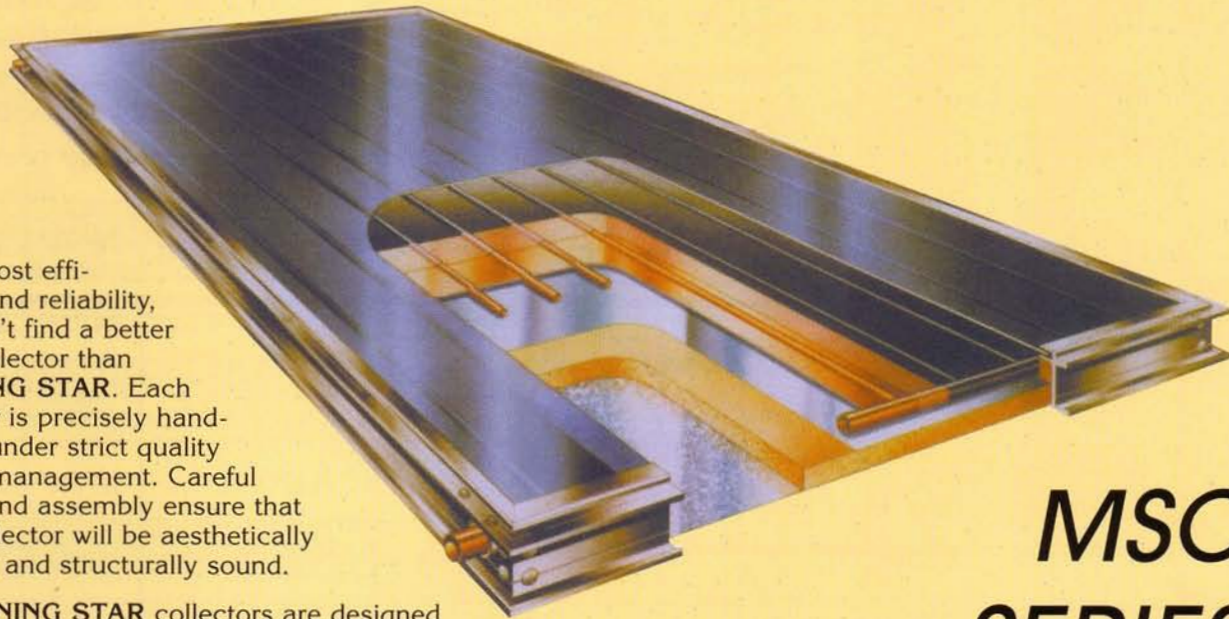




Over 10,000 Collectors installed  
in Hawaii in the past 20 years

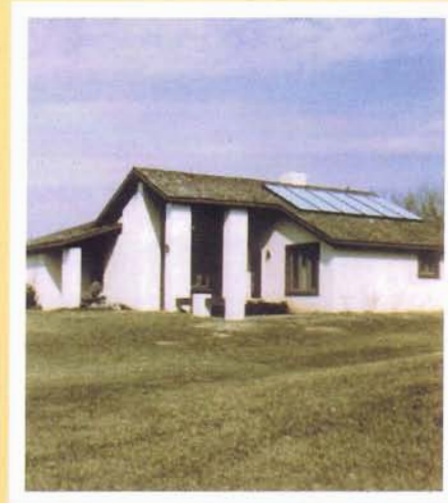
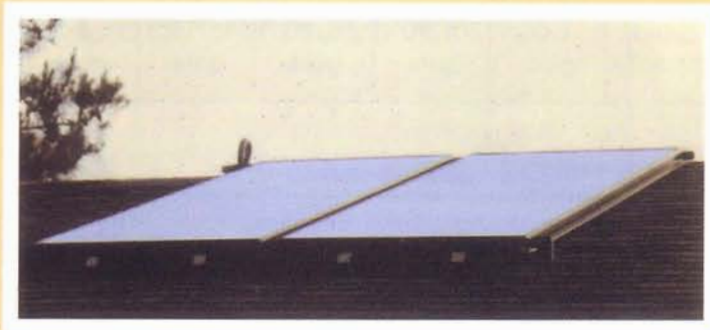
For cost efficiency and reliability, you won't find a better solar collector than **MORNING STAR**. Each collector is precisely hand-crafted under strict quality control management. Careful design and assembly ensure that your collector will be aesthetically pleasing and structurally sound.



**MORNING STAR** collectors are designed to meet or exceed all major governmental and local codes. And the 30 year design life is backed with a 10 year warranty available. The exclusive **QUICK-LOCK** mounting system allows an easy and durable installation in almost any orientation. Wind loading is certified to 180 mph.

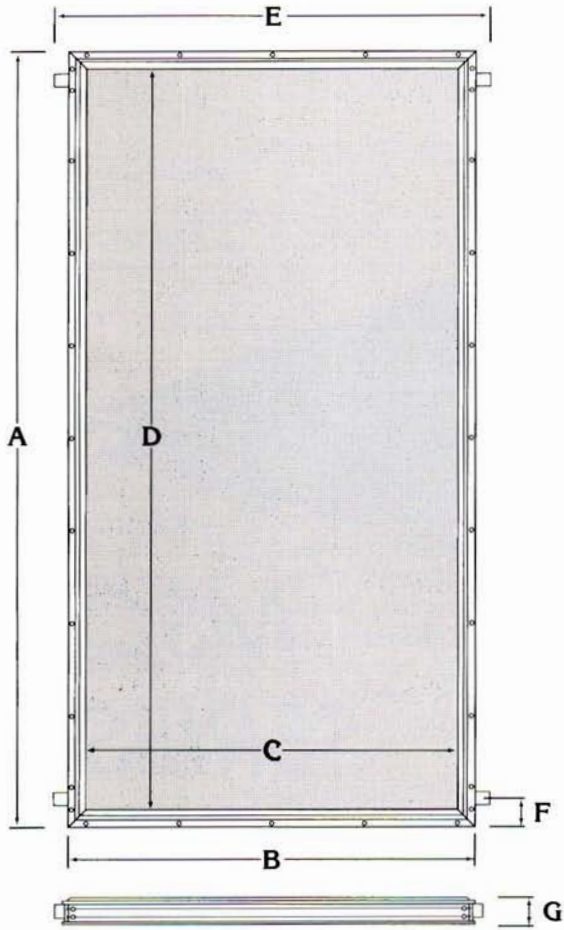
Ask your dealer today for more information about **MORNING STAR'S** proven value and performance - or call us. Our engineering department will be pleased to answer your questions.

## MSC SERIES



**ALTERNATE ENERGY TECHNOLOGIES, LLC.**

# DIMENSIONAL DATA



**H** = Gross Frontal s.f.

**I** = Transparent frontal ares s.f.

**J** = Absorber plate area s.f.

MODEL	MSC 40-E	MSC 32-E	MSC 28-E	MSC 26-E	MSC 24-E	MSC 21-E
MODEL	MSC 40	MSC 32	MSC 28	MSC 26	MSC 24	MSC 21
A	122"	98"	86"	78"	98"	86"
B	48"	48"	48"	48"	36"	36"
C	44 <sup>7</sup> / <sub>8</sub> "	44 <sup>7</sup> / <sub>8</sub> "	44 <sup>7</sup> / <sub>8</sub> "	44 <sup>7</sup> / <sub>8</sub> "	32 <sup>7</sup> / <sub>8</sub> "	32 <sup>7</sup> / <sub>8</sub> "
D	118 <sup>5</sup> / <sub>8</sub> "	94 <sup>5</sup> / <sub>8</sub> "	82 <sup>5</sup> / <sub>8</sub> "	74 <sup>5</sup> / <sub>8</sub> "	94 <sup>5</sup> / <sub>8</sub> "	82 <sup>5</sup> / <sub>8</sub> "
E	50"	50"	50"	50"	38"	38"
F	2 <sup>7</sup> / <sub>16</sub> "	2 <sup>7</sup> / <sub>16</sub> "	2 <sup>7</sup> / <sub>16</sub> "	2 <sup>7</sup> / <sub>16</sub> "	2 <sup>7</sup> / <sub>16</sub> "	2 <sup>7</sup> / <sub>16</sub> "
G	3 <sup>1</sup> / <sub>8</sub> "	3 <sup>1</sup> / <sub>8</sub> "	3 <sup>1</sup> / <sub>8</sub> "	3 <sup>1</sup> / <sub>8</sub> "	3 <sup>1</sup> / <sub>8</sub> "	3 <sup>1</sup> / <sub>8</sub> "
H	40.7 s.f.	32.7 s.f.	28.5 s.f.	26.0 s.f.	24.5 s.f.	21.5 s.f.
I	36.9 s.f.	29.5 s.f.	25.8 s.f.	23.3 s.f.	21.6 s.f.	18.9 s.f.
J	36.8 s.f.	29.4 s.f.	25.7 s.f.	23.2 s.f.	21.5 s.f.	18.8 s.f.
Weight	151 lbs.	116 lbs.	102 lbs.	91 lbs.	87 lbs.	76 lbs.
Fluid capacity	1.21 gals.	1.04 gals.	0.95 gals.	0.89 gals.	0.75 gals.	0.70 gals.

# SPECIFICATIONS

**Glazing:** Exclusively using the new "High-T" tempered glass with the lowest iron content of any other glass manufactured in the world at this time. Iron oxide content is less than 1%. A thickness of 1/8" is used for all collectors, except for the MSC-40 and the MSC-40E with a thickness of 5/32".

**Glazing Gasket:** EPDM Channel with molded corners.

**Insulation:** 1-1/4" and 3/4" foil-faced polyisocyanurate board insulation.

**Frame Wall and Batten:** 6063 T5 Aluminum extrusion with an anodized bronze finish.

**Mounting System:** Anodized integral mounting system.

**Backsheet:** 0.019 stucco embossed aluminum sheet (bronze) popriveted to frame wall.

**Absorber Plate:** Exclusively manufactured by Thermafin Manufacturing. All copper fin and tube construction. High frequency forge welded for permanent bond between tube and sheet. No soldered or crimped joints to fail from expansion and contraction. 30 year warranty on fin-to-tube joint.

**Absorber Coating:**

Crystal Clear:

Absorbivity: 0.94 - 0.96

Emissivity: 0.09 - 0.12

Selective Paint:

Absorbivity: 0.92

Emissivity: 0.15

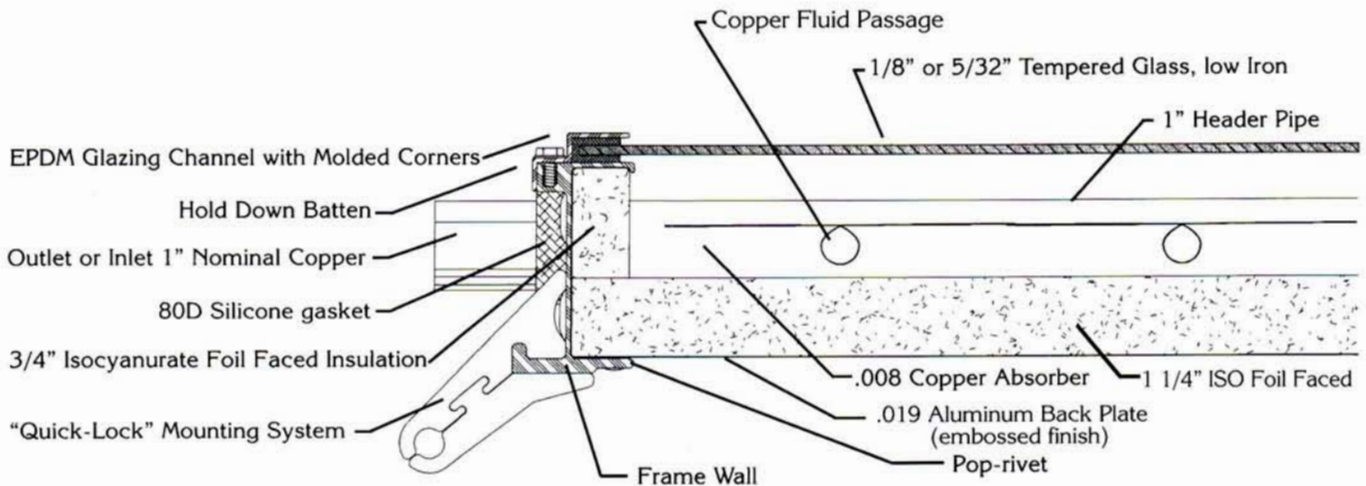
**Working Pressure:** 165 PSI

**Design Life:** 30 Years

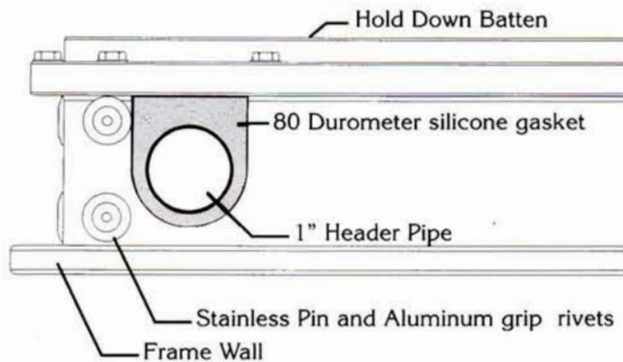
**Flow Rate:** .5 to 1.8 GPM recommended

**Warranty:** 10 year available

## COLLECTOR CROSS SECTION

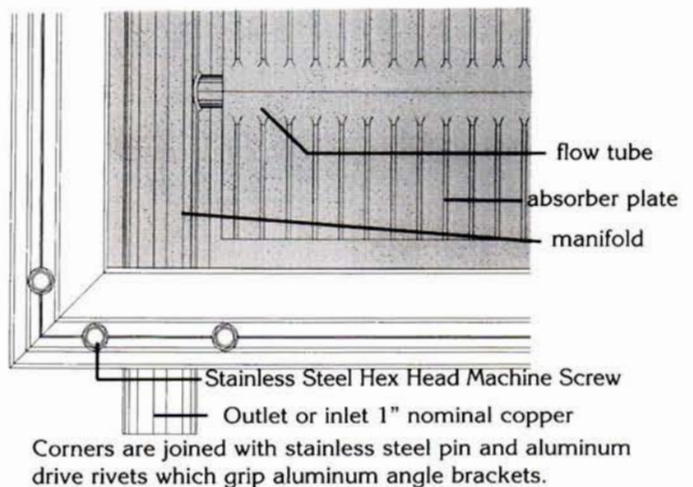


## MANIFOLD OUTLET

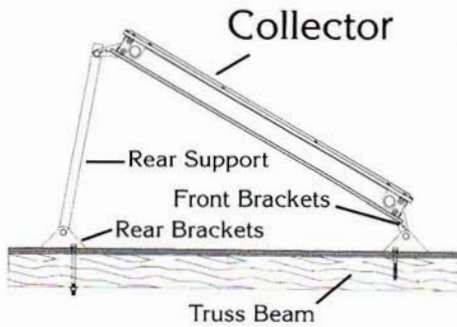


Dimensions are typical per outlet.  
4 1" nominal outlets per panel.

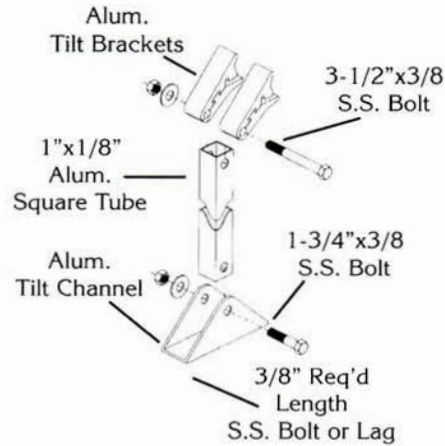
## CORNER DETAIL



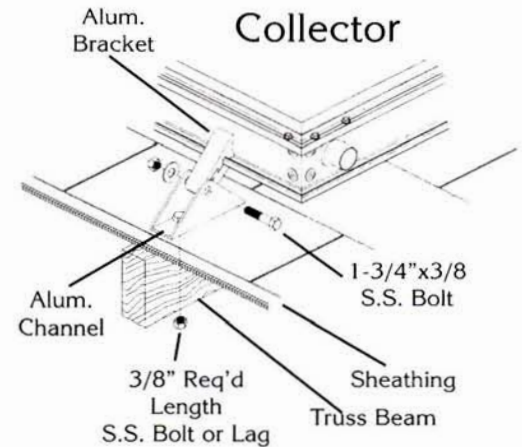
## Collector Side View



## Rear Mounting Brackets

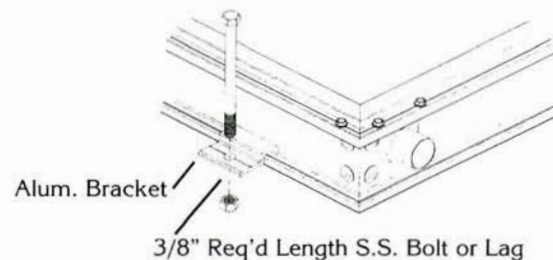


## Front Mounting Brackets



MORNING STAR'S exclusive "Quick-Lock" mounting system adds a new dimensions to collector orientation and mounting. The system can be used to mount collectors to any roof, vertical wall, fascia boards, pre-constructed racks or ground mounts. The framewall and mounts have been certified to withstand 180 mph winds. The framewall will accept the mounts anywhere around the collector without drilling or tapping so the integrity of the framewall is not violated. The rear struts can be cut to any length allowing proper elevation and orientation.

## Flush Mount Clip



## CODE APPROVAL

Morning Star Solar Collectors have been designed and constructed to meet or exceed all major applicable codes nationwide including the following:

- Solar Rating and Certification Corp.- -Test Methods and Minimum Standards for Certifying Solar Collectors, Standard 100-81
- Florida Solar Energy Test Methods and Minimum Standards for Solar Collectors, FSEC, 1977
- Arizona Solar Energy Commission
- City of Los Angeles Mechanical Testing Lab, Approval No. RR-4338
- L.A. City Standard Plan Approval No. 421
- Metropolitan Dade County Dept. of Building and Zoning Approval for Solar Collectors No.81-215.1
- Miami Test Lab Wind Testing, Approval No. MTL 11235
- Interim Minimum Property Standards Supplement, HUD 4930.2, 1977
- Uniform Solar Energy Code, 1APM0, 1976
- Uniform Plumbing Code, IAPM0, 1981
- City and County of Honolulu Approval No. MM 83-18(l)

