



# Installation Manual for Solartech™ Swimming Pool Collectors



## "Using the sun to heat your pool"

The installation of a SolarTech™ solar pool heating system is usually quite simple and straightforward. Some of the procedures, however, are unique and should be well understood before beginning an installation.

The procedures recommended in this manual should not be construed to supersede any local, national, or regional building codes or regulations. Check with local authorities for any applicable plumbing, electrical, or building regulations. Aspects of this system are covered by US Patent 8,746,234



11700 E. Sneller Vista  
Tucson, Arizona 85749



## *Introduction:*

Our goal at SolarTech™ International is to offer the most cost-effective pool heating system on the market. Decades of testing, research, and development have resulted in the ability to meet this objective.

SolarTech™ systems are intended for use on pools, spas, hot tubs, or any system to preheat water (laundromats, carwashes, etc.). Manual or automatic, commercial or residential, in most cases SolarTech™ can do the job.

System size is based on the amount of water to be heated. In most cases, the existing pump will push water through the SolarTech™ collectors. Some circumstances may require the addition of a booster pump. Consult your local SolarTech™ dealer if your pump is less than 1hp, if you have more than a 75 ft. pipe run, uphill pipe run, smaller pool plumbing i.e. 1¼" lines or are installing more than 12 coils.

The basic theory is this: systems are made up of coil sets of two in series. All pairs of coils are fed in parallel from one common supply manifold and empty into one common return manifold. Water flows from the supply manifold, through the first coils of a pair, through the second coils of the pair, and then empties into the return manifold and on back to the pool.

Follow all instructions in this manual; however, do not construe these instructions to supersede any local building codes. Consult local authorities for information on permits and building codes.

SolarTech™ stands behind its product with a fifteen-year limited warranty. We also stand behind our dealers and customers by providing free technical support. If you have any questions, please call us at 1-520-749-3538.



1-520-749-3538

11700 E. Sneller Vista Tucson, Arizona 85749



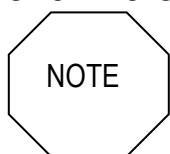
## Specifications:

Weight when empty .....	28 lbs.
Weight when full .....	85 lbs.
Diameter .....	6.5 ft.
Pressure Rating .....	100 psi @ 75 deg. F
Break Temperature .....	-180 deg F
Vicat Softening Temperature .....	+225 deg F

Coils are installed in sets of two. The number of coil sets required is dependent upon the size of the pool and type of application. The general rule of thumb in Southern Arizona for residential is two coils for every 100 sq. ft. of surface area and for commercial is three coils for every 100 sq. ft. of surface area. SolarTech™ recommends the following residential table when establishing system size requirements:

		VOLUME	SURFACE AREA
6 Coils	up to 10,000 gal.		up to 350 sq. ft.
8 Coils	up to 12,000 gal.		up to 450 sq. ft.
10 Coils	up to 14,000 gal.		up to 550 sq. ft.
12 Coils	up to 16,000 gal.		up to 650 sq. ft.

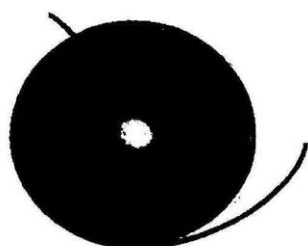
Certain elevations such as those at 2900 feet or greater may require different sizing. To verify sizing based on your elevation, for larger or smaller systems, or for other applications, consult your local SolarTech™ dealer or call SolarTech™ directly at 1-520-749-3538.



While an automatic valve is not required, the automatic valve is recommended by SolarTech™ for optimum efficiency and ease of use.

## Materials Needed & System Components for manifolds (Per pair or set of two coils):

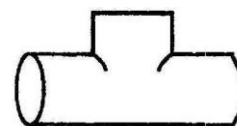
Items sold separately.



Two (2) SolarTech panels



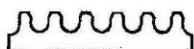
Two (2) appropriately sized thread reducing bushings (i.e. 1 1/2" x 3/4" if using 1 1/2" PVC pipe)



Two (2) appropriately sized PVC Tees (i.e. 2" if using 2" PVC pipe)



Two (2) 3/4" cpvc thread x barb adaptors



One (1) SolarTech pipe hanger (referred to as "rafter")



One (1) 3/4" brass barbed coupling



Five (5) 3/4" Stainless Steel hose clamps

### Other tools and miscellaneous materials you will need:

Hacksaw or PVS saw  
Channel Lock 430 or other large pliers  
Pipe clamps & screws  
Manual and/or automatic 3-way valve  
PVC primer and cement  
PVC pipe and misc. fittings (including check valves, ball valves, elbows, etc.)  
Wire and misc. electrical parts (auto control only--see dealer for details)

Wire cutters  
3/8" nut driver or wrench

#### ***Tilt Mount Installation Only***

Tape measure\*  
Chalk line\*  
Electric drill & bit\*  
SolarTech™ Tilt Mount Kits\*

### ***\*Tilt Mount Installation for Pitch Roofs***

To install SolarTech™ Solar Spiral™ coils on a pitch roof, you will need SolarTech™ tilt mount kits. Each tilt mount kit comes with enough hardware to mount one pair of coils and includes:

- 4 - SolarTech™ Tilt Mount Brackets
- 4 – 2" Multi material (Spax) screws
- 4 – 4" long section 2" wide double-sided roofing tape
- 4 – 4" long section 4" wide single-sided roofing tape



proudly made  
in the USA

solarheatmypool.com

US Patent 8,746,234

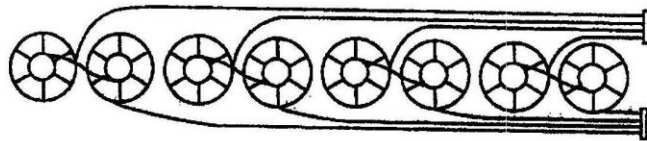
## System Layout:

The first step to any install is to layout the system and formulate a plan. You may find it helpful to make a sketch of the proposed layout before proceeding. First, plan your bypass set up (see section on connecting to pump for details and illustration). Trace out where path water will follow. If installing an automatic system, determine where the auto control will be mounted. Decide where the coils will be located. If possible, these should be located in the most direct line from the coils (it may be helpful to mark these positions).

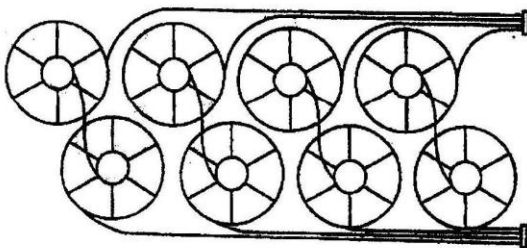
In cold climates, it may be necessary to plan for drainage of PVC pipe because while the SolarTech™ Solar Spiral™ coils face little danger of cracking due to freezing, PVC and/or accessory components will crack if the water inside freezes and expands. If you have any questions at this point, contact your SolarTech™ dealer now before the installation.

### POSSIBLE MANIFOLD AND PANEL SUGGESTIONS

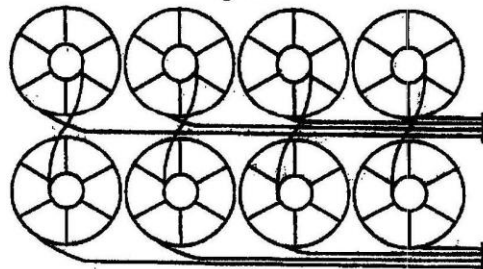
**Layout 1**



**Layout 2**



**Layout 3**



## Coil Installation:

Always layout coils and manifolds before beginning assembly. Due to the design of the SolarTech™ Solar Spiral™ coils it is not necessary to anchor coils when mounting on perfectly flat surfaces. Roofs with a slight pitch may require one anchor point and pitched roofs require that coils be anchored using SolarTech™ tilt mount kits.

## *Flat Roof / Ground Mount Procedure:*

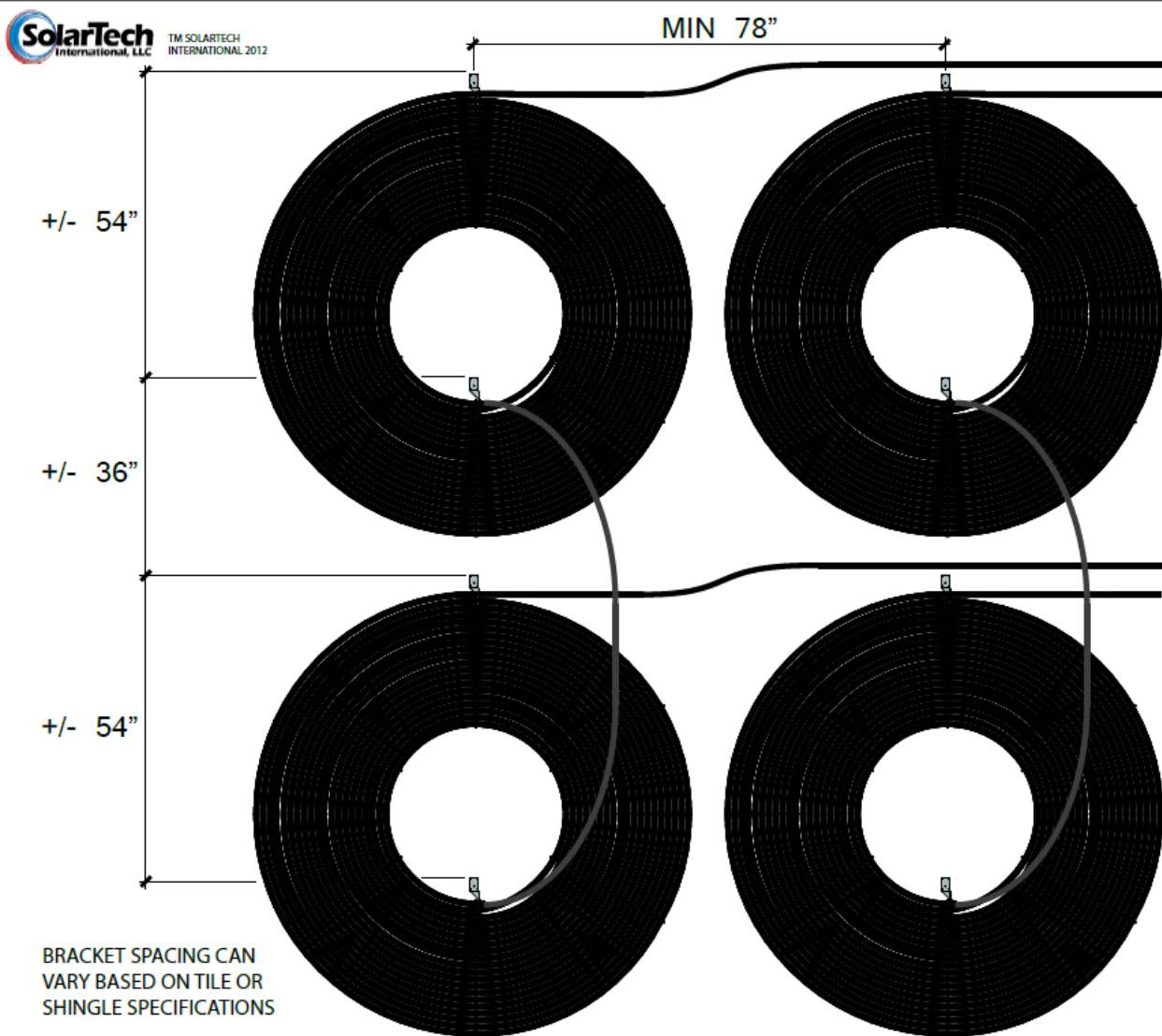
1. Determine where manifolds will be placed (usually close to where pipes come on to roof). Remember that while SolarTech™ coils are not damaged when water inside them freezes, PVC pipes can be. Therefore, it is best to locate manifolds in such a way that they will drain naturally when the pump shuts off. If this is not possible, hose bibs or other drains should be installed at low points to allow for winterization of the system.
2. Lay out coils to determine their placement. Refer to diagrams on page 5 for possible configurations. If possible, leave 1-2' between coils and manifolds to facilitate connections.
3. Use wire cutters to remove all ties connecting excess tubing to rest of the coils.
4. Standing in the center of the first coil, unwind part of the coil so that the excess tubing exiting the coil from the outermost wrap can be situated in the most direct line possible to the manifold.
5. Repeat step 4 with each of the remaining coils. As you get further from the manifold, it may become necessary to unsnap some extra tubing from the coil in order to reach the manifold. Remember, it is better to have this be too long and trim some off, than it is to leave it short of the manifold.

## *Tilt Mount Procedure for Shingle or Tile roofs:*

1. Determine where manifolds will be placed (usually close to where pipes come on to roof). Remember that while SolarTech coils are not damaged when water inside them freezes, PVC pipes can be. Therefore, it is best to locate manifolds in such a way that they will drain naturally when the pump shuts off. If this is not possible, hose bibs or other drains should be installed at low points to allow for winterization of the system.
2. Determine layout of coils. Refer to diagrams on page 5 for possible configurations.
3. Establish a line where the top row of coils will be placed. (this can be done with a chalk-line, or simply by choosing a line of tiles or shingles)
4. Install tilt mount brackets where coils will be located. Refer to diagram on page 7 for recommended spacing between brackets. Brackets should be installed 2-3" below the top of the shingle/tile to ensure that the butyl rubber tape will extend 2" under the next tile/shingle up. NOTE: Do not drill close to edge or corners

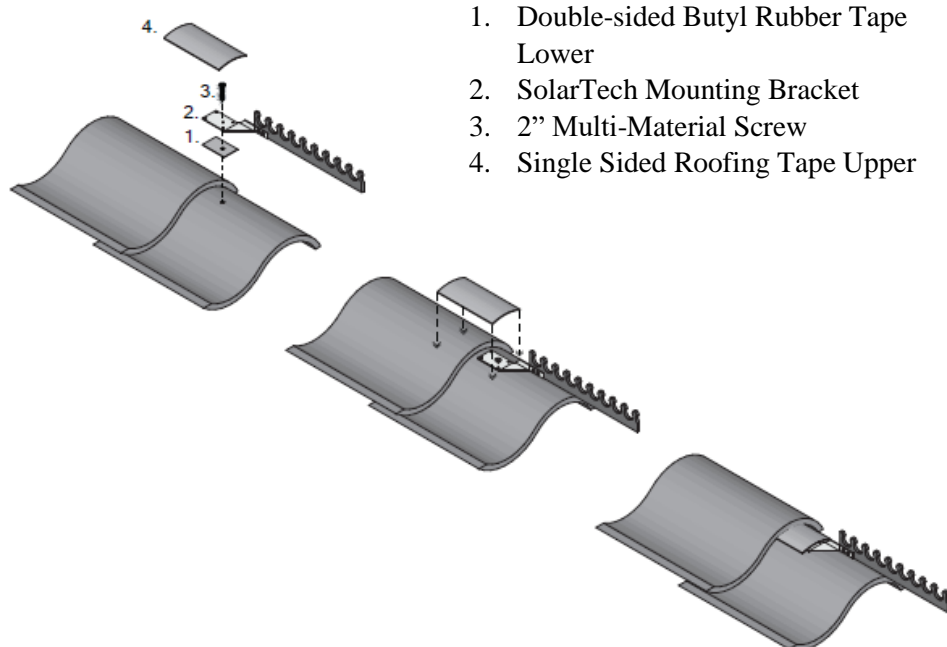


of tile or substrate, this may cause cracking or damage and hinder the tilt mount causing potential sliding of tile or panels.



# SOLARTECH BRACKET KIT

\*SOLD IN KITS - 2 PANELS PER KIT  
(4 BRACKETS) SEE MOUNTING DIAGRAM



## FLASHED MOUNT FOR PITCHED ROOF INSTALLATION

1" = 1'-0" (1:8) SOLARTECH INTERNATIONAL, LLC



### NOTE

Make sure coils are secure before proceeding. The above is only a suggested method of installation. SolarTech™ International cannot be held responsible for damage to coils, persons, or property due to the installation of system. If in doubt about the security of suggested installation methods due to extenuating circumstances, such as an excessively steep roof or unsound structural members, consult a building contractor before installation.



## Manifold Assembly:

Always follow manufacturer's directions when using PVC primer and cement.

Manifold assembly is a two-stage process. First cement thread reducing bushings (appropriately sized, i.e.  $1\frac{1}{2}$ " x  $\frac{3}{4}$ " ) into tees (appropriately sized i.e.  $1\frac{1}{2}$ " ) applying PVC cement. (See Figure 1 below) Use pliers to screw adaptors into Tee/Reducing Bushing assemblies. **DO NOT OVER TIGHTEN THESE FITTINGS!**

Layout supply and return manifolds to be sure everything is right before proceeding to assemble manifolds by cementing short pieces of PVC pipe in between T-adaptor assemblies. (See Figure 2)

You may want to substitute 90-degree elbows for the last tee on each manifold. This is not recommended in cold climates because it does not allow for drainage of the manifolds for winterization. You may also want to secure manifolds to the roof with pipe clamps to prevent shifting caused by wind, expansion, or contraction, etc.

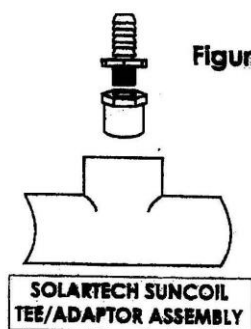


Figure 1

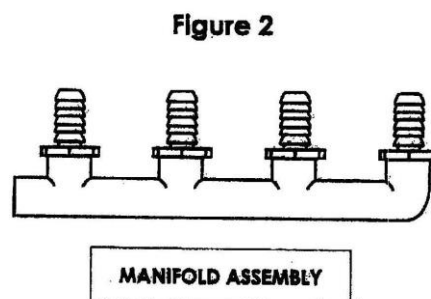


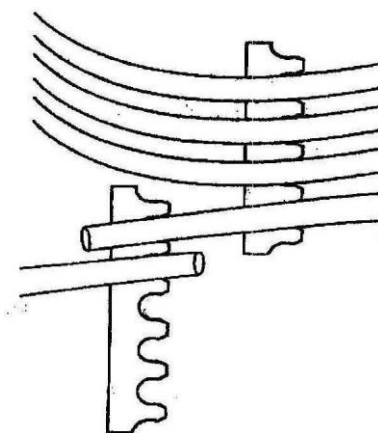
Figure 2

## Raftering:

Once coils are installed and manifolds are assembled, it is helpful to secure the tubing along its run from coils to manifold.

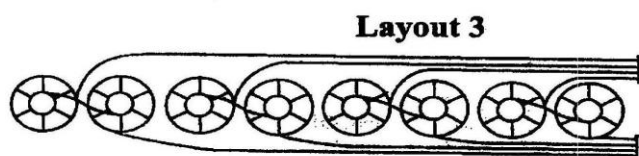
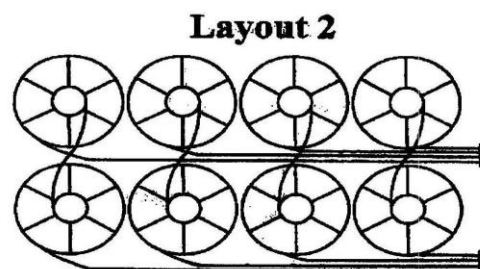
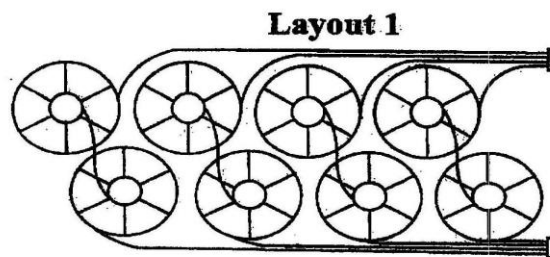
These should be placed on every coil except for the last (farthest from manifold). Using a hacksaw, cut a piece of rafter with a number of slots equal to the number of tubes to be secured plus one (two on second to last, three on third, etc.). Lift coil and slide rafter under so that outermost coil will snap into end slot. Snap unsecured tubes in other open slots making sure not to cross lines. Repeat as necessary to secure all tubing before connecting coils to manifolds.

Diagram 2



## Connecting Coils to Manifold:

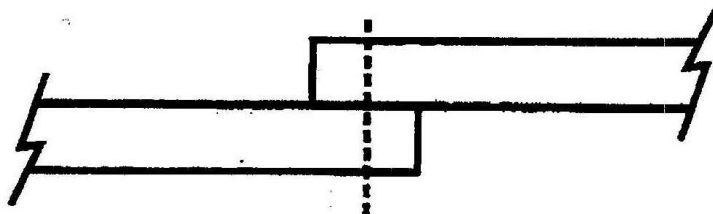
1. Beginning with the coil closest to the manifold on the supply row, align outermost tube in direct line to top T-adaptor assembly on manifold.
2. Cut tubing squarely at a point which will allow the tubing to fit securely over the hose adaptor.
3. Place a hose clamp over the tubing and push tubing onto adaptor. If tubing resists, apply a sparing amount of WD-40 or other lubricant to inside of tubing.
4. Tighten hose clamp, making sure that hose clamp is located over the ribbed portion of adapter. **DO NOT OVER TIGHTEN!**
5. Repeat steps 1-4 on remaining coils.



## Connecting Coils to Coils:

1. Beginning with the set of coils closest to the manifolds, extend tubing from inner coil of the first coil toward the center of second coil, over-lapping in the middle. **BE CAREFUL NOT TO KINK TUBING.** If necessary, remove additional tubing from coil.
2. Cut tubing from both coils at a point halfway between the two coils. Be sure tubing is cut squarely.

**Diagram 3 SQUARE CUT**



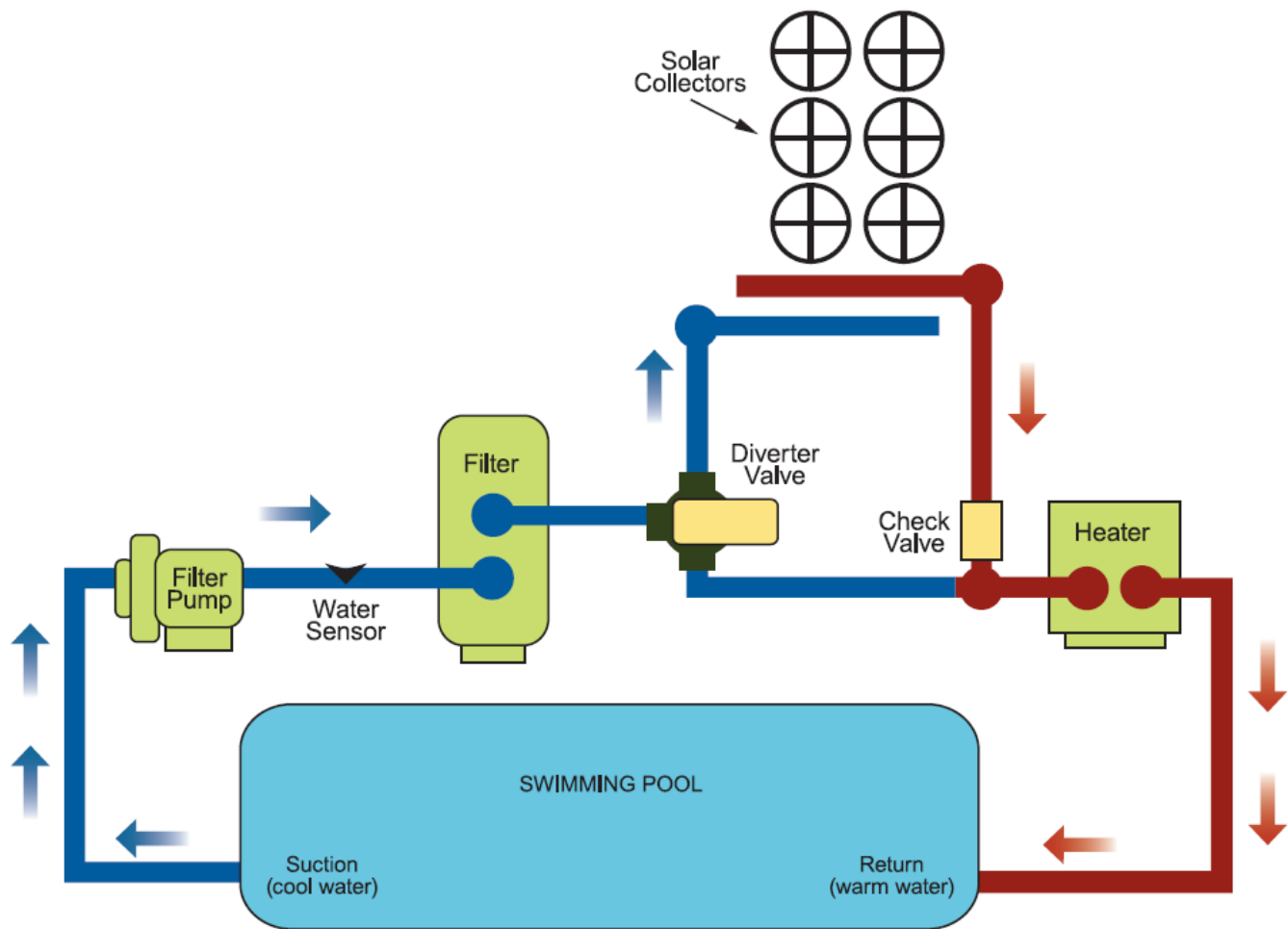
## *Connecting Coils to Coils, continued:*

3. Place hose clamp over the end of each tube.
4. Insert  $\frac{3}{4}$ " hose coupling into end of tube from supply coil. If tubing resists apply a small amount of lubricant to inside of tubing.
5. Tighten hose clamp over coupling. **BE SURE CLAMP IS OVER RIBBED PORTION OF COUPLING. DO NOT OVER TIGHTEN!**
6. Insert other end of coupling into tube extending from return coil.
7. Tighten clamp over ribbed portion of coupling.
8. Repeat steps 1-7 with remaining pairs.

## *Connecting SolarTech™ Coils to Pump:*

**BEFORE CUTTING INTO AN EXISTING PLUMBING, TURN PUMP OFF!!**

Check to see that pump is above water level of pool. If not, isolate pool equipment by closing all valves on pipes to and from pool. Solar system will connect into pool water return pipe **AFTER FILTER, BEFORE HEATER AND/OR CHLORINATOR, OZONE GENERATOR, OR OTHER EQUIPMENT.** Trace path water will follow and layout necessary fittings, valves, etc. before you start cutting!! While no two installs look exactly the same, see diagram on page 12 showing what a basic system might look like. It may be helpful to sketch your own diagram before you begin. SolarTech recommends installing a check valve on the outlet of either the pump or the filter to prevent backflow from collectors when the pump shuts off. Installation of a 3-way valve after the filter allows some or all of the flow to be diverted to solar. A check valve should also be installed on the solar return line to prevent water from pressurizing the collectors when pump is running with solar off. Finally, the solar return line will come into a T at the farthest point along the pool return.



## Start-Up:

1. Before turning pump on, double check all plumbing (and wiring if you have an automatic system). Turn all solar valves off, letting water return to pool in its normal matter.
2. Pump may have lost its prime (ability to draw water from pool). If so, use a garden hose or bucket to fill hair and lint pot with water before starting pump.
3. Turn pump on. Allow pump to prime and reach full flow.
4. Slowly open 3-way valve so that all water will be diverted to solar. If you have an automatic system, switch control to "Manual On". As pipes and coils fill with water air will be pushed out causing bubbles to rise from pool returns.

5. Once bubbles have stopped, adjust flow rate by turning the 3-way valve to the bypass or off position, then opening the valve slowly until the pressure gauge on the filter rises by 6-8 psi. Cartridge filter may be slightly higher. If using a valve actuator in an automatic system, follow manufacturer's directions to adjust cams of motor to set flow rate
6. If automated system, switch control to "Automatic" and set thermostat to desired pool temperature.

### *Maintenance:*

1. If coils should become covered with dust, leaves, etc., simply sweep them off with a broom or spray them off with a garden hose.
2. Valves should be turned on and off slowly. Never turn valves quickly. This can cause a "water hammer" effect which could damage plumbing.
3. When backwashing or cleaning the filter, make sure system is isolated to prevent air from entering the system.

### *Congratulations.*

You have successfully installed your SolarTech™ Solar Spiral™ pool heating system. We are always interested in hearing about your installation experiences. Please call, write or email [info@solarheatmypool.com](mailto:info@solarheatmypool.com) with your questions or comments. We love to see pictures. Thank you for installing SolarTech™.