SOLAR COLLECTORS

The new GOBI has undergone a complete transformation for 2011 making it the industry's best flat plate collector. By redesigning the frame and incorporating state of the art components, the GOBI has a reduced profile and even better performance. With 3 sizes and 2 absorber surface types to choose from, there is a GOBI collector for every type of solar water heating application.

Thinnest Profile – The redesigned frame is easier to handle for installers and offers the end user a streamlined, sleek look on their roof compared to bulky traditional flat plate collectors.

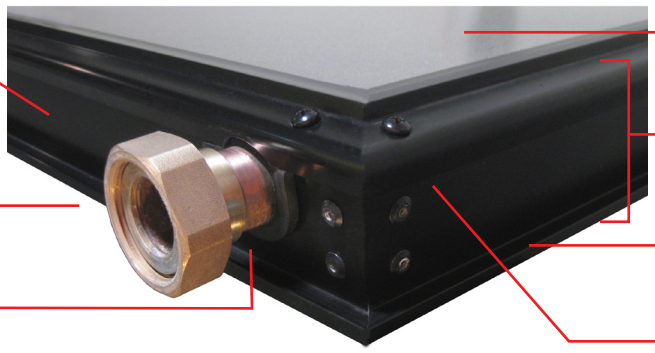
Rated Top Performance – New SRCC ratings certify that the GOBI now ranks among the best OG-100 collectors. The high energy output of the GOBI offers maximum performance out of the solar hot water system.

Easiest to Install – The GOBI retains its unique Dyn-O-Seal (DOS) union interconnection method. DOS unions come factory assembled and eliminate the time consuming task of soldering each collector together in an array.

DOS unions are included to connect and cap off collectors

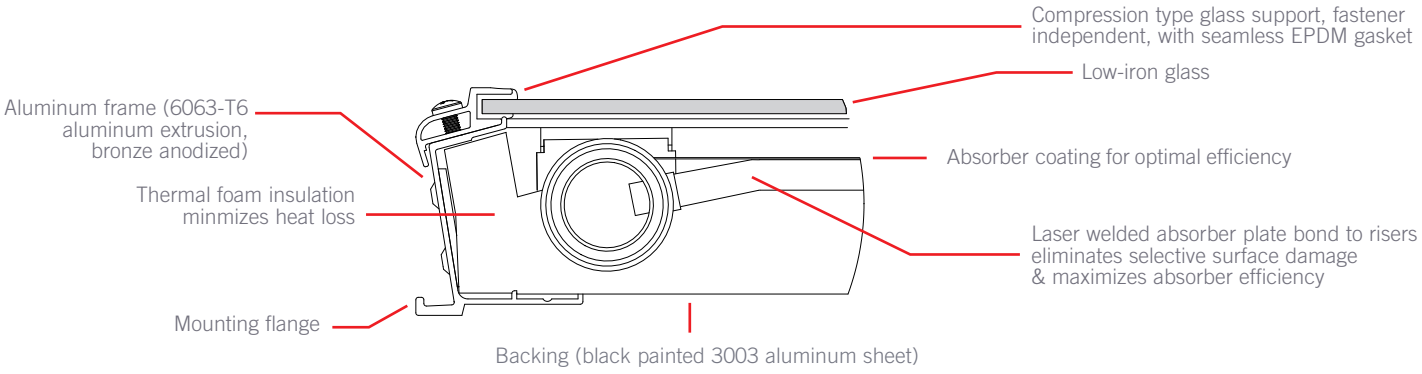
New Design Features

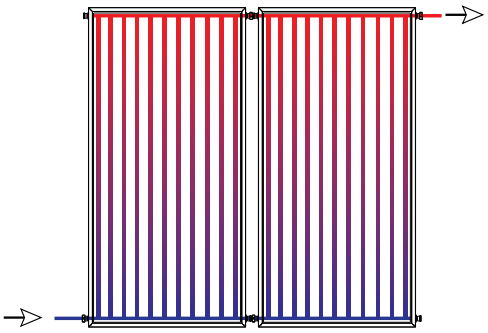
- 1" reduction in frame thickness
- Improved insulation
- Full plate absorber
- Rounded frame edge
- OG-100 certified with higher performance and efficiency



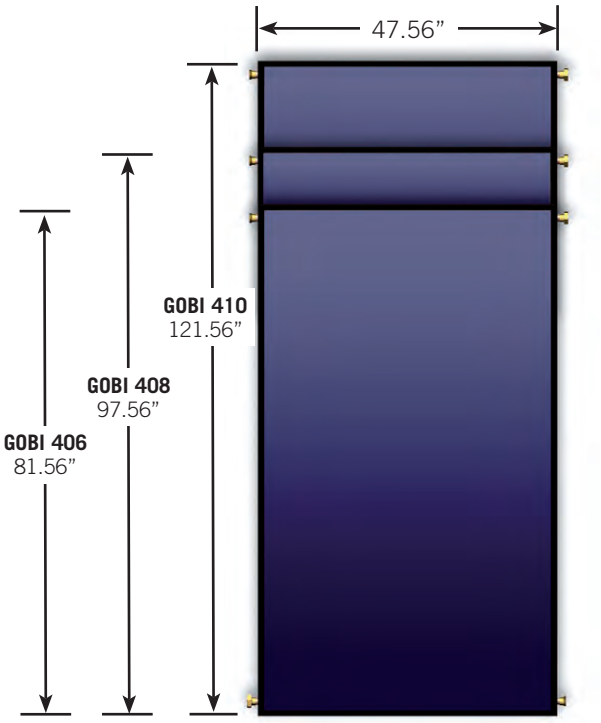
EXCELLENCE BY DESIGN™

TECHNICAL SPECIFICATION





GOBI headers fit together up to 8 collectors in 1 array. Solar fluid absorbs heat as it flows from the bottom to top within 11 parallel riser tubes.



NOTE: GOBIs all have a depth of 2.8”

SRCC SRCC OG-100 RATINGS (CLEAR DAY)

Collector size		GOBI 406		GOBI 408		GOBI 410	
Absorber coating		High Selective surface (GOBI 406 001)	Semi Selective surface (GOBI 406 002)	High Selective surface (GOBI 408 001)	Semi Selective surface (GOBI 408 002)	High Selective surface (GOBI 410 001)	Semi Selective surface (GOBI 410 002)
Certification Number		2010115C	2010115B	2010115D	2010116C	2010115A	2010116A
Category (Ti – Ta)	A (-9°F)	30.97	27.5	37.23	35.5	46.43	42.57
	B (9°F)	26.63	21.8	31.90	29.2	40.04	36.71
	C (36°F)	20.98	14.6	24.96	21.2	31.69	28.28
	D (90°F)	11.54	3.20	13.41	8.80	17.76	12.42
	E (144°F)	4.60	0.02	5.05	1.10	7.36	0.83

TECHNICAL SPECIFICATIONS	GOBI 406	GOBI 408	GOBI 410
Gross Area	26.94 ft^2	32.23 ft^2	40.15 ft^2
Net Area	24.91 ft^2	29.83 ft^2	38.3 ft^2
Dry Weight	74 lbs.	102 lbs.	127 lbs.
Fluid Capacity	0.6 gal	0.7 gal	0.8 gal
Maximum Operating Pressure		150 psi (10.34 Bar)	
Recommended Design Flow Rate (glycol/water mix)	0.8 gal/min	1.0 gal/min	1.25 gal/min
Recommended Design Flow Rate (water)	0.7 gal/min	0.8 gal/min	1.0 gal/min
Wind Load Certification		50 psf (2.39 kPa)	

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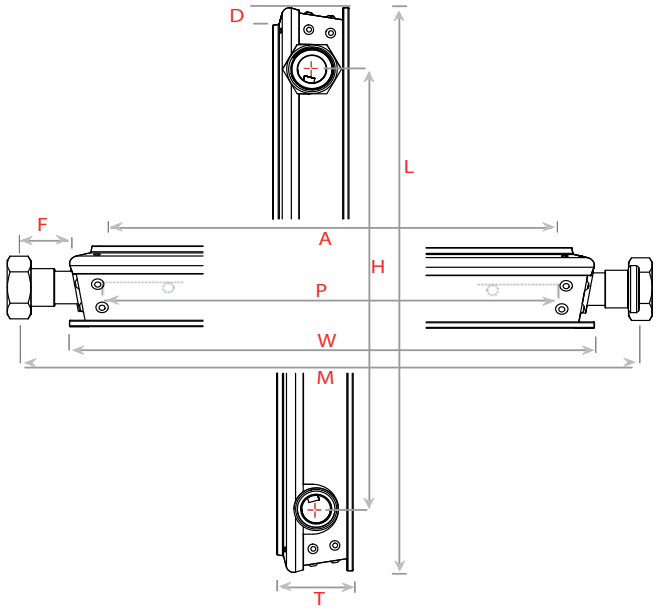
2. TECHINCAL SPECIFICATION

1.1. Technical Specifications for Gobi

DIM	DESCRIPTION	UNITS	GOBI 406	GOBI 408	GOBI 410
L	Length	inch	81.56	97.56	121.56
W	Width		47.56		
T	Thickness		2.75		
H	Header Length		76.88	92.88	116.88
M	Header Width		50.25		
A	Aperture Length		79.25	95.25	119.25
	Aperture Width		45.25		
P	Plate Length		78.0	94.0	118.0
	Plate Width		46.25		
D	Flashing Base		0.61		
F	Flashing Header		1.93		
L x W	Gross Area	ft²	26.94	32.22	40.15
A_L x A_W	Net Area	ft²	24.90	29.93	37.47
g	Dry Weight	lb.	74	102	127
G	Full Weight	lb.	80	108	135
V	Volume	Gal.	0.6	0.7	0.8
-	Max Pressure	PSI	150 (10 Bar)		
-	Test Pressure	PSI	300 (20 Bar)		
-	Stag. Temp.	°F	397.6 (203 °C)		

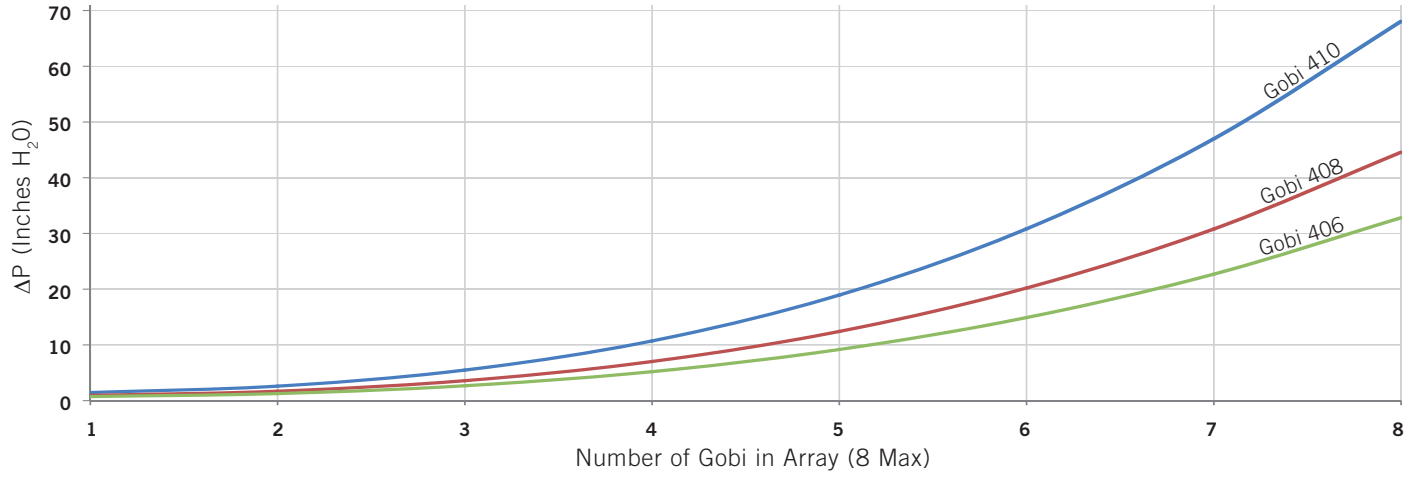
Distance box-to-box between Gobis: 2.68"



1.2. Flow and Pressure Loss[1]

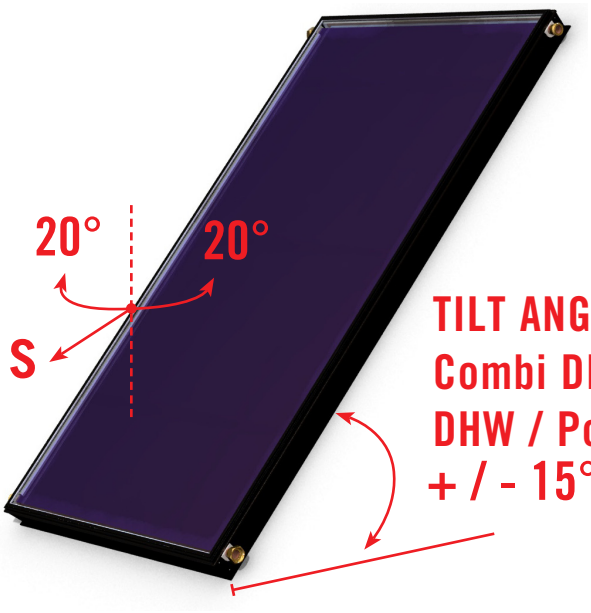
RECOMMENDED DESIGN FLOW RATES WITH GLYCOL[2]		
GOBI 406	GOBI 408	GOBI 410
0.85 Gal / min	1.0 Gal / min	1.25 Gal / min

PRESSURE DROP PLOT

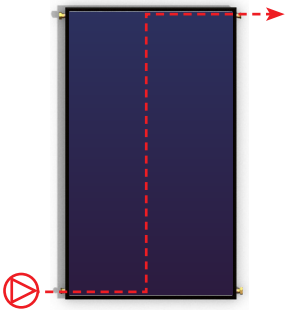


1. Losses calculated at recommended Gobi design flow rates for 50/50 propylene glycol / water solution.
2. Minimum flow rates shown. Do not exceed recommended flow rates by more than (3) times.

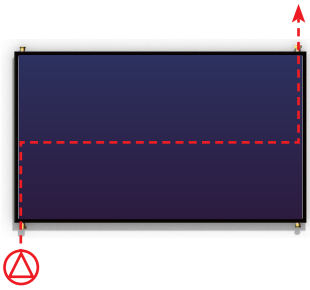
3. GOBI ORIENTATION AND PLUMBING



TILT ANGLE
Combi DHW: 45°
DHW / Pool: 35°
+ / - 15° ✓



Closed-loop ✓
Open-loop ✓
Drain Back ✓



Closed-loop ✓
Open-loop ✓
Drain Back ✗

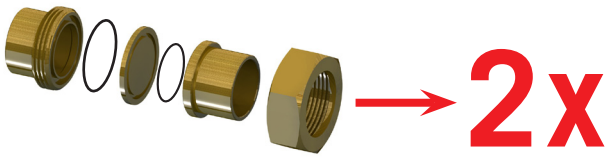


Figure 1.3.-1 DOS-Disc Assembly (p/n: 50013)

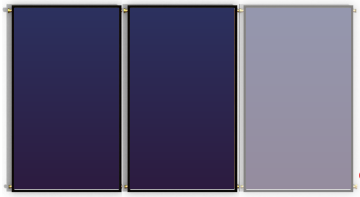
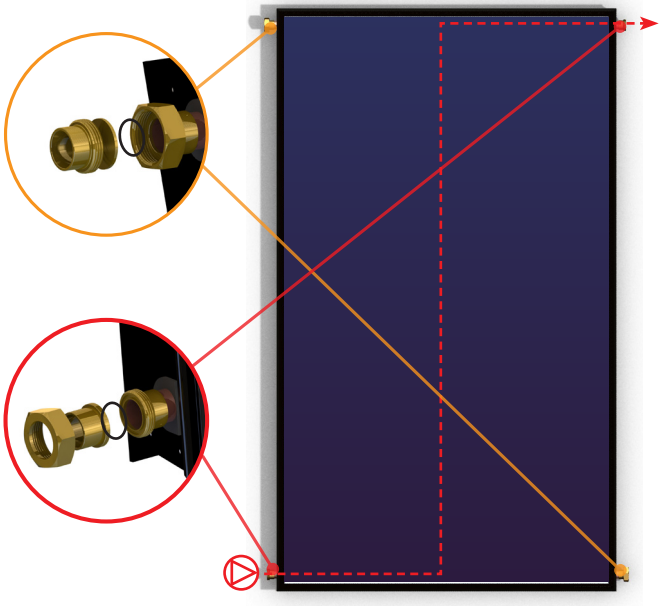


Figure 1.3.-2 Two DOS-Discs Per Vertical Array

OR

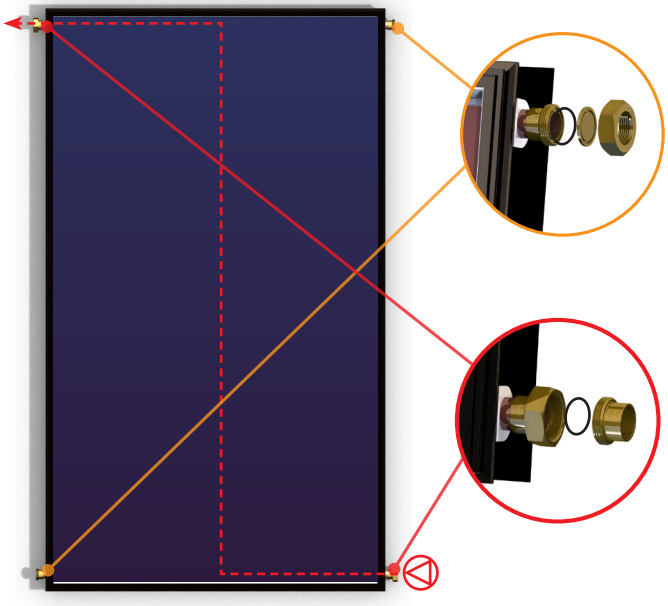
Figure 1.3.-3 Two DOS-Discs Per Horizontal Collector

DOS Connections



Flow path: lower left corner to top right corner

OR



Flow path: lower right corner to top left corner

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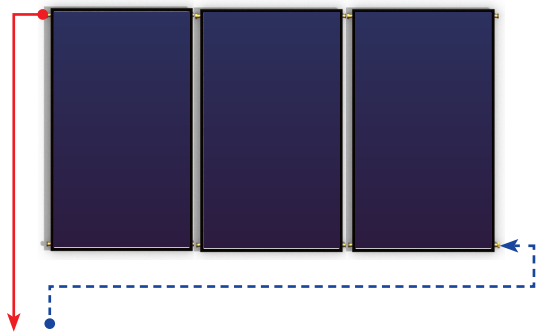
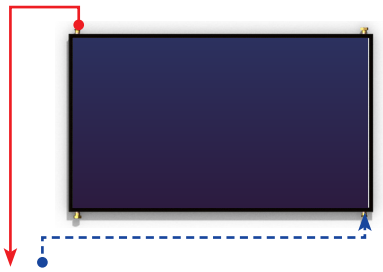
Gobi Collector Plumbing

Use copper piping on the collector loop, solder to appropriate conditions in technical specifications. Always plumb in reverse return with the longest line the cold, or use automatic balancing valves. Insulate piping for least losses; use rubber based insulation with environment protection or Solar Flex Tube from Heliodyne. Gobi collectors can be put in portrait arrays of up to eight. Install bleed vents for filling at local high points.

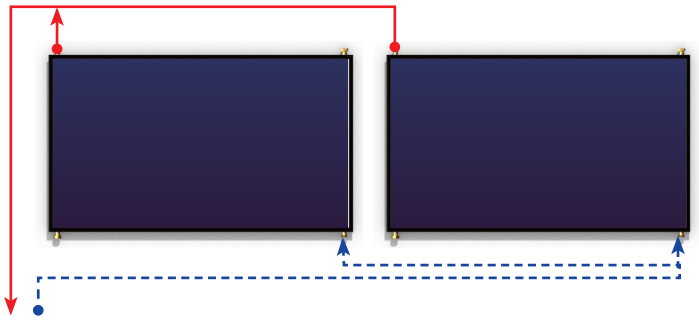
4.2.0. Portrait Single Collector or Array



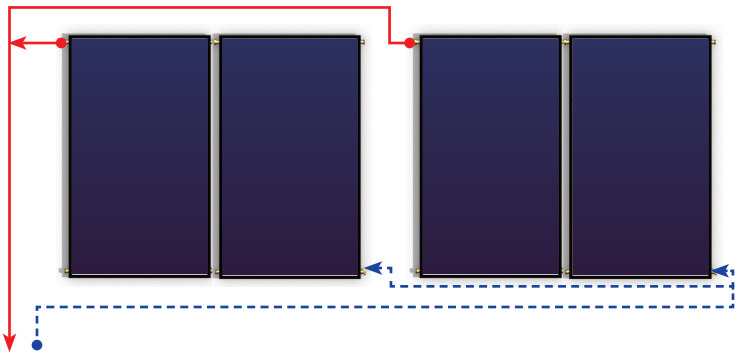
4.2.1. Single Horizontal Collector



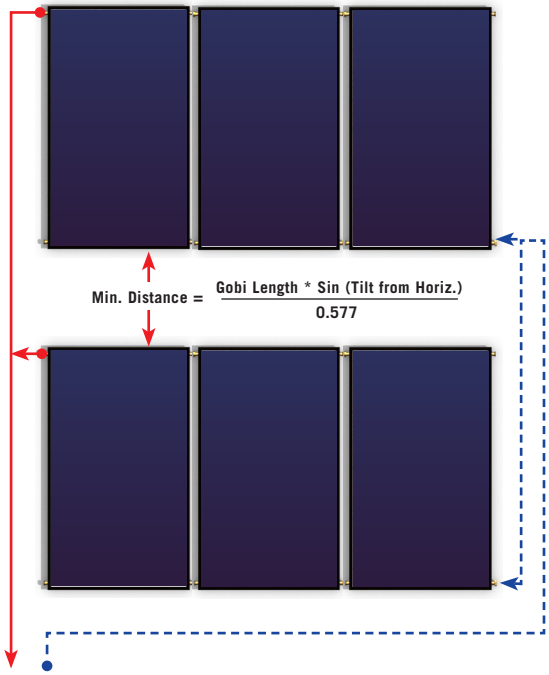
4.2.2. Multiple Horizontal Collectors



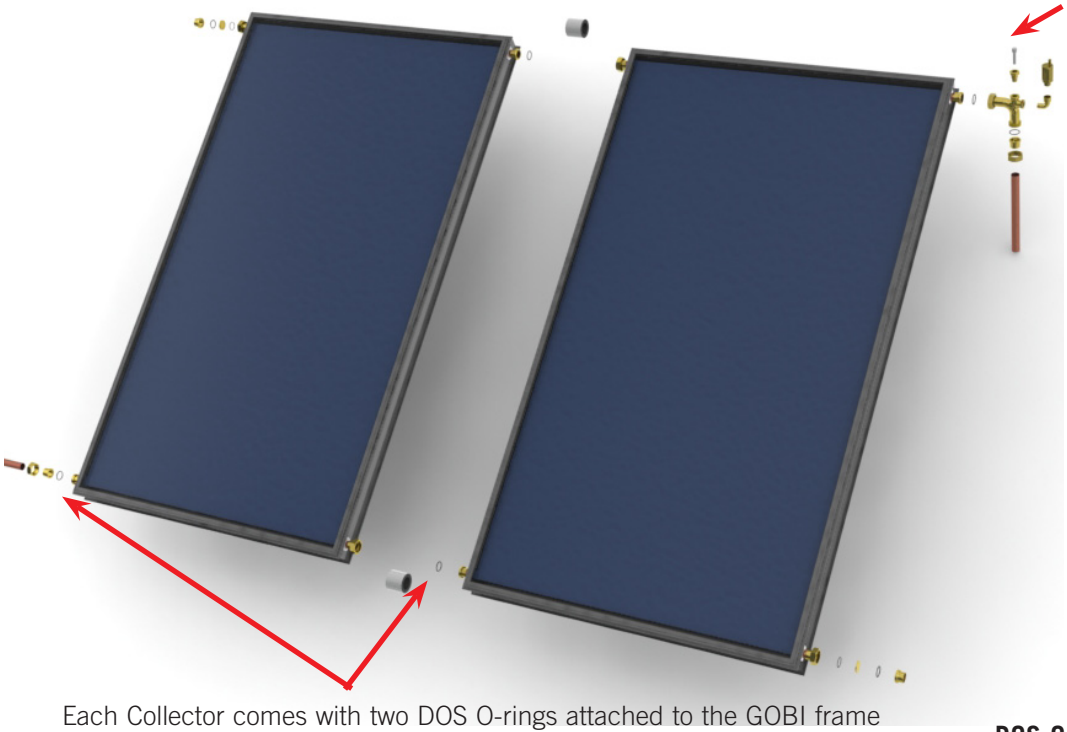
4.2.3. Multiple Horizontally Aligned Portrait Arrays



4.2.4. Multiple Vertically Aligned Portrait Arrays



For detailed information on collector mounting hardware, please see Heliodyne's Flush-Mount and Rack-Mount Hardware Installation Manuals.



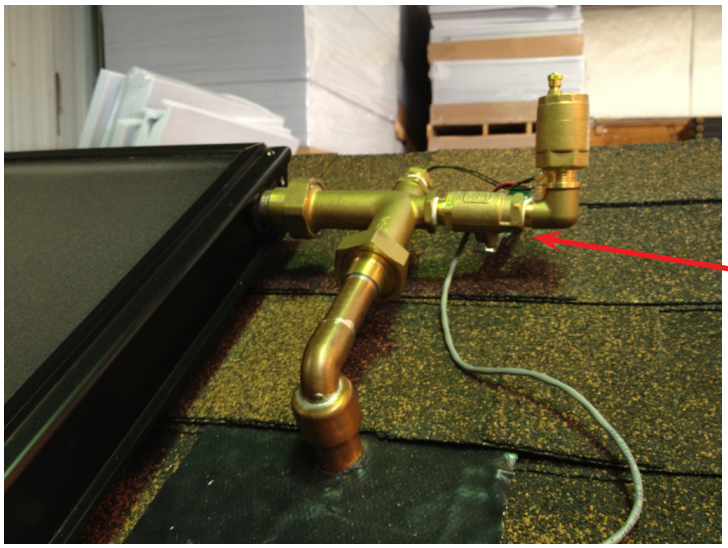
Each Collector comes with two DOS O-rings attached to the GOBI frame in a plastic pouch. The O-rings are to be inserted before tightening down the mating half-unions on the collectors.

Collector Sensor (T_1)

Connect the temperature sensor as close as possible to the collector outlet header. The T1 sensor can be either a lugnut strapped onto the pipe header, or as an 1/2“ NPT immersial well sensor. o the outlet header of the last collector in the array. A DOS combo fitting with sensor well is recommended to ensure optimal sensor connection.

DOS Combo Fitting

A DOS combo fitting at the collector hot outlet header will combine a temperature sensor immersion well with a 1/2“ NPT connection for an an air valve connection. This fitting is recommended to ensure optimal sensor connection.



Air Vents - For Close loop System

Install air vents at the collector outlet at the highest point in the system.
Heliodyne recommends also installing a high-temperature ball valve in line before the air vent. This ball valve can be shut after commissioning to help protect the air vent against stagnation temperatures.**Makesure toinsulateComboFitting&oversensorwith hightemp.ratedinsulationthatisUVprotected**

Copper pipe is preferred material for collector feed and return lines. Cast iron piping is permitted in closed-loop glycol systems.
Pre-insulated Solar Flextube shown to the right is also good option for small residential systems (1-3 collectors).
Do not use galvanized pipe: it is not compatible with high temperature or propylene glycol.

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4. COMMISSIONING

4.0. Calculate System Fluid Volume and Necessary Glycol Concentration

Find the total fluid capacity by adding in the volume of the collectors, HPAK and supply and return lines. With the total volume, use the equation below to find out necessary gallons of glycol. Glycol concentration should be 40 – 60% for proper inhibitor concentration, regardless of required freeze protection. A higher concentration than is required for freeze protection is recommended in case of errors in fluid calculation. Dyn-O-Flo HD propylene glycol is the recommended heat transfer liquid; the substitution of any other heat-transfer fluid can cause irreparable damage and/or create health and safety hazards. Use mineral spring water or good quality tap water and only fill system when collectors are cold.

SYSTEM COMPONENT	FLUID CAPACITY (GAL.)
GOBI 406	0.60
GOBI 408	0.70
GOBI 410	0.80

ASTM B88 COPPER TUBING	GALLONS / 100'
Type M 1/2" (5/8" OD)	1.32
Type M 3/4" (7/8" OD)	2.68
Type M 1" (1-1/8" OD)	4.54
Type M 1-1/4" (1-3/8" OD)	6.80
Type M 1-1/2" (1-5/8" OD)	9.51
Type M 2" (2-1/8" OD)	16.5

4.1. Flush the Collector Loop

Before filling the collector loop with Dyn-O-Flo HD glycol solution, flush and pressure test the collector loop with water to remove solder material and check the system for leaks. Rinse system with 1-2% TSP solution then drain.

Ensure that collectors are covered during water flush to protect against sudden changes in system pressure.

4.1. Filling the the Collector Loop

1. Cover the collectors to prevent heating, or commence the fill at night when collectors are cool.

WARNING: Collectors must be cool or covered to prevent damage during charging

2. Remove/Isolate the expansion tank.
3. Open all Air Vents to aid in removal of air from the system.
4. If using a filling station: connect the filling inlet valve to a site mains supply hose or filling station supply hose. Connect the other fill valve to a return hose which can drain into a bucket or floor drain. Fill and Flush the collector loop until fluid runs clear.
5. If no filling station is available, fill system from highest point (air valve port)
6. Pressurize loop up to mains pressure (60 – 80 psig.) and check for leaks.
7. Purge air out of the pumps if the pumps are not self-priming.
8. Reinstall or unisolate expansion tank.
9. Fill expansion tank with water cycling mains pressure on and off.
10. Pressurize solar loop to desired operating pressure and then isolate and remove filling station.
11. After the final fill of the system, monitor the pressure gauge for drops in pressure, inspect all joints for leaks.
12. After the system is run for the first time for a couple of hours, it is normal for the initial pressure to drop as air comes out of solution. Re-pressurize the system as needed.
13. Place sysetm in automatic differential solar control operation.
14. After the first few days of operation, all of the air in a closed-loop system should be removed. If available, shut the ball valves in line with the top air vents to protect the air vent plastic floats against stangation damage.