TORO®

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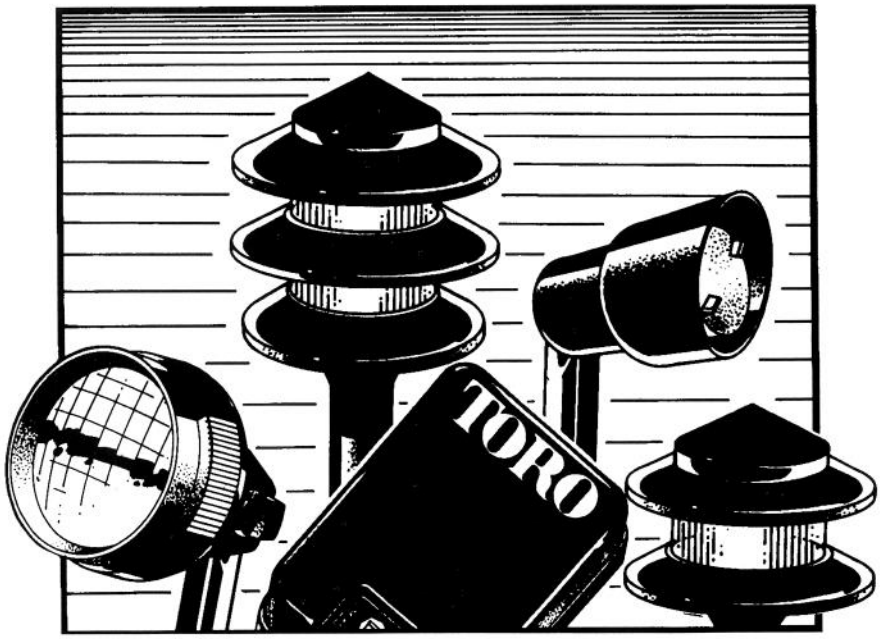
Tech. Publications

Low-Voltage Outdoor Lighting System

Owner's Guide

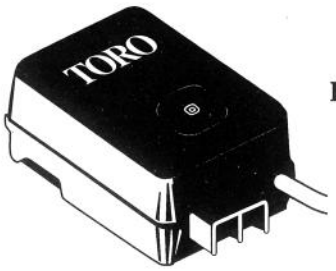


....Versatile
....Easy To Install

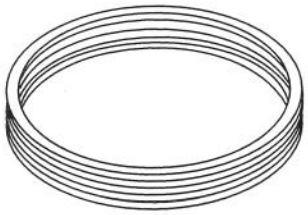
Form number 3316-653 EN

1 Identify Your Parts

The only tool you will need is a Phillips head screwdriver to hang your power pack.

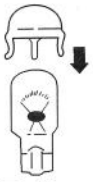


Power Pack

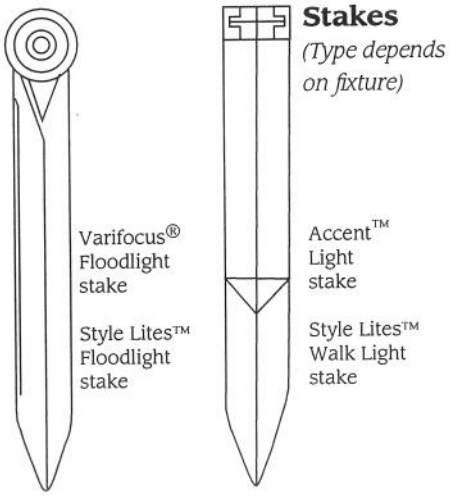


Cable

Bulb Cap
(Varifocus® Floodlight fixture only)



Bulb



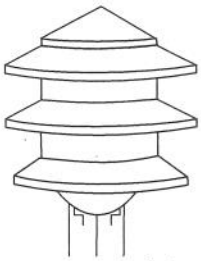
Stakes
(Type depends on fixture)

Replacement Parts and Accessories

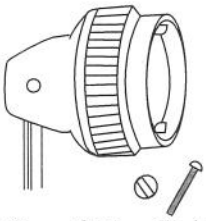
Call toll-free to order:
(1-800-321-8676)

Fixtures

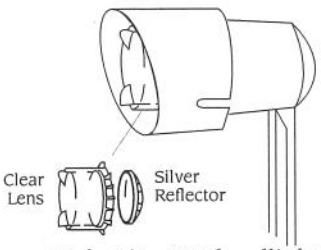
(Type depends on kit purchased)



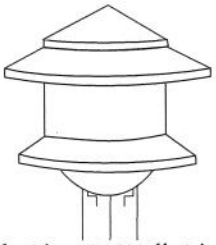
Accent™ Light



Varifocus® Floodlight



Style Lites™ Floodlight



Style Lites™ Walk Lights

2 *Develop Your Lighting Plan*

Look and Imagine

Observe the lighting effects created by the sun and moon. Plan your design to duplicate these effects.

Determine Focal Points

Decide what your yard's centerpiece will be. Front walkways, landscape areas, decks, or a large tree make excellent focal points. Choose no more than one or two focal points. Build the remaining lighting effects around these points.

Think Safety & Security

Lighting can be used to eliminate shadows and darker spots, improving the security of your home. Steps and other potential hazards should be illuminated for increased safety.

Focus on Effects

For maximum impact, use several different lighting effects. For example, blending uplighting and downlighting in trees adds depth and drama.

Sketch Out Your Plan

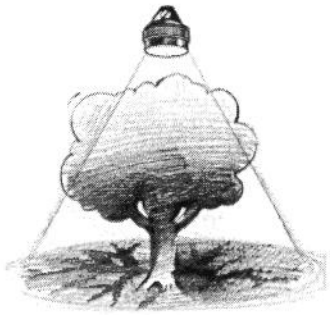
Draw a simple map of your home including paths, landscape elements, and doorways. Then sketch in the location of fixtures and their light patterns.

Test Your Plan

Lay out the fixtures and turn them on at night before burying the cable to make sure you've achieved the desired effects. With Toro Outdoor Lighting fixtures, it's easy to change your mind or enhance an existing effect.

Lighting Techniques

Professional quality lighting uses these three basic lighting techniques:



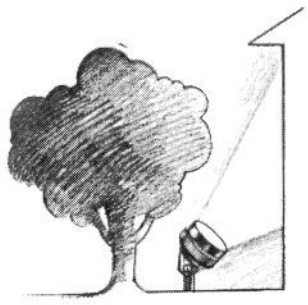
Downlighting

Downlighting is lighting from above which imitates natural light created by the sun or moon. Downlighting is used in safety lighting for pathways, driveways and stairs. Downlighting is also used for deck lighting, area lighting, accent lighting and dramatic moonlighting. All Toro fixtures can be used for down lighting. Use Toro Varifocus™ or Varifocus™ Halogen MiniSpots™ for moonlighting.



Uplighting

Uplighting creates drama and adds depth to the landscape and to home features by lighting them from below. Uplighting also helps deter crime. Uplighting from an angle brings out texture in a wall or fence. Use Toro Varifocus™ and Halogen MiniSpots™ for large areas. The Toro Deck Light with the lens mounted upward creates subtle effects for small landscape or garden areas.



Backlighting

Backlighting is an indirect lighting effect created by silhouetting the object to be highlighted against a lighted surface such as a wall or fence. Backlighting is a dramatic effect which is an effective deterrent to crime. Use Toro Varifocus™ Floodlights and Halogen MiniSpots™ for walls and large areas. Use the Toro Deck Light for smaller landscape or garden areas.

3 Plan Your Layout

Cable Layout

There are two ways to lay out your cable: in a single line or in branching lines using cable connectors. You may want to use a branching pattern because of your yard layout.

The total lamp wattage on a branching line affects the length of the line you can have. The maximum length of cable per line depends on the lamp-load wattage on that line

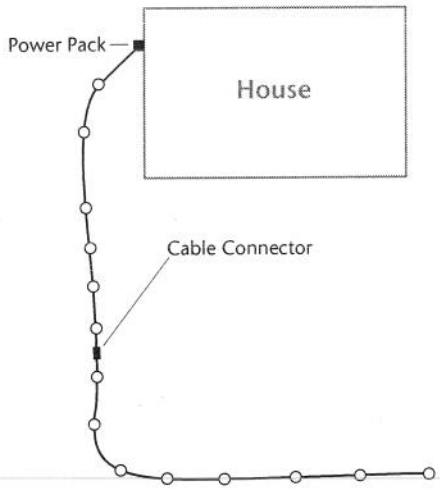
Lamp Load	Maximum Cable Length per Branch
0–40 watts	250 feet
40–72 watts	150 feet
98 Watts & up	100 feet.

IMPORTANT: EXCEEDING THE RECOMMENDED CABLE LENGTH WILL RESULT IN DIM LIGHTS AT THE END OF THE LINE.

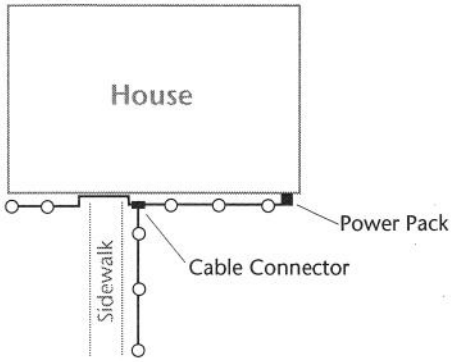
For adding or splicing cable, use a TORO model 52914 outdoor lighting system connector. Be sure to read and follow the cable connector instructions.

A cable connector allows great flexibility. Pictured below are three different types of connections.

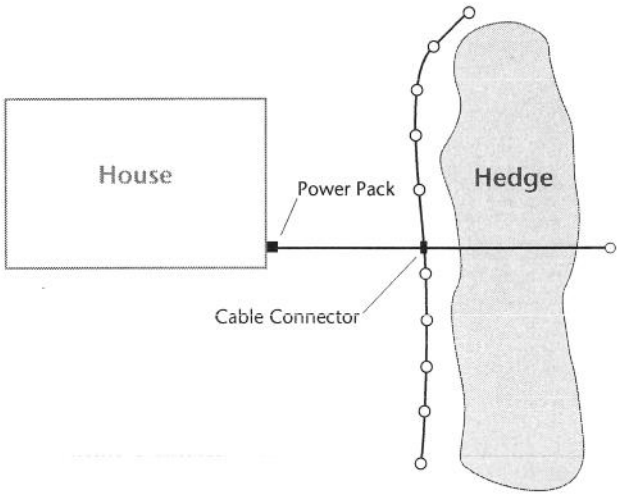
An In-line Extension



A "T-Branch" Connection



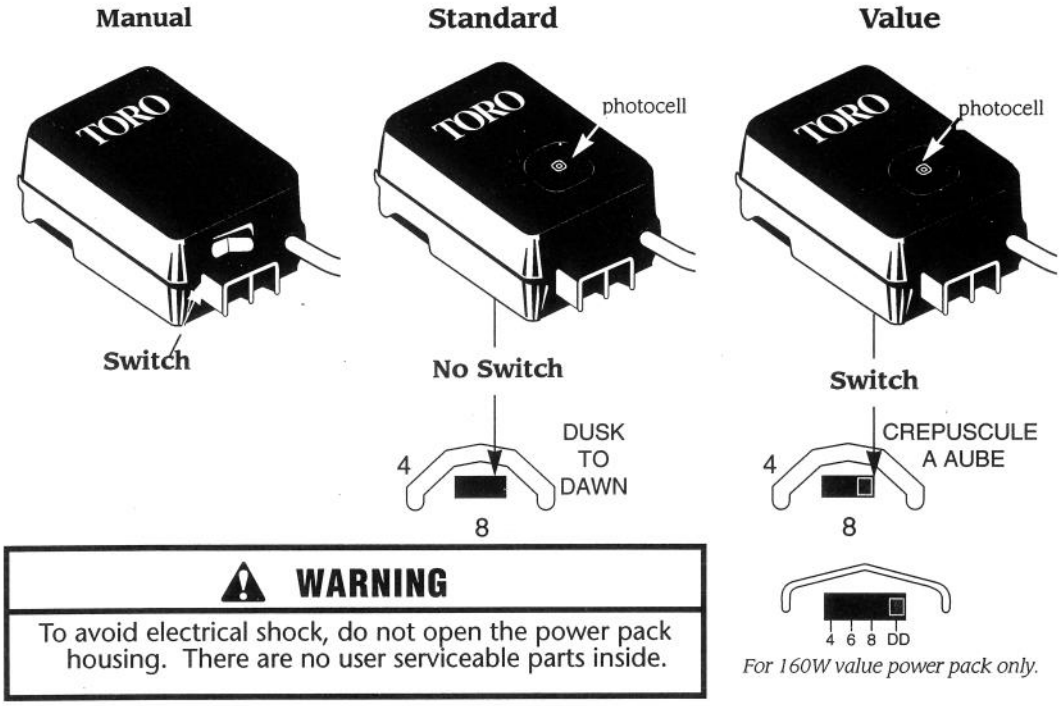
A Four-Way Connection



Always bury the cable and connector about four inches underground after you have completed connecting your lights. Burying the cable protects it from being broken and pierced by heavy or sharp tools often used in yard maintenance. It also isolates the cable and connector from combustible materials often found in the yard. Also, if the cable is somehow shorted or cut when underground, it is less likely to cause a fire. Do not bury the cable or cable connectors in combustible materials such as wood chips, bark, dried leaves, etc.

4 Identify Your Power Pack

The type of power pack you have will affect how you install your system.



For 160W value power pack only.

⚠ WARNING

To avoid electrical shock, do not open the power pack housing. There are no user serviceable parts inside.

Your power pack converts 120-volt energy into 12-volt energy.

You'll install each light with the power on. That way you'll know when you have a good connection.

TURNING ON THE POWER PACKS

The Manual Power Pack
This power pack has a manual switch near the power cord connection (see above).

The *Standard* And *Value* Power Packs
A photoelectric cell turns on the *Standard* and *Value* power packs automatically. **When installing your lights, cover the photo-electric window completely with thick dark tape**. This will fool the photocell so that it switches the power on. The *Value* power packs have a slide switch on the back. In the left position, the lights will turn on at dusk and stay on for four hours. In the middle position, the lights will turn on at dusk and stay on for eight hours. In the right position, the lights will turn on at dusk and turn off at dawn. Set the switch to this position during installation.

WHAT YOU NEED TO KNOW ABOUT POWER PACKS

Overloads
Power packs have built-in overload protection. If an overload occurs, your power pack will shut off and not turn back on for 5 to 20 minutes. If not corrected, the power pack will keep cycling on and off. Overloading may be caused by:

- Too many fixtures.
- Using fixtures with bulb wattages that are too high.
- A short in the cable.

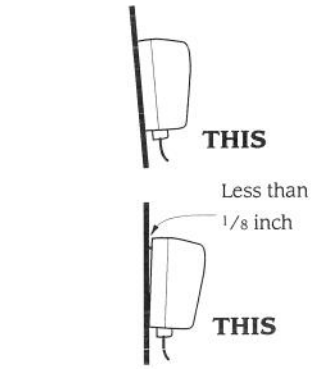
Your power pack has enough output for the lights that came with this kit. If you want to add more fixtures, please read page 16.

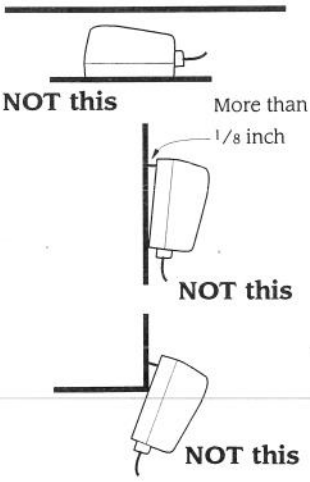
Power Failure
When power is restored after an outage, your system will resume normal operation without you having to make any adjustments to the power pack.

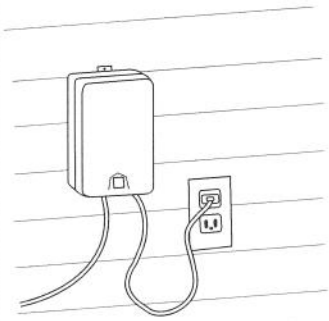
5 Connect And Hang Your Power Pack

NOTE: *The power pack must be* ***vertically*** *flush with the wall (see below). Otherwise moisture may seep into the power pack and damage it.*

POSITION:





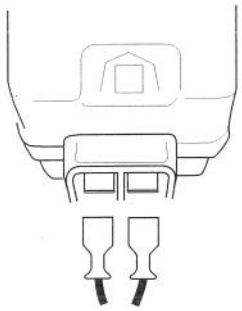


Hang your Toro Power Pack near an outlet.

Toro power packs with a photo cell must be mounted so the photo cell is exposed to natural light. Avoid direct exposure to street lights, porch lights, headlights and other artificial sources of light because this may cause your system to shut off.

For safest operation, hang the power pack (screw provided) at least four feet above the ground, making sure the cord can reach the outlet. ***Mounting the Power Pack improperly can result in moisture damage to the Power Pack.***

Your power pack has a cord that plugs into a standard 120-volt outlet. Do not use an extension cord.

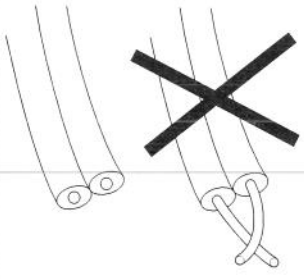


Connect your cable to your Toro Power Pack.

Locate the end of the cable with the wire connectors. Then insert the connectors into the bottom of the power pack as shown.

Lay the Cable.

Lay the cable from the power pack to the fixtures. Follow the instructions in the next section for connecting the fixture of your choice. Install fixtures by working from the power pack out toward the end of the cable. ***Leave extra cable at each fixture so it can be easily relocated if necessary.***



IMPORTANT: You may connect your fixtures with the power pack on. However, don't cut or splice the cable with the power on because you will damage the power pack. Also, don't allow the two wires in the cable to contact each other because this will also result in power pack damage.

6 Install The Light Fixtures

You can use different TORO outdoor lighting fixtures to achieve many different design effects. Four types of fixtures are described here:

- Accent™ Lights
- Varifocus® Floodlights
- Style Lites™ Walk Lights
- Style Lites™ Floodlights

Accent™ Lights

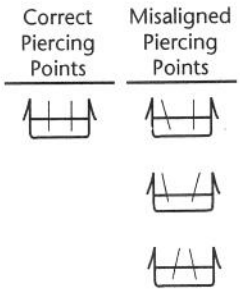
The most important part of installing the fixtures is making sure their metal pins pierce the wire inside the cable:



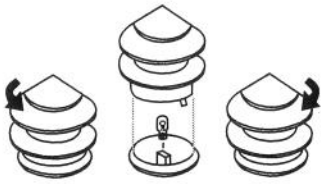
This



Not This



You'll know they're well-aligned and the wire was pierced when the light comes on.

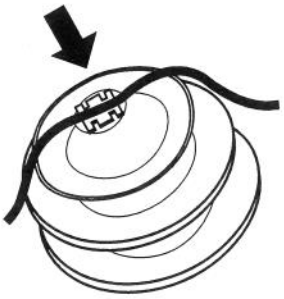


Install the light bulb.

Turn the fixture's ring and lens assembly counterclockwise while holding the base stationary. Lift the assembly off the base.

Install the new bulb by pushing it straight down into the socket.

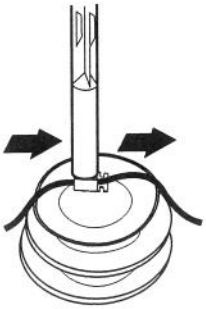
Replace the ring and lens assembly and turn it clockwise to click it into place.



Attach the electrical cable to the fixture.

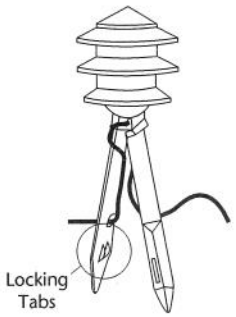
Make sure your power pack is on as described on page 6.

Make sure the brass piercing points in the cable channel at the base of the fixture **are straight**. Place the electrical cable over the piercing points and press the cable down **firmly.** (It may help to use something with a hard, flat surface to press the wire into the piercing points.) If you have done this correctly, the fixture will light. If it doesn't, make sure the power pack is on (and the photocell is covered to block light), the piercing points **are straight**, and try again. You can reposition the cable; the earlier holes created by the piercing points will self-seal and not cause a hazard.



Attach the stake to the fixture.

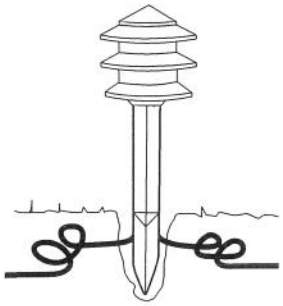
Slide the closed stake onto the fixture base, locking the cable against the contacts (follow the arrow direction on the fixture).



Run the cable through the stake.

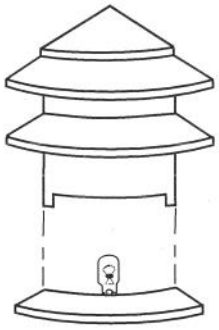
Open the stake by pinching the locking tabs together.

Fold the cable into each side of the stake. Align the cable with the notches at the bottom of the stake and snap the stake closed.



Put the stake into the ground.

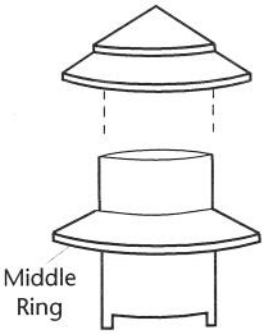
Make a hole in the ground for the stake. Don't push the stake into the ground without making a hole first because the stake could be damaged. Insert the stake, fill around it with dirt. Do not hammer or press on the lamp fixture assembly.



Removing Accent™ Light rings.

The Toro Accent™ Light fixture can provide additional light output if you remove the fixture's middle ring.

1. Turn the fixture ring and lens assembly counterclockwise while holding the base stationary. Lift the assembly off its base.



2. Remove the top cap and top ring.
3. Remove the middle ring by pressing very firmly at one point to lift the ring over the lip. Keep pushing the ring up until it is free.
4. Replace the top ring and top cap.

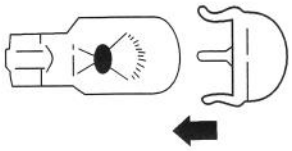
⚠ WARNING

! Possible Burns !

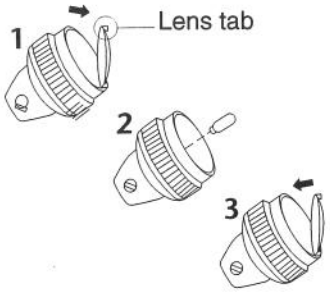
- Do not remove bulbs while fixtures are on.
- Lit bulbs are hot enough to burn skin.
- Allow bulbs to cool several minutes before touching.

IMPORTANT: To ensure your power pack isn't overloaded, use a replacement bulb with the same wattage as the original bulb. Maximum wattage allowed for the Accent Light fixture is 12 watts.

Varifocus® Floodlights



Press on the light bulb cap. This cap improves the quality of light output.



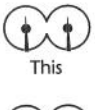
Install the light bulb into the fixture.

Remove the lens by pulling on the fixture lens tab (use pliers if necessary).

Push the new bulb straight down into the socket.

Replace the lens.

The most important part of installing the fixtures is making sure their metal pins pierce the wire inside the cable:

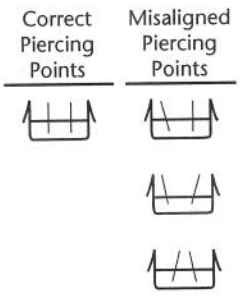




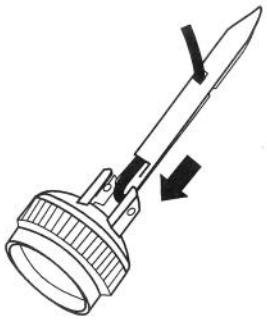


Loop the cable around the stake.

Loop the cable around the channels in the stake. Make sure the cable is centered around the stake head and is tight. If the cable is loose, pull the ends to eliminate slack.



You'll know they're well-aligned and the wire was pierced when the light comes on.

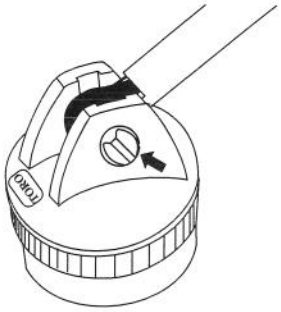


Push the stake into the back of the fixture head.

Make sure your power pack is on as described on page 6.

Make sure the brass piercing points in the cable channel at the base of the fixture **are straight**. Also make sure the cable is centered around the stake head and is tight.

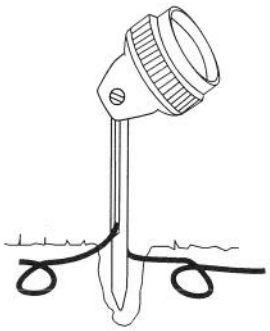
Press the stake with the cable down firmly into the piercing points on the fixture until it snaps into place. If you have done this correctly, the fixture should light. If it doesn't, make sure the power pack is on (and the photocell well covered to block light), the piercing points **are straight**, and try again. You can reposition the cable; the earlier holes created by the piercing points will self-seal and not cause a hazard.



Secure the fixture head to the stake.

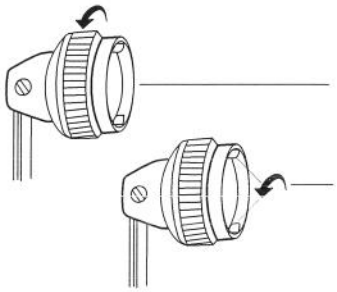
Insert the bolt through the fixture head and stake.

Screw the fastener knob onto the bolt and turn until the bolt stake and fixture head are securely in place.



Put the stake into the ground.

Make a hole in the ground for the stake. Do not push the stake into the ground without making a hole first because the stake could be damaged. After you've inserted the stake, fill in around it with dirt. Do not hammer or press hard on the lamp assembly.



Adjust the light beam.

To adjust the light beam from narrow to broad, turn the focus ring.

To adjust the light pattern from vertical to horizontal, turn the lens using the lens tabs.

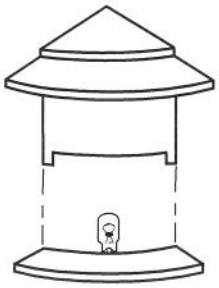
⚠ WARNING

! Possible Burns !

- Do not remove bulbs while fixtures are on.
- Lit bulbs are hot enough to burn skin.
- Allow bulbs to cool several minutes before touching.

IMPORTANT: To ensure your power pack isn't overloaded, use a replacement bulb with the same wattage as the original bulb. Maximum wattage allowed for the Varifocus Flood Light fixture is 18 watts.

Style Lites™ Walk Lights



Insert the bulbs into the fixture.

Turn the fixture ring and assembly counterclockwise while holding the base stationary. Lift the assembly off the base.

Insert the bulb by pushing straight down into the socket.

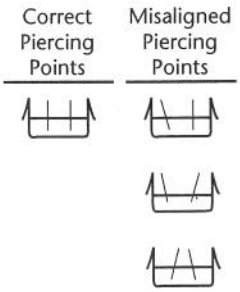
The most important part of installing the fixtures is making sure their metal pins pierce the wire inside the cable:



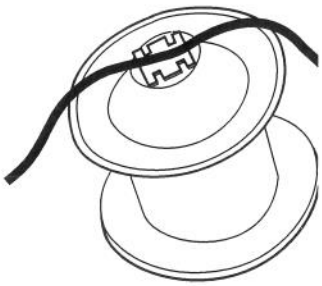
This



Not This



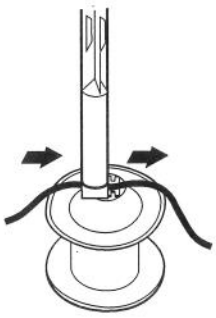
You'll know they're well-aligned and the wire was pierced when the light comes on.



Attach the electrical cable to the fixture.

Make sure your power pack is on as described on page 6.

Make sure the brass piercing points in the cable channel at the base of the fixture **are straight**. Place the electrical cable over the piercing points and press the cable down firmly. (It may help to use something with a hard, flat surface to press the wire into the piercing points.) If you have done this correctly, the fixture should light. If it doesn't, make sure the power pack is on (and the photocell covered to block light), the piercing points **are straight**, and try again. You can reposition the cable; the earlier holes caused by the piercing points will self-seal and not cause a hazard.



Attach the stake to the fixture.

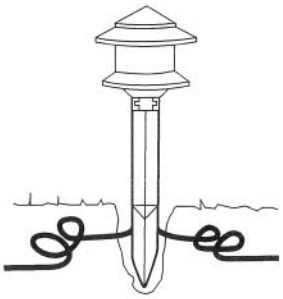
Slide the closed stake onto the fixture base, locking the cable against the contacts (follow the arrow directions on the fixture). The fixture head should now be on the stake.



Run the cable through the stake.

Open the stake by pinching the locking tabs together.

Fold the cable into each side of the stake. Align the cable with the notches at the bottom of the stake and snap the stake closed.



Put the stake into the ground.

Make a hole in the ground for the stake. Don't push the stake into the ground without making a hole first because the stake could be damaged. After the stake is inserted, fill around it with dirt. Do not hammer or press on the lamp fixture assembly.

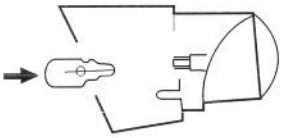
⚠ WARNING

! Possible Burns !

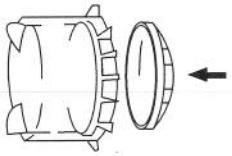
- Do not remove bulbs while fixtures are on.
- Lit bulbs are hot enough to burn skin.
- Allow bulbs to cool several minutes before touching.

IMPORTANT: To ensure your power pack isn't overloaded, use a replacement bulb with the same wattage as the original bulb. Maximum wattage allowed for the Style Lites™ Walk Light fixture is 7 watts.

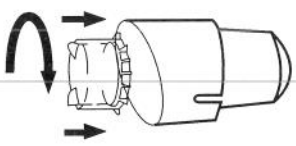
Style Lites™ Floodlights



Press the bulb into the fixture contacts.



Snap the silver reflector into the clear lens.



Install the fixture lens/reflector.

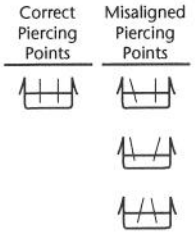
Install the clear lens/reflector by pushing down on the lens with slight pressure while turning the lens clockwise. The tabs on the lens will snap into the three slots on the fixture. Turn the lens until the movement stops.

MAKE SURE YOUR POWER PACK IS ON AS DESCRIBED ON PAGE 6.



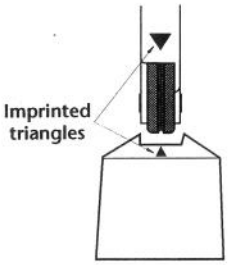
Prepare the stake.

Loop the cable around the channels in the stake. Make certain the cable is centered around the stake head and is tight. If the cable is loose, pull the ends to eliminate the slack.



Make sure the piercing points in the fixture are straight.

Make sure the brass piercing points in the cable channel at the base of the fixture **are straight**. Even a slight bend may result in contact not being made with the wire.



Align the side of the stake with the imprinted triangle to the top of the fixture head with the imprinted triangle.

The most important part of installing the fixtures is making sure their metal pins pierce the wire inside the cable:



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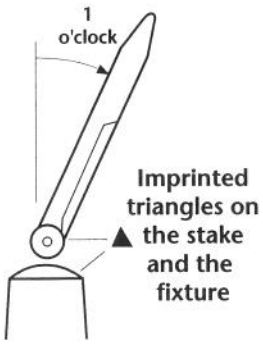
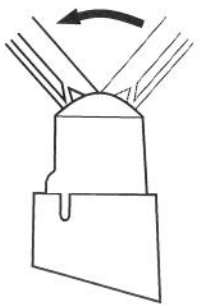
You'll know they're well-aligned and the wire was pierced when the light comes on.



Hold the stake with the cable at an angle of about 30° (1 o'clock) to the floodlight housing as shown.

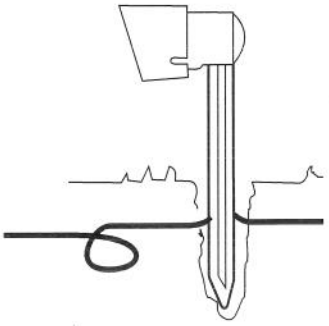
Press the stake with the cable down firmly into the piercing points on the fixture.

If you have done this correctly, the fixture should light. If it doesn't, make sure the power pack is on (and the photocell is covered to block light), the piercing points **are straight**, and try again. You can reposition the cable; the earlier holes created by the piercing points will self-seal and not cause a hazard.



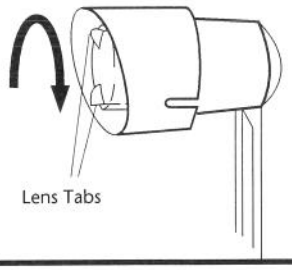
Lock the stake in place.

After the fixture has lit, turn the stake away from the imprinted triangle on the fixture to lock it in place. Pull on the cable to remove any slack.



Put the stake into the ground.

To install the stake, make a hole in the ground. Do not push the stake into the ground without making a hole first because the stake could be damaged. After you've inserted the stake, fill in around it with dirt. Do not hammer or press hard on the lamp assembly.



Adjust the light beam.

To adjust the light beam from narrow to broad, turn the lens using the tabs.

⚠ WARNING

! Possible Burns !

- Do not remove bulbs while fixtures are on.
- Lit bulbs are hot enough to burn skin.
- Allow bulbs to cool several minutes before touching.

IMPORTANT: To ensure your power pack isn't overloaded, use a replacement bulb with the same wattage as the original bulb. Maximum wattage allowed for the Style Lites™ Flood Light fixture is 7 watts.

7 Finishing Up

⚠ WARNING!

! Overloading the Cable or a Cable Connector Can Cause Fire !

- Overloading a cable connector will cause overheating and can cause fire if near combustible materials.
- **Never** bury the cable in combustible materials such as wood chips, bark, dried leaves, etc.

BURY OR HIDE YOUR CABLE. Once you've made all your connections and experimented with different lighting effects at night, bury or hide the cable. Always bury the cable and any connectors about four inches underground after you have completed connecting your lights. Burying the cable protects it from being broken and pierced by heavy or sharp tools often used in yard maintenance. It also isolates the cable and connector from combustible materials often found in the yard. If the cable is somehow shorted or cut when underground, it is less likely to cause a fire. DO NOT BURY THE CABLE IN COMBUSTIBLE MATERIALS SUCH AS WOOD CHIPS, BARK, DRIED LEAVES, ETC. It's not necessary to tape the end of the cable.

MAKE SURE YOU REMOVE ANY TAPE OR OTHER COVERING FROM THE PHOTOELECTRIC CELL IN YOUR POWER PACK.

Now, just sit back and enjoy the new beauty of your home or landscaping.

8 If You're Having Trouble...

⚠ WARNING

To avoid electrical shock, do not open the power pack housing. There are no user serviceable parts inside.

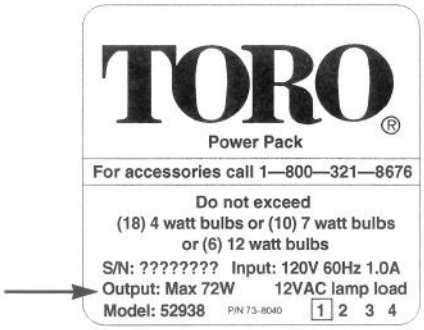
- **Fixtures do not light**
  - Make sure your power pack is plugged in and your outlet is working.
  - If you have a photo-cell controlled timer and it is daylight, the photo cell must be covered with tape or other material to simulate darkness. Make sure the tape or material is heavy and dark so that no light gets through. The tape must be removed after installation.
  - Contact points in the fixture may be bent. Straighten the contacts to align with the copper wire inside the cable.

  IMPORTANT: Do not cut insulation away from the cable to make contact. This may lead to corrosion and overheating.
  - A fixture might have a defective bulb. Test by using another bulb. A defective bulb in one fixture will not affect the operation of the other fixtures.
- **Lights turn on and off at night.**
  Make sure a fixture from your lighting set is not facing your photo cell. See if other light sources (such as headlights or reflections from a window) are triggering the photo cell.
- **Lights stay off at night.**
  Make sure the photo cell isn't getting light from a street light, porch light or other light sources. Check connections in the fixtures or cable connector.

Lights go on, then shut off for about 5–20 minutes, then go on (and the cycle repeats).
See Overloads, page 6.

9 If You Decide To Add More Lights...

Your power pack has enough output for the lights that came in your kit However, you can add fixtures to some kits. Also, you can increase the bulb wattage to some fixtures (See each fixture for the maximum bulb wattage it will handle). Just make sure the total lamp load doesn't exceed your power pack's output rating. Your power pack's maximum OUTPUT is listed on the front above the model number:



To find out your lamp load, add the bulb wattages of your fixtures. **EXAMPLE:** Ten fixtures, each with 7-watt bulbs = 70-watt lamp load.

Maximum number of lights for each type of power pack:

Power Pack	Maximum Output	Bulb Wattage 4	7	12	18	20
		Maximum number of lights				
Manual, Standard and Value	36 watt	9	5	3	2	1
Standard and Value	72 watt	18	10	6	4	3
Standard and Value	98 watt	24	14	8	5	4
Value	160 watt	40	22	13	8	8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