

1. General Guidelines

Install Heliodyne Gobi collectors for seasonal or year-round pool heating in any climate.

The Gobi collectors offer great advantages in windy, cool, or foggy locations, or wherever an early or extended season is desired, or where looks and reduced collector area are important.

Install Gobi collectors also to heat indoor pools, which require more heating without the benefit of direct solar gain, and to heat year-round public and private pools.

Gobi collectors, boxed insulated, glass-covered, and with low-emittance selective surface absorber, are capable of converting direct and indirect sunlight into heat. Unlike “unglazed” (metal or plastic) pool heating panels, Gobi collectors are a function of solar radiation and less of ambient temperature. This means that they can produce heat on even cold, windy, or foggy days. This also means that fewer collectors are required for the warmer spring to fall heating season for an attractive skylight look. While Gobi collectors heat the pool even on cold days, it is important to keep the heat in the pool with a pool cover. A pool cover also reduces evaporation losses, a major problem worsened particularly in dry climates.

Because of the higher temperatures produced by the Gobi collectors, design criteria will be different. It is therefore important to read all guidelines for a successful design and installation.

Description: The Gobi collector system uses the pool filter pump to heat the pool from the solar collectors. *The pool timer must therefore be set to operate the filter pump during solar collection hours.* The Gobi collectors pick up heat from solar radiation (direct and diffuse) and transfer this heat to the pool at each passage.

Keeping the temperature difference small between pool temperature and collector operating temperature is more efficient than a large differential. This means that the flow needs to be designed and adjusted so that the collectors operate at about 10° F above the pool temperature.

2. Installation Guidelines

Important: Please review all guidelines carefully, because the requirements with the hotter Gobi collectors differ from low temperature bare, un-insulated panels.

General

Although the pool lines may be PVC piping, it is important to use copper pipe to and from the collectors and 5-6 feet beyond the heat exchanger to prevent pipe melting near the collectors, particularly on the return line. This may be the case when the pool pump is stopped in the middle of the day and then restarted after the collectors have been “stagnating”, reaching high temperatures.

Cut into the pool line after the filter, install a Tee fitting and further down the pool line, cut into it again and install another Tee fitting for the return line from the collectors. Install a flow meter and bypass valve on the feeder line for accurate flow rate setting.

- Use copper supply and return lines and extend to at least 5 feet after the heat exchanger, before switching to CPVC on the pool side, to prevent melting that could occur with PVC.
- Use smaller pipe size than with unglazed. Do not exceed recommended flow of 1.5 gpm to 3 gpm per collector. Install a bypass as needed.
- Make sure that the pool pump timer is set to operate the pump during solar hours. Or connect relay from solar pool control to pool pump to ensure that the 2 pumps run in tandem.

3. Solar Closed-Loop Pool Heating System Installation

Design the collector pipe and pump for 1 to 1.5 gpm per Gobi collector. Use copper for the collector loop and 5 feet beyond the heat exchanger before switching to CPVC on the pool-side. Insulate all hot fluid lines, paying particular attention to the sensors. Use 3/4" wall thickness foam rubber type pipe insulation (Halstead, Armaflex) with a minimum R-Value of 2.8. Do not use plastic foam, which will melt.

Install an air vent at all high points of the collector loop and tighten caps after filling and venting the system. Consult the attached typical schematic for installation of expansion tank, pressure relief valve (both 150 psi rated) pressure gauge (0-160 psi) and hose bib.

Plumb the heat exchanger in a counter-flow pattern: collector loop to the shell side (top fittings) in one direction, pool water to the tube bundle, with the flow in the opposite direction (two-pass heat exchangers have both in and out tubes on the same side). Pump only filtered pool water side through the heat exchanger.

Install the collector pump and the control to activate this pump. Attach the 10K ohm copper sensor to the upper collector header with a stainless steel clamp. Attach tightly without damaging the sensor so that the sensor will read pipe, not air, temperature; attach the second plastic pool side sensor according to the Compool installation manual guidelines and on the cold side of the pool water pipe. Run sensor wire to the control and attach to terminals as marked. Seal wire nuts with silicone.

Note: The pool pump (existing pool equipment), which will be piped to the heat exchanger tubes, will be set to operate during solar collection hours. The collector pump should not operate unless the pool pump is activated. In some cases, a partial pool water bypass around the heat exchanger may be advised.

Filling

Calculate the collector loop volume as closely as possible to assure a 50/50 glycol/water mix using the following content values for each item:

Collector loop fluid contents:

Gobi 406 Collector 1 gal. each
Gobi 408 Collector: 1.14 gals.
Gobi 410 Collector: 1.34 gals.

Expansion tank:

EX 2 2.0 gals.
EX 5 5.0 gals.

Heat Exchanger:

Model 32 CNTB shell: 0.5 gals.
Model 52 CNTB shell: 1.0 gals.
Model 54 CNTB shell: 1.5 gals.
Model 64 CNTB shell: 2.0 gals.

Copper pipe M:

1"	4.50 gals. / 100 feet
1-1/4"	6.80 gals. / 100 feet
1-1/2"	9.51 gals. / 100 feet
2"	16.5 gals. / 100 feet
2-1/2"	25.4 gals. / 100 feet

The collector loop should be filled only when the collectors are cold. Calculate the total collector loop volume from the chart above, pour half of this volume of concentrated glycol into the top of the collectors at the unions, fill and pressurize with water: attach a full garden hose to the hose bib on the collector loop, turn on the water pressure, open the hose bib, and operate the collector loop pump by setting the control to manual to fill and vent the loop. Make sure the cap on the air vent is loosened. Run the system until all air is out and the pressure gauge reads 35 psi when cold. Close the hose bib and disconnect the garden hose. Tighten all air vent caps and set the control to automatic.