance data when designing your sprinkler system.



Parts Order List

570™ Series Fixed-Spray Sprinklers with Pre-Installed Nozzles

3" POP-UP SPRINKLER			
QUANTITY NEEDED	MODEL NO.	PATTERN	RADIUS @ 30 PSI
	53100	90°	15'
	53101	180°	15'
	53103	270°	15'
	53102	360°	15'
	53628*	0-330°	15'
	53108		9' x 18'
	53111		4' x 30'
	53109		4' x 30'
	53110		4' x 15'
	53104	90°	12'
	53105	180°	12'
	53107	270°	12'
	53106	360°	12'

*GRAY NOZZLE

4" POP-UP SPRINKLER			
QUANTITY NEEDED	MODEL NO.	PATTERN	RADIUS @ 30 PSI
	53711	90°	15'
	53309	180°	15'
	53712	360°	15'
	53630*	0-330°	15'

*GRAY NOZZLE

570™ Series Fixed-Spray Sprinklers (Bodies Only with Flush Plug)

QUANTITY NEEDED	MODEL NO.	DESCRIPTION
	53395	2" Pop-Up Body Only with Flush Plug
	53396	3" Pop-Up Body Only with Flush Plug
	53397	4" Pop-Up Body Only with Flush Plug
	53398	6" Pop-Up Body Only with Flush Plug (Side Inlet)
	53710	12" Pop-Up Body Only with Flush Plug (Side Inlet)

Funny Pipe® & Fittings

QUANTITY NEEDED	MODEL NO.	DESCRIPTION
	53265	Funny Pipe® (24" Sticks)
	53186	Funny Pipe® (50' Roll)
	53338	Funny Pipe® (100' Roll)
	53270	1/2" Male Elbow (10-Pack)
	53271	3/4" Male Elbow (10-Pack)
	53272	1/2" Female Elbow (10-Pack)
	53273	3/8" Coupling (10-Pack)
	53304	1/2" Male Elbow
	53305	3/4" Male Elbow
	53306	1/2" Female Elbow
	53307	3/8" Coupling
	53388	1/2" Male Adapter
	53389	3/4" Male Adapter
	53390	3/8" x 3/8" x 3/8" Tee

570™ SHRUB SPRAY

QUANTITY NEEDED	MODEL NO.	PATTERN	RADIUS @ 30 PSI
	53113	90°	15'
	53114	180°	15'
	53116	270°	15'
	53115	360°	15'
	53627*	0-330°	15'
	53121		9' x 18'
	53124		4' x 30'
	53122		4' x 30'
	53123		4' x 15'
	53117	90°	12'
	53120	180°	12'
	53119	270°	12'
	53118	360°	12'

*GRAY NOZZLE

Adjustable Flood Bubbler

QUANTITY NEEDED	MODEL NO.	PATTERN	FLOW
	53692	360°	Adjustable*

MultiStream Lawn Sprinkler with Pre-Installed Nozzle

QUANTITY NEEDED	MODEL NO.	ARC PATTERN DISCS	RADIUS @ 30 PSI
	53278	90°, 180°, 360°	18'-27' Adj.

MultiStream Shrub Sprinkler with Pre-Installed Nozzle

QUANTITY NEEDED	MODEL NO.	ARC PATTERN DISCS	RADIUS @ 30 PSI
	53279	90°, 180°, 360°	18'-27' Adj.

MultiStream Assortment Replacement Arc Pattern Discs

QUANTITY NEEDED	MODEL NO.	ARC PATTERN DISCS
	53614	90°, 112°, 135°, 157°, 180°, 202°, 225°, 270°, 360°

Universal Impact Sprinklers

QUANTITY NEEDED	MODEL NO.	DESCRIPTION
	53720	Universal Impact Sprinkler-40
	53721	Universal Impact Sprinkler-45
	53722	Universal Impact Sprinkler

570™ Series Fixed-Spray Nozzles

5' PATTERN (RED)			
QUANTITY NEEDED	MODEL NO.	PATTERN	RADIUS @ 30 PSI
	53318	90°	5'
	53321	120°	5'
	53319	180°	5'
	53322	240°	5'
	53323	270°	5'
	53320	360°	5'

10' PATTERN (BLUE)			
QUANTITY NEEDED	MODEL NO.	PATTERN	RADIUS @ 30 PSI
	53140	90°	10'
	53327	120°	10'
	53141	180°	10'
	53328	240°	10'
	53329	270°	10'
	53142	360°	10'

15' PATTERN (BLACK)			
QUANTITY NEEDED	MODEL NO.	PATTERN	RADIUS @ 30 PSI
	53128	90°	15'
	53132	120°	15'
	53129	180°	15'
	53133	240°	15'
	53131	270°	15'
	53130	360°	15'
	53626*	0-330°	15'

*GRAY NOZZLE

SingleStream Lawn Sprinklers with Pre-Installed Nozzle

QUANTITY NEEDED	MODEL NO.	PATTERN	PRE-INSTALLED NOZZLE
	53261	90°	1.5 GPM
	53262	180°	3.0 GPM
	53263	360°	6.0 GPM
	53715	Adj.	3.0 GPM*

*1.5 AND 6.0 GPM NOZZLES INCLUDED IN BOX.

SingleStream Replacement Nozzles

QUANTITY NEEDED	MODEL NO.	NOZZLES (GPM)
	53613	1.5, 3.0, 6.0

SimpleSet Lawn Sprinkler

QUANTITY NEEDED	MODEL NO.	NOZZLES (GPM)
	53674	1.5, 3.0, 6.0

8' PATTERN (GREEN)			
QUANTITY NEEDED	MODEL NO.	PATTERN	RADIUS @ 30 PSI
	53143	90°	8'
	53324	120°	8'
	53144	180°	8'
	53325	240°	8'
	53326	270°	8'
	53145	360°	8'

12' PATTERN (BROWN)			
QUANTITY NEEDED	MODEL NO.	PATTERN	RADIUS @ 30 PSI
	53134	90°	12'
	53138	120°	12'
	53135	180°	12'
	53139	240°	12'
	53137	270°	12'
	53136	360°	12'

SPECIAL PATTERNS (ORANGE)			
QUANTITY NEEDED	MODEL NO.	PATTERN	RADIUS @ 30 PSI
	53146		9' x 18'
	53149		4' x 30'
	53147		4' x 30'
	53148		4' x 15'

Valves

QUANTITY NEEDED	MODEL NO.	DESCRIPTION
	53285	3/4" Anti-Siphon Valve with Flow Control
	53380	3/4" In-Line Valve
	53381	1" In-Line Valve with Flow Control
	53682	1" In-Line Valve with Flow Control
	53683	1" In-Line Valve
	53300	1" Pressure Vacuum Breaker (PVB)

Automatic Timers

QUANTITY NEEDED	MODEL NO.	DESCRIPTION
	53331	ECx® 4-Zone
	53332	ECx® 6-Zone
	53333	ECx® 8-Zone
	53698	ECx® 6-Zone Outdoor Sprinkler Timer
	53334	ECx® 2-Zone Expansion Module
	53335	Weather-Resistant Outdoor Timer Cabinet
	53603	Lawn Master 12-Zone

Need a sprinkler system? Let us design one for you.



Thank you for letting us help you design your sprinkler system.

We want to do everything we can to make the planning and installation of your Toro sprinkler system an easy, step-by-step project. Follow these steps for the best results.

- A. Create an accurate layout of your property and provide all the information requested.
- B. Toro sprinkler system designers will enter your layout and water supply information into a computer and design a system specifically for your property.
- C. Your design will be mailed directly to you as soon as it is complete. A typical design takes approximately 5 days to complete after it's received in the Toro Computer Design Center. Please inform us if you require your design sooner.
- D. Meet with your local store to review the sprinkler system design for your yard. We will supply the necessary information for your sprinkler system installation.

WE'LL SEND YOU A CUSTOMIZED DESIGN SHOWING:

- Proper valve, piping and sprinkler placement — for even water coverage throughout your yard to avoid having dry spots.
- Correct sprinkler nozzle selection and placement — to accommodate corners and contours of lawn and planting areas.
- Ideal timer location and amount of zone (station) capability needed.
- A complete shopping list — of all the parts and accessories that you will need.
- A FREE step-by-step Do-It-Yourself installation guide.

1 DRAW YOUR PROPERTY FROM A BIRD'S EYE VIEW

First, draw your property plan on graph paper (pages 25-26). Using a tape measure, outline and measure your property accurately according to scale. From the outside of the house, measure outward to define the outside perimeters.

We trace directly over the drawing you send in so be sure to draw all of your property to scale. Use a scale of 1 inch = 10 feet, 1 inch = 20 feet, etc. or 1/4 inch = 1 foot, 1/8 inch = 1 foot, etc. (Refer to page 5 of this guide).

Include:

- Your house, garage, other buildings.
- All sidewalks, patios and driveways.
- Fences and walls.
- All grass areas, flower beds, trees and shrubs.
- Show the water meter and water supply line locations.
- Desired timer and valve locations.
- Any slopes.

If you have a current survey that is drawn to scale, you may mail or fax that in. Be sure to include ALL of the above information.

2 GATHER INFORMATION

Continue to complete the Gather Required Information section (pages 6-7) of this guide.

3 COMPLETE THE QUESTIONNAIRE

Use the information from pages 6-7 when you complete the Sprinkler Design Questionnaire on page 24. Fax or mail the questionnaire and property plan to:

Toro Computer Design Center
23181 Verdugo Drive, Suite 101
Laguna Hills, CA 92653-1313
Fax: (949) 465-0510



Sprinkler Design Questionnaire

IMPORTANT: Please print all information and fill out completely so that we may process your sprinkler design.

COMPLETE THIS QUESTIONNAIRE AND MAIL OR FAX TO TORO ALONG WITH YOUR PROPERTY PLAN.

CHECKLIST:

- Is your plan drawn to the scale specified?
- Have you indicated your water meter location?
- Have you indicated your desired timer and valve locations? (If not sure, leave blank and we will suggest locations.)
- Have you completed all the information on the questionnaire?

All information must be properly supplied before we will be able to design a sprinkler system for you. The Toro design and recommended parts will be based on the accuracy of information and drawings that you provide.

REFER TO PAGES 6-7 OF THIS GUIDE TO DETERMINE THE FOLLOWING INFORMATION:

1. Scale of Drawing:

_____ inch = _____ feet

2. Water Meter Size:

- 5/8 inch
- 3/4 inch
- 1 inch

3. Water Supply Line Type:

- Copper
- Galvanized
- PVC

4. Water Supply Line Size:

- 3/4 inch
- 1 inch
- 1-1/4 inches

5. Working pressure and flow readings:

Static water pressure _____ PSI

Gallons per minute: at 40 PSI _____
at 45 PSI _____
at 50 PSI _____

6. Pump Information:

It is recommended that your pump produce a minimum of 45 PSI @ 10 GPM for a sprinkler system. If your pump is not adequate, call for advice or write "Will purchase a new pump" on your design. We will design your system using the pump output recommended for your property.

Your Name _____

Address _____

City _____ State _____ Zip _____

Daytime Phone Number () _____

Evening Phone Number () _____

Store Name _____

City _____ State _____ Zip _____

IMPORTANT: Be sure to include store information so that we can customize your parts list based on product availability in your area.

REMINDER

Is your property plan complete and to scale?

Double-check all information for accuracy.

Mail property plan to:
Toro Computer Design Center
23181 Verdugo Drive, Suite 101
Laguna Hills, CA 92653-1313

Or fax to:
(949) 465-0510

NOTE: *Be sure to fax both your property plan and your completed Sprinkler Design Questionnaire.*

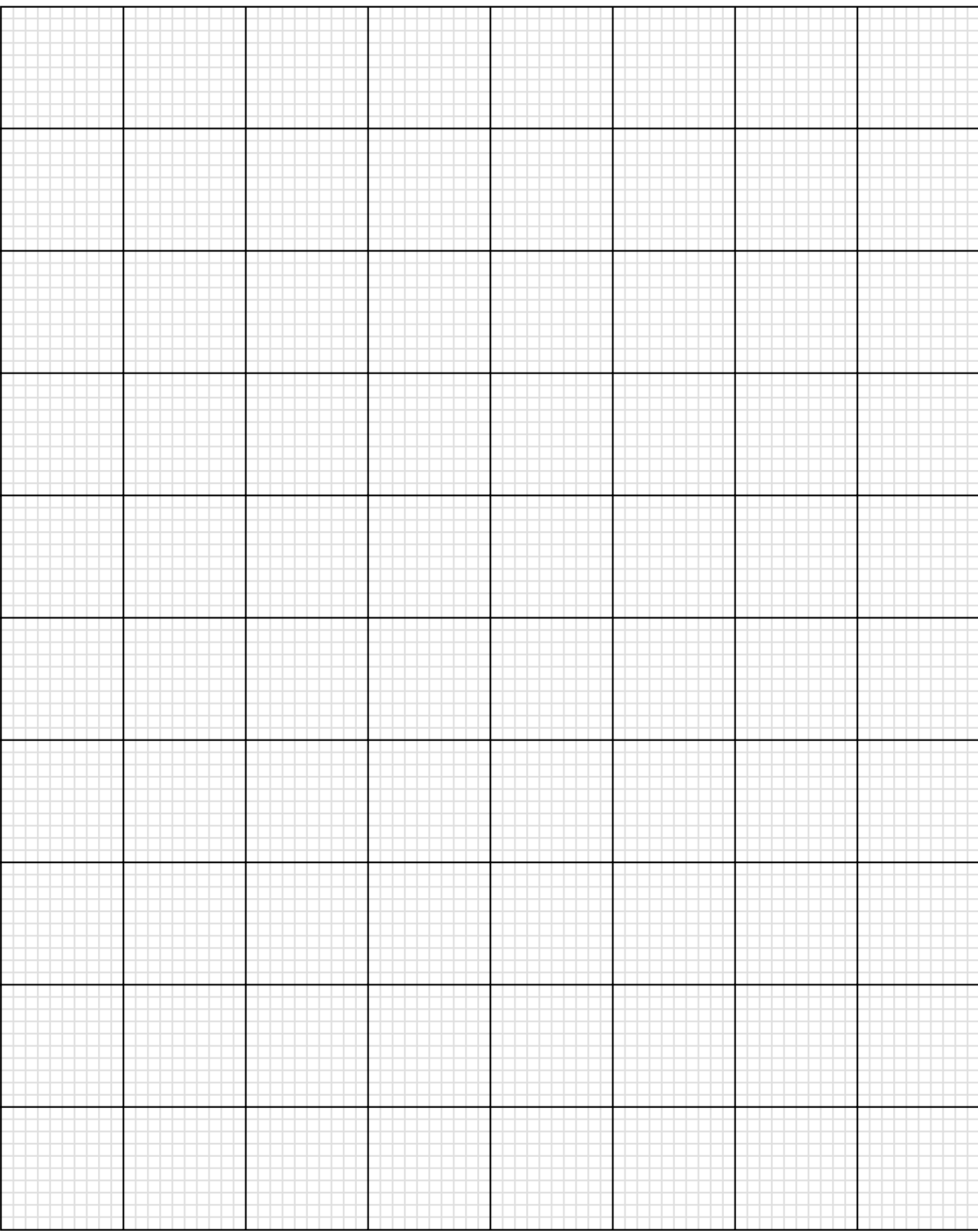
The Toro Professionals want to ensure that you are completely satisfied with our Design Service. Please call us with any questions, concerns or problems.

1-800-367-8676

Visit us on our web site: www.toro.com

Property Plan

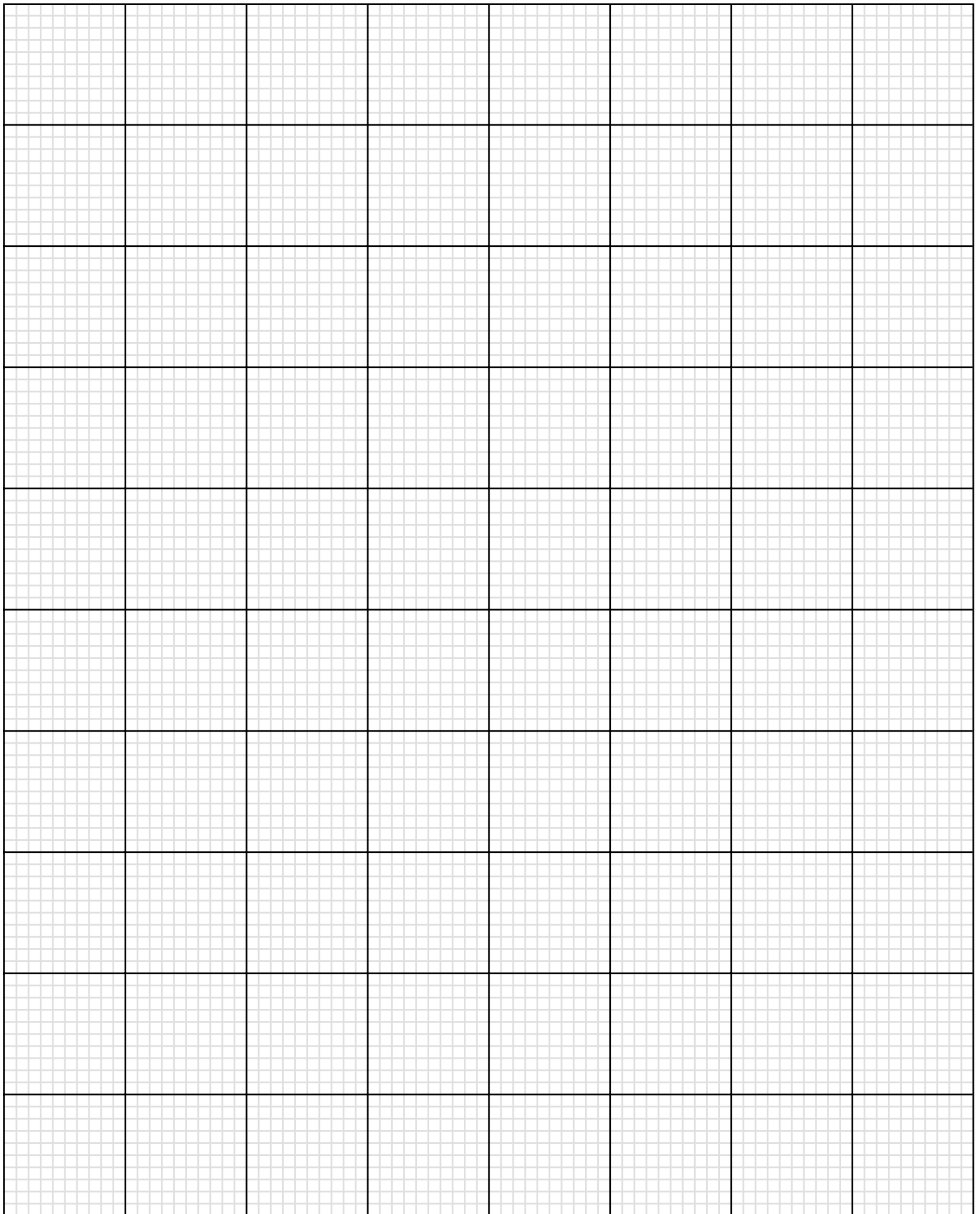
Your Name _____ SCALE: _____ INCH = _____ FEET



Here's an extra Property Plan graph for your convenience

Your Name _____

SCALE: _____ INCH = _____ FEET



1 WATER CONSERVATION

Your new Toro underground sprinkler system is now installed and ready to water your lawn automatically. Following are some tips to conserve water:

1. Water in the early morning (before sunrise) when water pressure is greatest, evaporation is minimal and the lawn drinks in the most water.
2. Do not water at night because water will sit on the lawn and may cause disease.
3. Do not water in the heat of the day because the sun will evaporate water before it can soak in.
4. Give lawns more water than plants, placing plants on a separate watering schedule. Some timers provide multiple watering programs, which allow you to schedule lawns, shrubs and flower beds separately.
5. Reduce run times for zones in the shade.

2 WATER SCHEDULING

Divide weekly run times into days — for example, if you need to water 65 minutes a week, you could water 9-10 minutes daily or 16-17 minutes every other day. If you have sandy soil, you can apply your daily requirement all at once. With clay soils, you will need to apply water more slowly and may have to use more daily start times.

AVG. DAILY TEMP.	MINUTES PER WEEK		
	570° Fixed-Spray	MultiStream	SingleStream
60° and 79°	45	100	120
80° and 99°	65	150	180
100° and 110°	85	200	240

3 TROUBLESHOOTING

Malfunctions aren't common, but when they occur, they're often due to one of these frequently overlooked causes. Refer to each product's specific operating manual for additional information.

PROBLEM	POSSIBLE CAUSE	SOLUTION
No water to sprinkler heads	Incorrect start times, run times or active days Water supply to zone valve is off Faulty solenoid Flow control at valve is closed Zone valve wires not connected	Check timer program Turn on water Replace Open fully counterclockwise Connect wires
Sprinkler head always on	Incorrect start times, run times or active days Debris in valve or solenoid Faulty diaphragm or valve	Check timer program Disassemble and clean with fresh water Replace
External water leaks at valve	Damaged/cracked valve body or bonnet Damaged/cracked pipe and/or fittings Damaged diaphragm	Replace Replace Replace
Heads will not pop up	Debris in nozzle or nozzle screen Not enough water pressure or GPM to run the zone Valve/flow control not fully open Debris between sprinkler riser or riser seal	Remove and clean Split the zone Open counterclockwise Remove debris
Head pops up but doesn't spray	Radius adjustment screw turned off fully (clockwise) Debris in nozzle Internal nozzle screen plugged with debris	Open counterclockwise Remove debris Clean screen

4 RECOMMENDED WINTERIZATION PROCEDURES FOR FREEZING CLIMATES

A MANUAL DRAIN VALVES

1. Close the main water supply valve.
2. Open all manual drain valves upstream of the automatic valves to allow drainage of the main line and valve manifold.
3. Open all manual drain valves downstream of the automatic valves to allow drainage of the lines.
4. Follow recommended winterizing instructions included with your specific sprinkler timer.

B AUTOMATIC DRAIN VALVES

If the system is installed with automatic drain valves, the lines downstream of the valves will drain automatically when the valve closes.

1. Close the main water supply valve.
2. Open all the manual drain valves upstream of the automatic valves to allow drainage of the main line and valve manifold.
3. Follow recommended winterizing instructions included with your specific sprinkler timer.

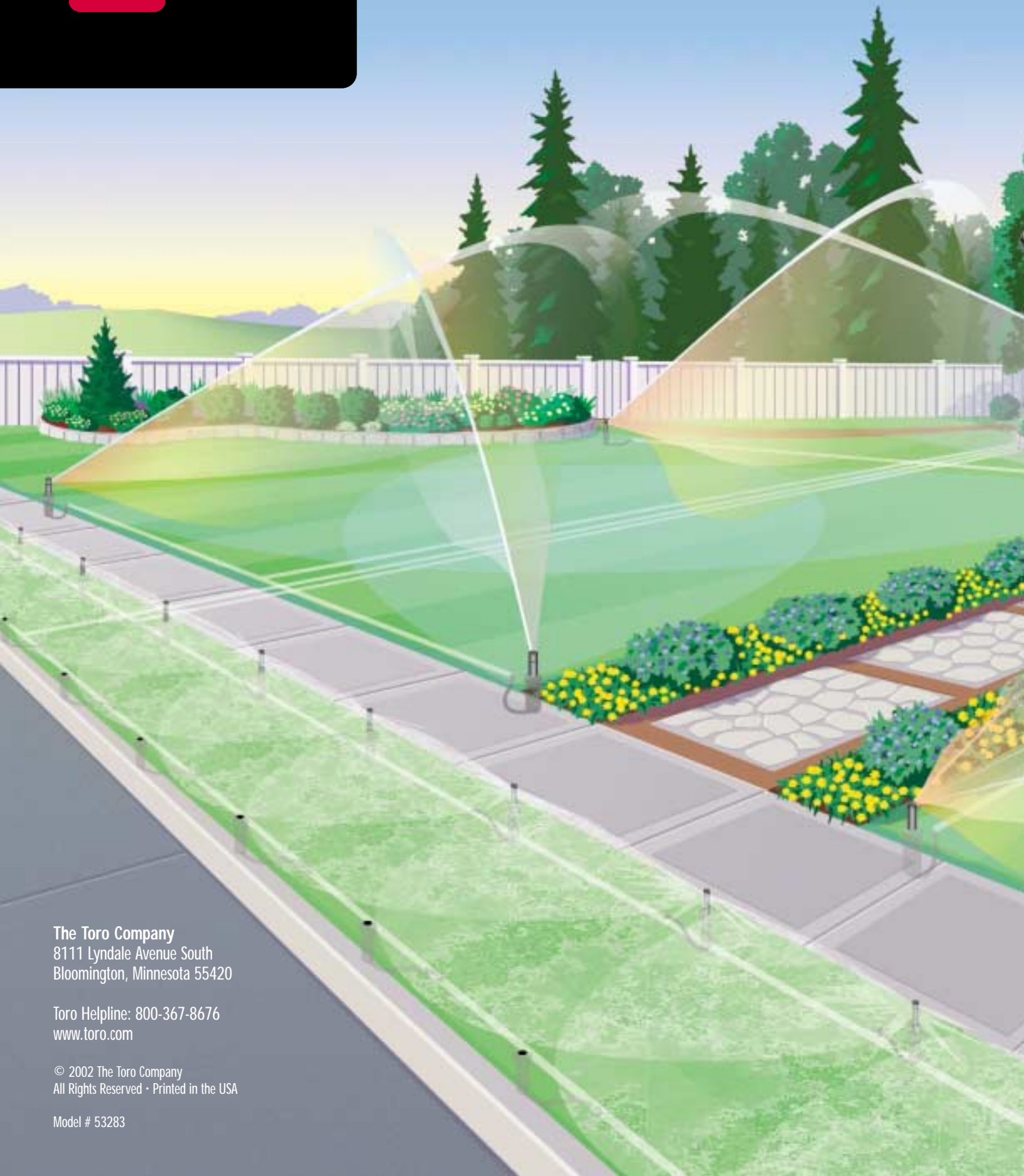
C WINTERIZATION WITH COMPRESSED AIR

 To winterize with compressed air, we recommend that you hire a professional.

Go to www.toro.com for more information on all your yardcare needs.

TORO[®]

TORO Count on it.



The Toro Company
8111 Lyndale Avenue South
Bloomington, Minnesota 55420

Toro Helpline: 800-367-8676
www.toro.com

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