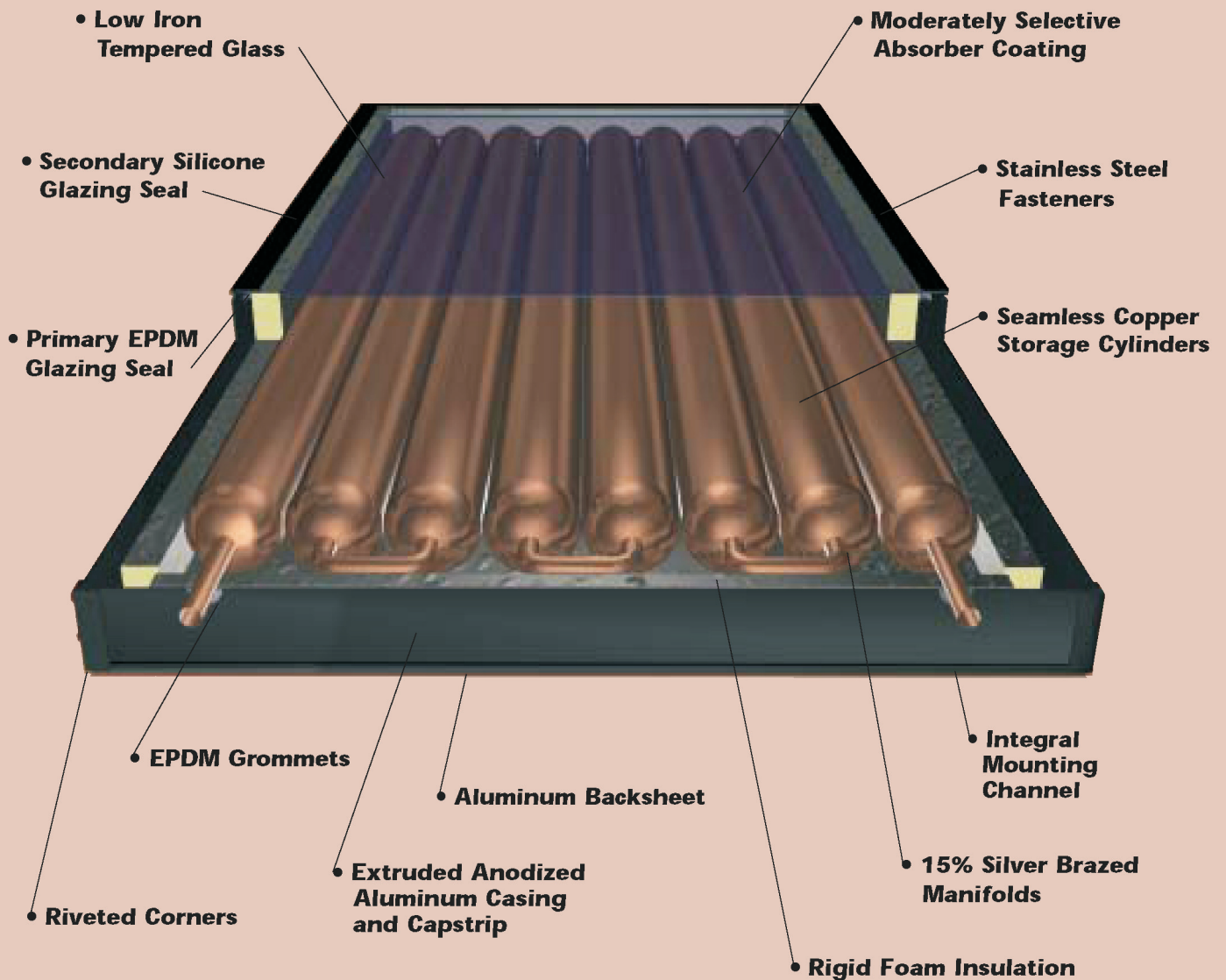


SIMPLE, DURABLE, AND RELIABLE

The CopperHeart Integral Collector Storage System



COPPERHEART ICS SPECIFICATIONS

SunEarth Model No.	Fluid Capacity U.S. Gallons	Dry Weight, Lbs.	Wet Weight, Lbs.	Width Inches	Length Inches	Depth Inches	Gross Area Sq Ft	Net Aperture Sq Ft	Rated Internal Working Pressure @ 200F in PSIG	Inlet and Outlet Piping, Inches	Inlet to Outlet Center to Center, Inches
CP-20	20	154	321	36 1/2	50 1/4	6 7/8	13.90	10.90	120	3/4	29
CP-30	32	210	477	36 1/2	78 1/4	6 7/8	21.10	17.40	120	3/4	29
CP-40	40	264	597	36 1/2	98 1/4	6 7/8	24.60	21.91	120	3/4	29

* For systems where two individual CopperHeart ICS units are required or preferred, the model numbers are CP-40-2 (two CP-20), CP-60 (two CP-30), and CP-80 (two CP-40).

THERMAL PERFORMANCE RATINGS*

Model	Btu/Day/Unit Output		
	CLEAR DAY 2000 Btu/ft ² /Day	MILDLY CLOUDY DAY 1500 Btu/ft ² /Day	CLOUDY DAY 1000 Btu/ft ² /Day
CP-20	18,675	11,900	9,940
CP-30	31,730	21,690	16,465
CP-40	35,810	24,750	18,505

* Performance results are for the Solar Rating and Certification Corporation (SRCC) rating day and are derived from TRNSYS simulation in conjunction with SRCC OG-200 system test results. OG-200 tests were independently conducted by DSET Laboratories, Inc. Phoenix, AZ.

ENGINEERING SPECIFICATIONS

(Performance specifications subject to testing error of +/- 3%)

The solar water heating system shall be of the integral collector storage (ICS) type, and shall require no pumps, controls, or parasitic energy consumption for its normal operation. The ICS unit shall be the SunEarth CopperHeart ICS model number _____. The CopperHeart ICS unit shall be tested in conformance with SRCC Standard OG-200 by an independent testing laboratory, certified by the SRCC under system standard OG-300, and also by the Florida Solar Energy Center (FSEC).

GENERAL

The dimensions of the CopperHeart ICS model number _____ shall be _____ inches in length, 36 1/2 inches in width, and 6 7/8 inches total depth to the top of the glazing capstrip, and be rated at a nominal capacity of _____ U.S. gallons. The casing shall be an anodized aluminum extrusion (alloy 6063 T5), a minimum 1/8 inch in thickness, with an architectural dark bronze finish. Sheet metal fasteners shall be stainless steel (18-8 #10 X 1/2). The framewall shall be secured by four exterior anodized aluminum corner brackets attached with 8 each AD54BS aluminum rivets per corner. The casing backsheet shall be textured aluminum of not less than .014 inches in thickness.

GLAZING

The glazing shall be one sheet of low iron tempered glass of not less than 1/8 inch thickness, and have a minimum transmissivity of 91%. The glazing shall be thermally isolated from the casing by a continuous EPDM gasket. There shall be a secondary silicone seal

between the glass and the aluminum capstrip to minimize the intrusion of moisture into the casing.

INSULATION

The backing insulation shall be a foil-faced polyisocyanurate foam sheathing board with a minimum thickness of 1 1/2 inches, and shall be siliconed in place to the aluminum backsheet. Aged thermal resistance R-value of the backing and side-wall insulation shall be not less than R-12 at 75° F mean temperature. The ends of the ICS shall be insulated with 1 inch polyisocyanurate foam sheathing board with an aged thermal resistance R-Value of no less than 7.2.

ABSORBER/STORAGE CYLINDERS

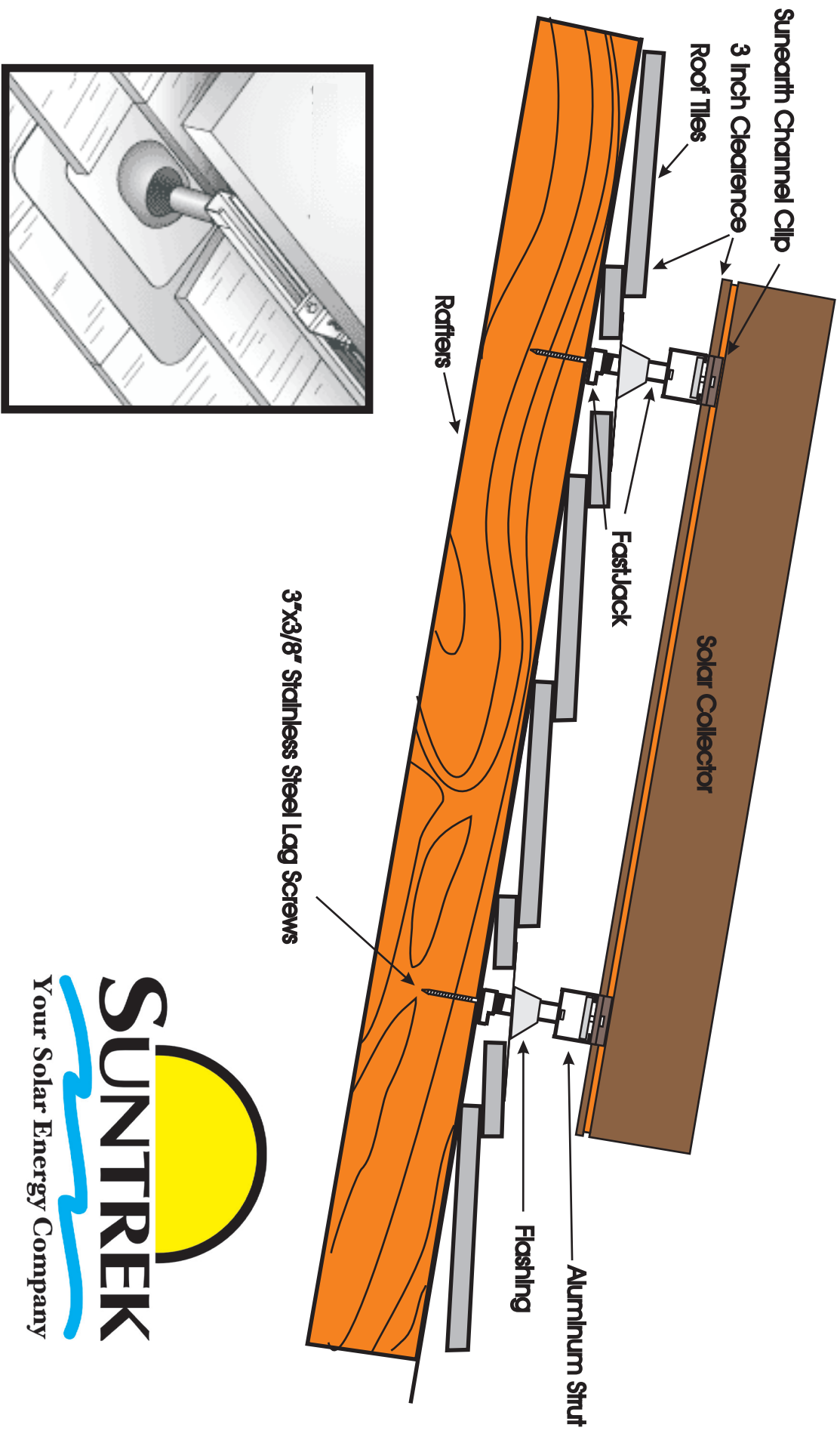
The CopperHeart ICS shall combine the collector and storage tank as one unit. The all copper storage cylinders shall be seamless drawn 4.125 inch O.D. copper tubing with a minimum wall thickness of .058 inches, and have machine spun ends to accept 7/8 inch O.D. Type L copper internal manifolds. Eight storage cylinders shall be manifolded in series to form a storage vessel. The rated internal working pressure shall be 120 PSIG at 200° F.

All internal manifold braze joints shall be joined utilizing a copper phosphorous brazing alloy with no less than 15% silver content and conforming to the American Welding Society's BCuP-5 classification. EPDM grommets shall isolate the manifolds from the aluminum casing.

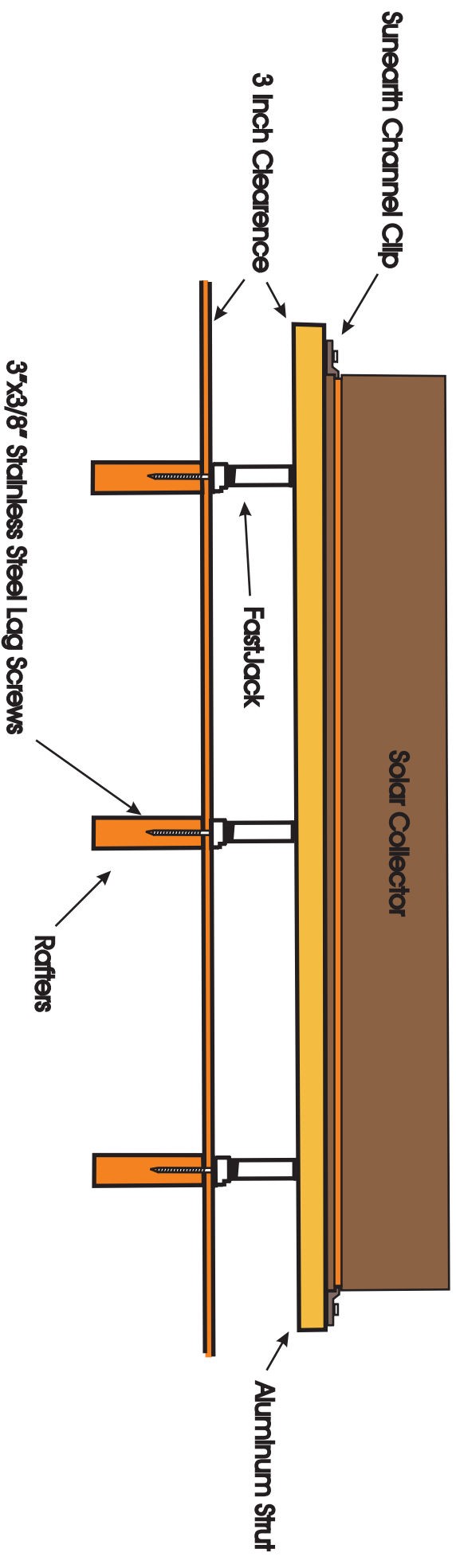
ABSORBER COATING

The absorber coating shall be a moderately selective paint with a minimum absorptivity of 94 percent and a maximum emissivity of 56 percent.

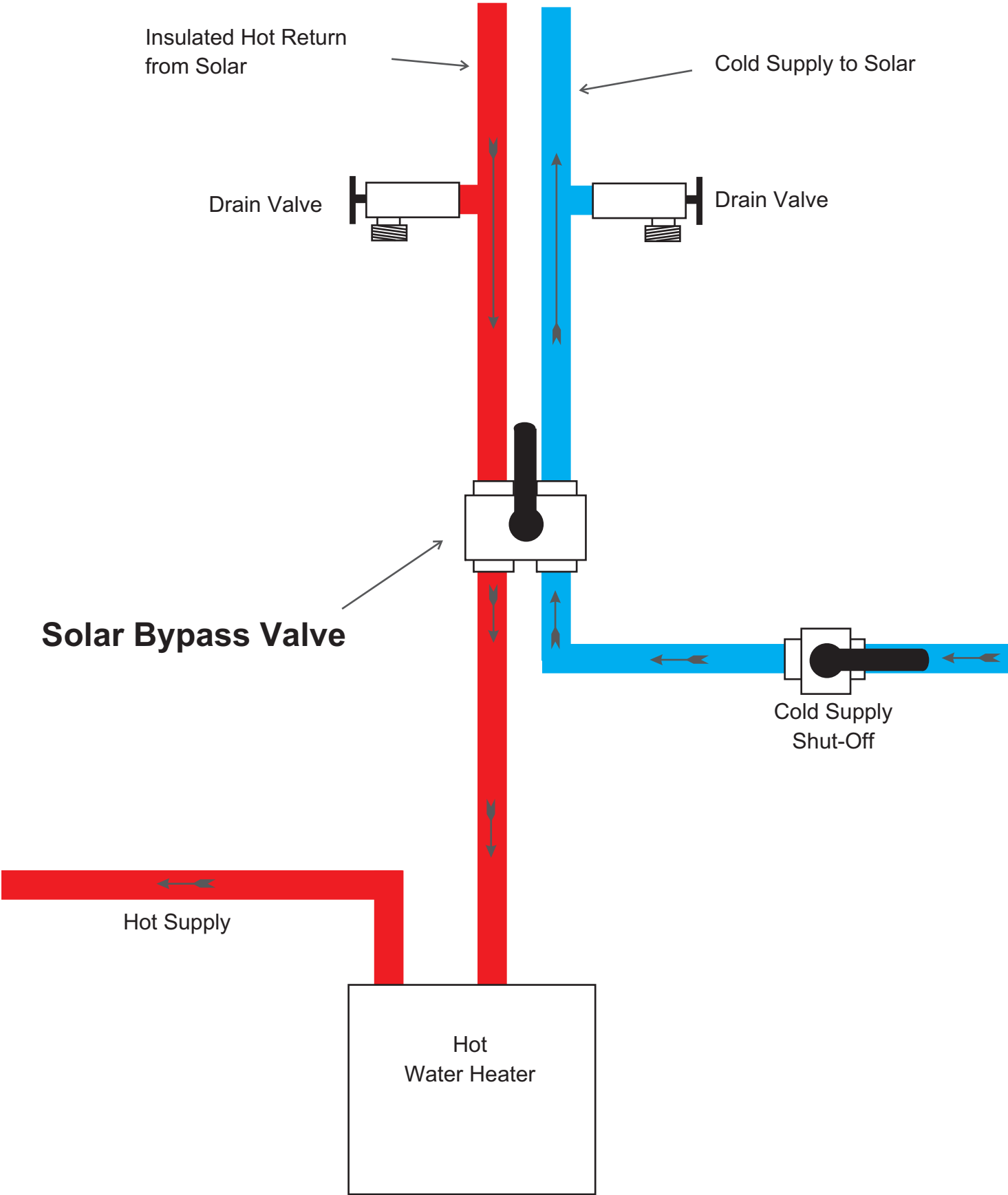
DHW mounting on standoff posts and tiled around. (same method for composition or tiled roofs)



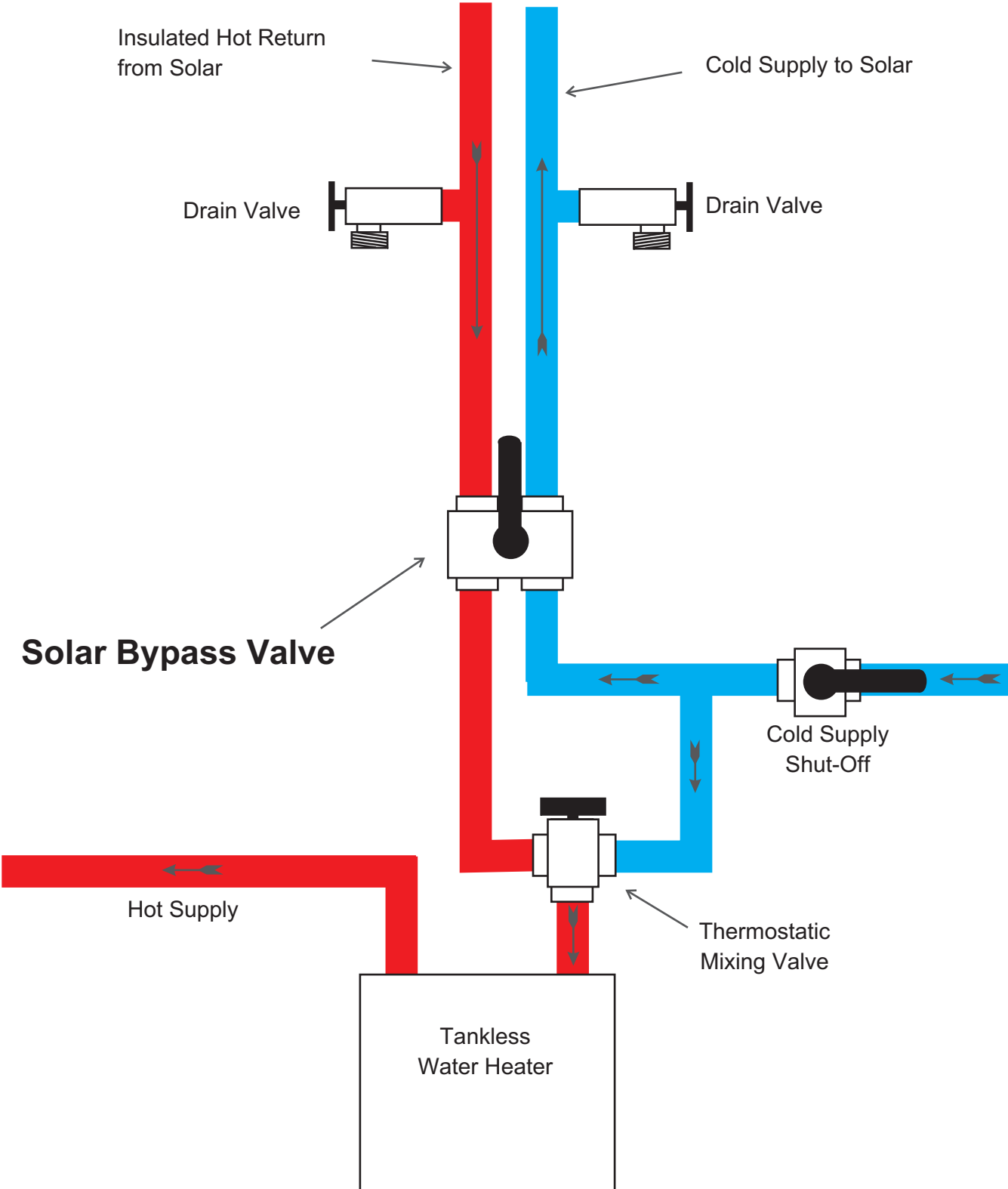
DHW mounting on standoff posts and tiled around.
(same method for composition or tiled roofs)



Solar Valving at hot water heater



Solar Valving (When used with a tankless water heater).



QUAD Flo™

by Tomlinson®

"The Quad-Flo™ bypass valve is the finest valve on the market. It's the only valve we use. The Quad-Flo is maintenance-free. It does not leak and it's the easiest to operate."


Ted Bowen—Rayne Water Systems, Irvine, CA

"I use the Quad-Flo bypass valve in my installation of water treatment systems. My work is well recognized and my jobs sell for me when I am not there. A good part of that perception is based on the Quad-Flo bypass valve."

Roger Garrett—Purely Water Inc., Sparta, NJ

"We recommend the Quad-Flo bypass valve to our dealer customers to use with every whole house system installation. It's easy to operate and the homeowners appreciate the simplicity."

Dick Smith—Pro-Flo Products, Cedar Grove, NJ



Only Quad-Flo™ two-position, four-way bypass valves use a Quad-Seal™ made of DuPont Teflon® to ensure smooth, positive operating action even with infrequent use. A single 90 degree turn of the two-position handle allows full service to pass.

U.S. manufactured of high quality brass, Quad-Flo bypass valves are designed for quick installation and servicing, making them the superior choice for water softeners, general liquid bypass, diverter systems and solar systems.

Shown: Model No. C-75 with 3/4" sweat fittings

The **QUAD FLO**™ bypass valve

by Tomlinson®

Special Features:

- U.S. manufactured, high quality brass/Teflon® construction.
- Unique Quad-Seal™ made of Teflon® protects and seals all internal sealing surfaces from water flow.
- The lowest pressure drop to flow rate ratio of all multi-purpose valves in the industry.

Installation Features:

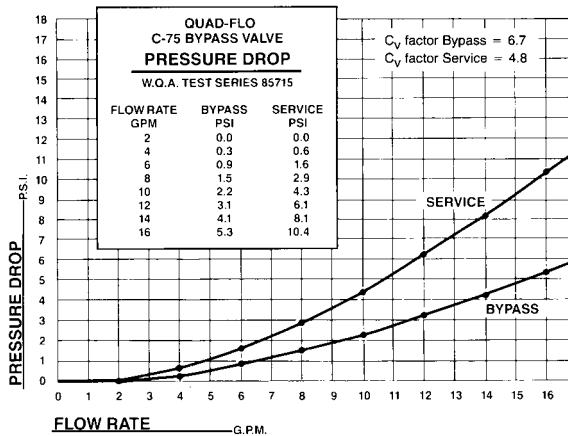
- **Flexible**—Designed for soft solder and threaded installations.

Model	Part No.	Size	Fittings
C-75	1017459	3/4"	Copper Sweat x Copper Sweat
C-100	1017462	1"	Copper Sweat x Copper Sweat
CP-75	1017460	3/4" NPT	Copper Sweat x NPT Internal Thread
P-75	1017461	3/4" NPT	NPT Internal Thread x NPT Internal Thread

- **Quick**—No disassembly for torch soft solder type installation.
- **Convenient**—Handle conveniently repositions for use; leaving ample clearance for plumbing.

Sales Features:

- Smooth, easy, single-handle operation.
- Unaffected by water pressure surges.
- Can be used as a metering valve for equipment start up and servicing.
- One year warranty.



Tested by the Water Quality Association Testing Laboratory.

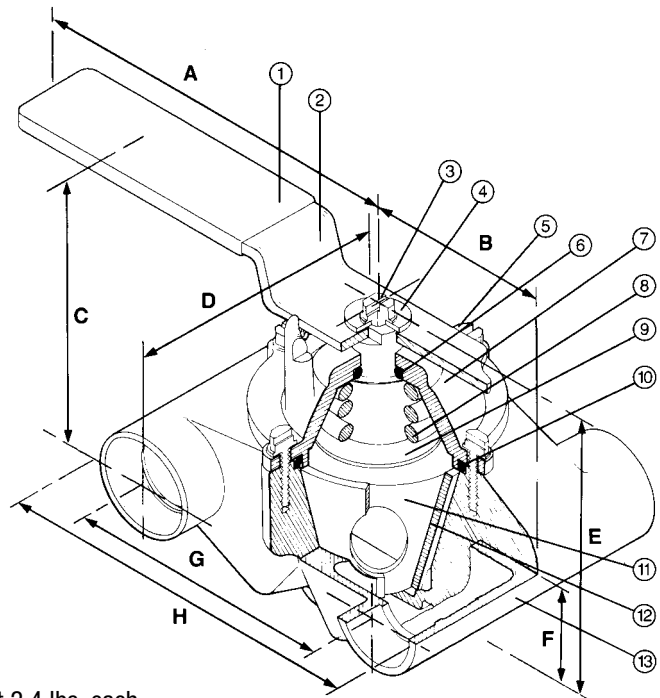


Teflon® is a registered trademark of E.I. DuPont Company.

Parts List

Ref. No.	Description	Material	Part No.
1	Handle Grip	Vinyl	1917471
2	Handle	Heat Treated Plated Steel	1917472
3	Cap Screw	Stainless Steel	1917473
4	Washer	Stainless Steel	1917474
5	Cap Screw	Stainless Steel	1917475
6	O-Ring Small	High Temperature Silicone	1917477
7	Cap	Cast Brass	1917478
8	Spring	Stainless Steel	1917480
9	Thrust Washer	Teflon	1917481
10	O-Ring Large	High Temperature Silicone	1917476
11	Plug	Cast Brass	1917483
12	Seal (Conical)	Teflon	1917484
13	Body, C-75	Cast Brass	1917463
	Body, C-100	Cast Brass	1917470
	Body, CP-75	Cast Brass	1917466
	Body, P-75	Cast Brass	1917467

Model	A	B	C	D	E	F	G	H
C-75 3/4" Sweat	4 1/2"	2"	2"	3"	3"	1 1/16"	3"	4 3/16"



Weight 2.4 lbs. each
Packaged weight of 10 valves 28.7 lbs.



Tomlinson Industries
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www.tomlinsonind.com
World Class, Worldwide

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Job Name _____ Contractor _____
 Job Location _____ Approval _____
 Engineer _____ Contractor's P.O. No. _____
 Approval _____ Representative _____

Series 70A

Hot Water Extender Tempering Valves

Sizes: 1/2" - 3/4" (15 - 20mm)

Series 70A

You can meet various installation requirements with the Watts 70A Series Hot Water Extender Tempering Valves. They are available in 1/2" and 3/4" (15 - 20mm) sizes, with sweat or threaded connections. Temperature range 120° to 160°F (49° - 71°C).

The hydraulically-operated thermostat opens a spring loaded check in the cold water inlet allowing cold water to mix with the hot water.

They have unusually high capacity for their size. For example, the 3/4" (20mm) 70A-T used for smaller domestic and residential requirements, passes over 10 gpm (38 lpm) with a 10 psi (70 bar) pressure drop.

Maintenance is simple too, as the thermostat is easily removed and replaceable as a unit. Valve bodies are of brass construction that is recognized and required to resist corrosive domestic hot water conditions.

No. 70A-F furnished in 1/2" (15mm) size with sweat connections.

No. 70A-T in 1/2" and 3/4" (15 - 20mm) threaded connections.



Series L70A

Identical to above except furnished for low temperature range applications between 100° to 130°F (38° - 54°C).

FEATURES

- Brass valve bodies
- Simple maintenance thermostat assembly is easily removed and replaceable as a unit.
- "FINGER TIP" Dial adjustment Cap
- Sweat or threaded connections
- Stainless steel springs

WARNING

WATTS HOT WATER EXTENDER TEMPERING VALVES CANNOT BE USED FOR TEMPERING WATER TEMPERATURE AT FIXTURES. SEVERE BODILY INJURY (i.e., SCALDING OR CHILLING) AND/OR DEATH MAY RESULT DEPENDING UPON SYSTEM WATER PRESSURE CHANGES AND/OR SUPPLY WATER TEMPERATURE CHANGES. A.S.S.E. STANDARD 1016 LISTED DEVICES SUCH AS WATTS MODELS L111 OR MMV SHOULD BE USED AT FIXTURES TO PREVENT POSSIBLE INJURY.

The WATTS hot water tempering valves are designed to be installed at or near the boiler or hot water heater. They are not designed to compensate for system pressure and/or temperature fluctuations and should not be used where devices tested to A.S.S.E. standard 1016 are required. These WATTS valves should never be used to provide "anti-scald" or "anti-chill" service.

*for...Small Domestic Water Supply
Systems recommended for
Tankless Heater, Water Heater
and Solar Installations*



No. 70A-F
Sweat connections



No. 70A-T
Threaded Connections

Minimum Flow Requirements to Maintain Set Temperature for 70A Series

Valve Size	gpm	lpm
1/2" and 3/4" (15 - 20mm)	2	8

NOTE: Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

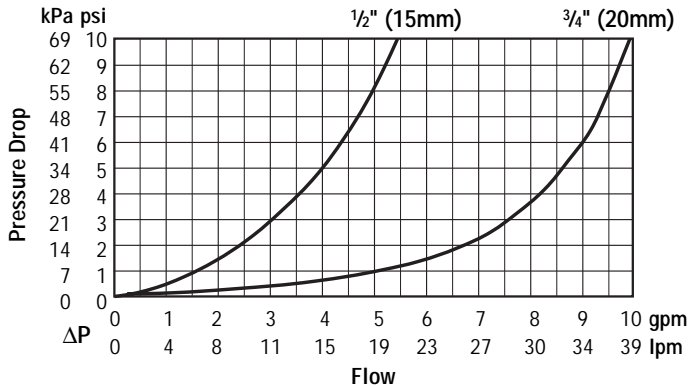


USA: 815 Chestnut Street, North Andover, MA 01845-6098
 Canada: 5435 North Service Road, Burlington, Ontario L7L 5H7
 www.wattsreg.com

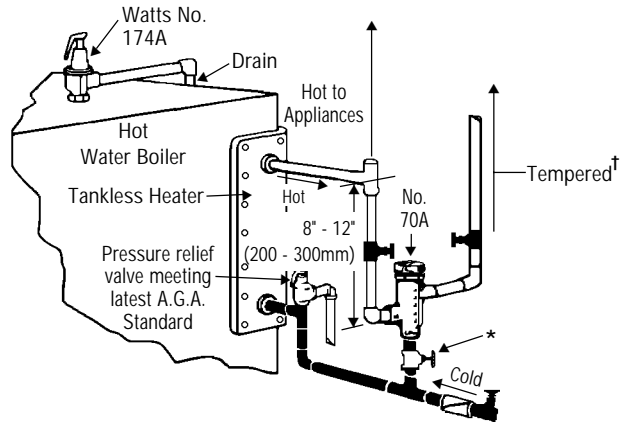
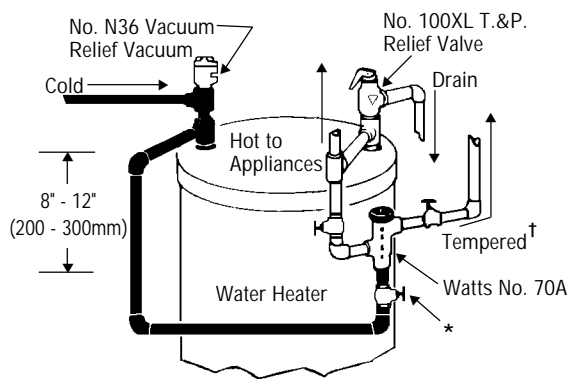
TEMPERATURE - PRESSURE

- Max. Temperature 210°F (99°C)
- Max. Pressure 150 psi (10.55 bar)

CAPACITY



RECOMMENDED INSTALLATION



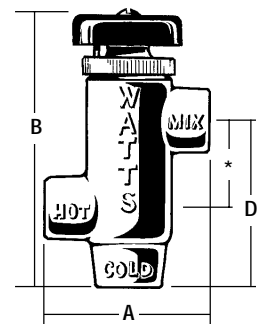
* Balancing valve should be installed in cold water line to hot water extender tempering valve, as shown, to help compensate for pressure drop through heater.

† Note: Valves listed to ASSE Standard 1016 such as Watts model L111 or MMV should be used at fixtures to prevent possible injury.

Check Valve - Watts No. 600

DIMENSIONS - WEIGHT

No.	Size		Connection	Dimensions								Weight	
	in.	mm		A	B	D		*		lbs.	kg.		
				in.	mm	in.	mm	in.	mm	in.	mm		
70A-F, L70A-F	1/2	15	Sweat	2 ¹ / ₃₂	52	3 ¹¹ / ₁₆	94	2 ³ / ₁₆	56	1 ⁵ / ₁₆	24	3/4	.3
70A-T, L70A-T	1/2	15	Threaded	2 ⁷ / ₁₆	62	3 ⁷ / ₈	98	2 ²¹ / ₃₂	67	1 ⁵ / ₁₆	24	1	.5
70A, L70A	3/4	20	Sweat	2 ³ / ₄	69	4 ¹ / ₈	105	2 ²⁷ / ₃₂	72	1 ³ / ₃₂	28	1	.5
70A-T, L70A-T	3/4	20	Threaded	2 ³ / ₄	69	4 ¹ / ₈	105	2 ²⁷ / ₃₂	72	1 ³ / ₃₂	28	1 1/4	.6



CAUTION: NEED FOR PERIODIC INSPECTION

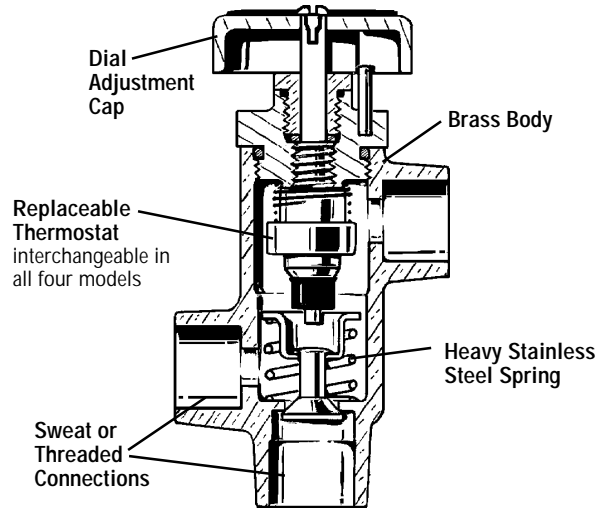
Periodic inspection by a licensed contractor is recommended. Corrosive water conditions, temperatures over 210°F (99°C), unauthorized adjustments or repair could render the valve ineffective for service intended. Regular checking and cleaning of thermostat assembly helps to assure maximum life and proper product function. Frequency of cleaning depends upon local water conditions. *See Warning on reverse side.



USA: 815 Chestnut Street, North Andover, MA 01845-6098
 Canada: 5435 North Service Road, Burlington, Ontario L7L 5H7
 www.wattsreg.com



BASIC CONSTRUCTION



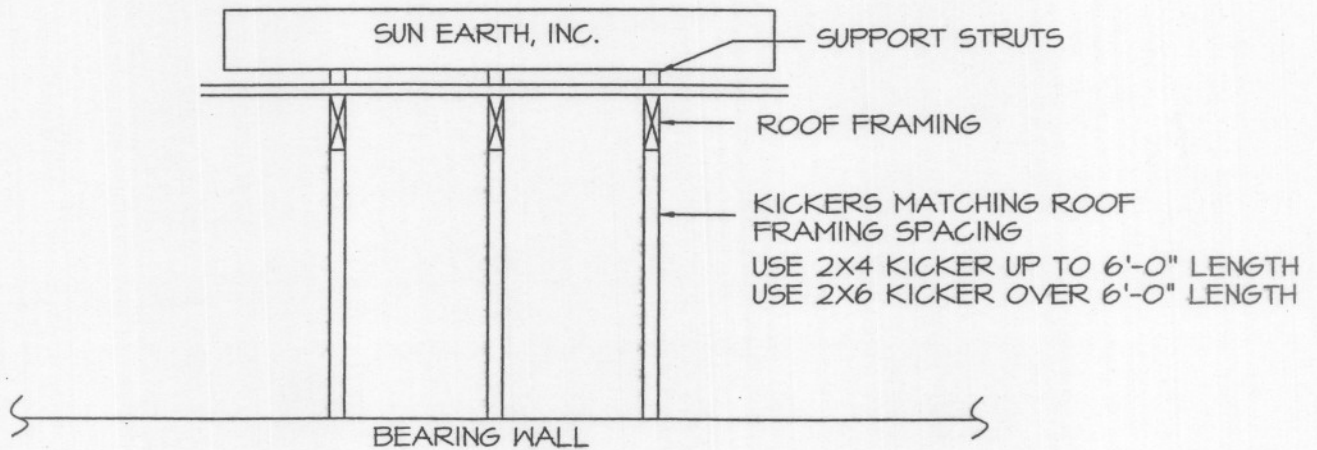
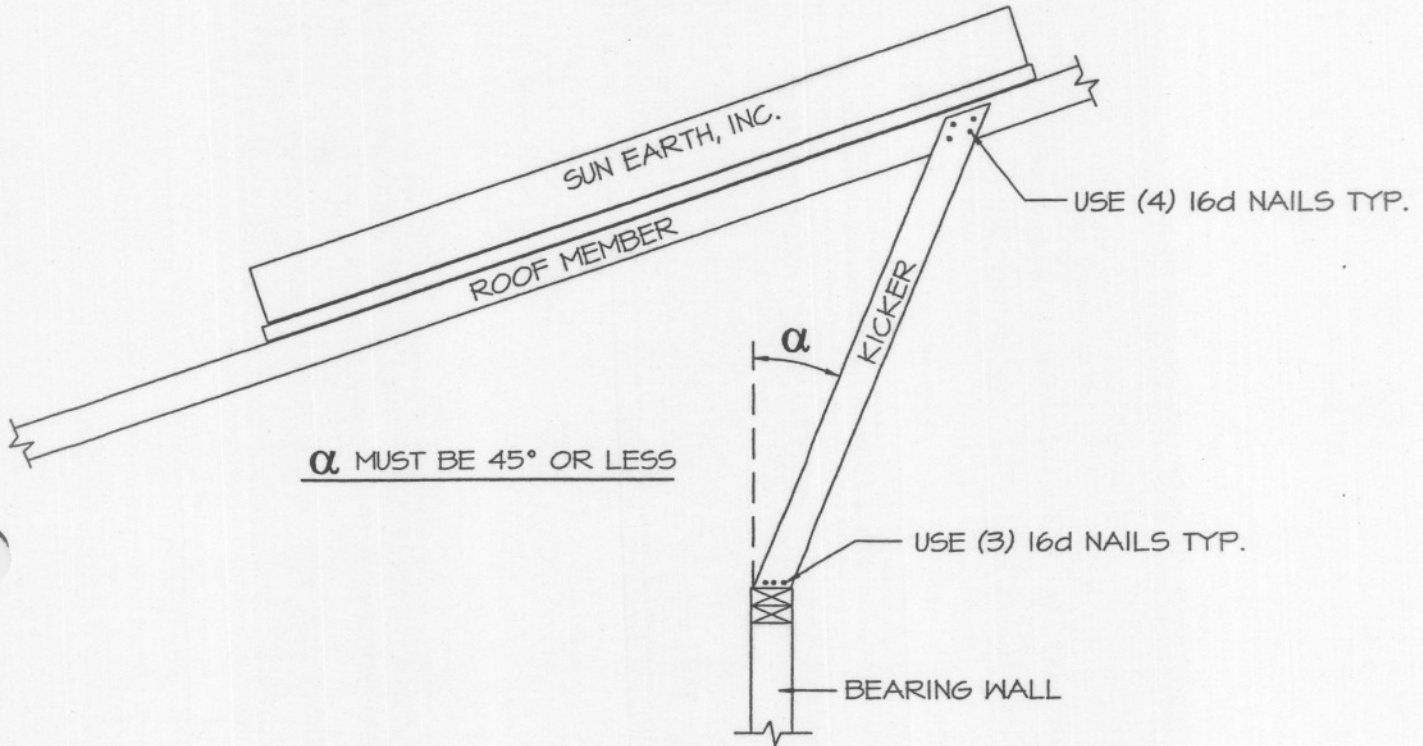
KRISTOPHER COLLINS, P.E.

JOB SUN EARTH, INC.		
LOCATION 4315 SANTA ANA ST. ONTARIO, CA. 91761		
DATE 5/15/2001	JOB NO. .	DWG FILE .
MODEL No. .		

STAMP

601 S. MILLIKEN AVE., SUITE H
ONTARIO, CA 91761
(909) 605-6865 PHONE
(909) 605-6870 FAX

NOTATION: ALTERNATE FRAMING FOR SOLAR UNIT WHERE EXISTING ROOF FRAMING EXCEEDS THE ALLOWABLE LOAD SPANS. REFER TO LOAD SPAN TABLE FOR SPECIFIC MODEL.



NOT TO SCALE

CONVENTIONAL FRAMING w/ BEARING WALL
PARALLEL TO SOLAR UNIT

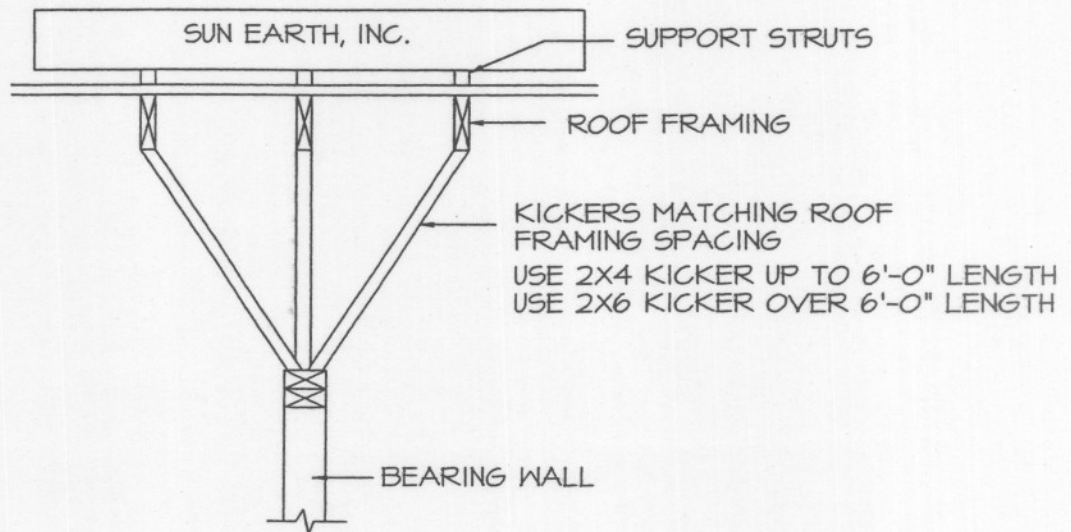
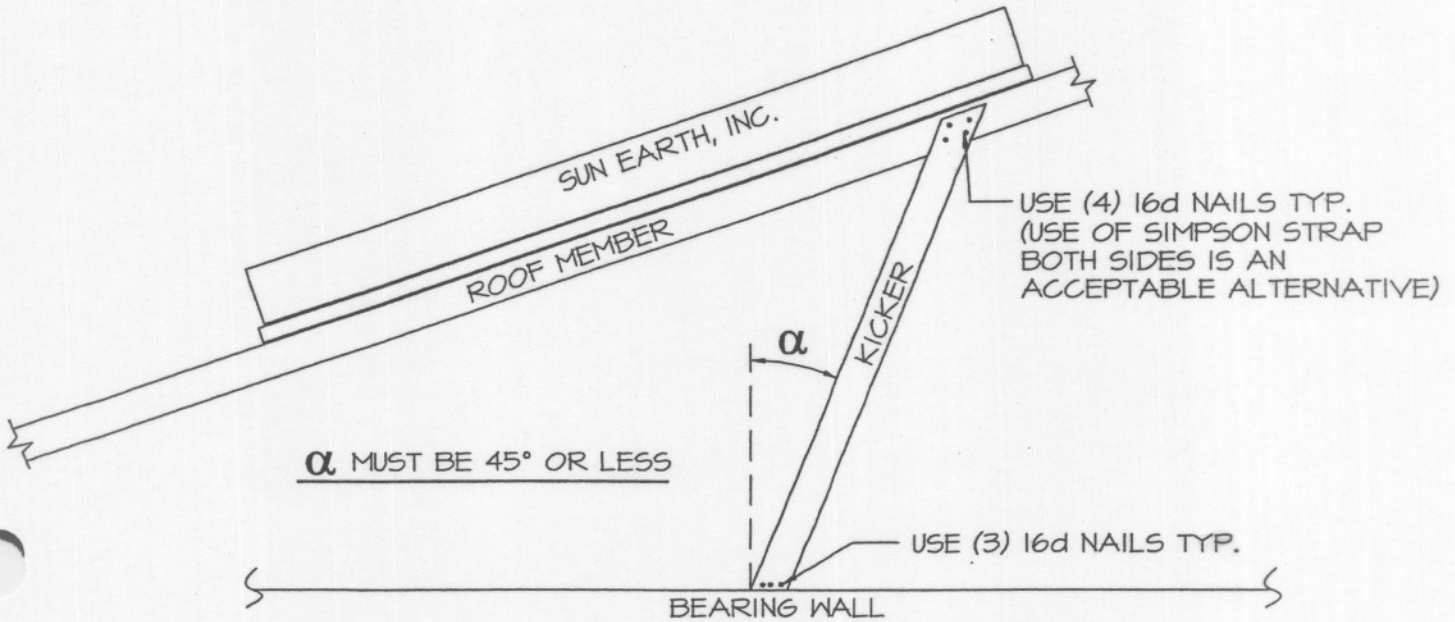
KRISTOPHER COLLINS, P.E.

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LOCATION 4315 SANTA ANA ST. ONTARIO, CA. 91761		
DATE 5/15/2001	JOB NO. .	DWG FILE .
MODEL No. .		

STAMP

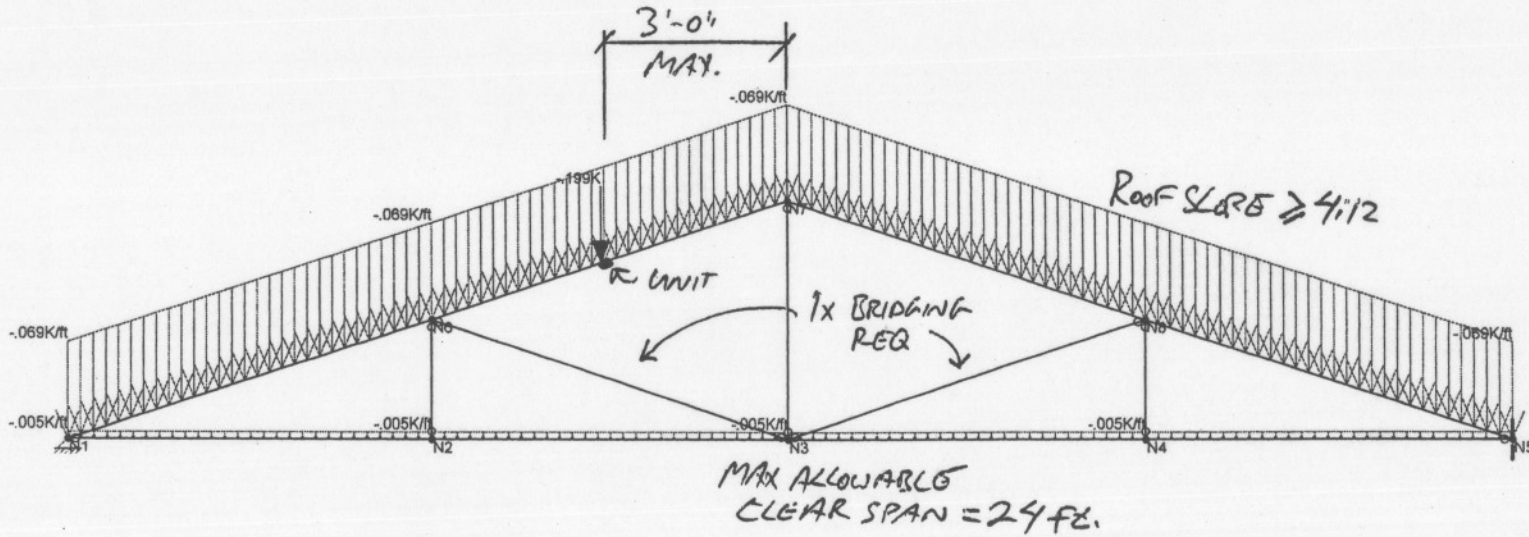
601 S. MILLIKEN AVE., SUITE H
ONTARIO, CA 91761
(909) 605-6865 PHONE
(909) 605-6870 FAX

DESCRIPTION: ALTERNATE FRAMING FOR SOLAR UNIT WHERE EXISTING ROOF FRAMING EXCEEDS THE ALLOWABLE LOAD SPANS. REFER TO LOAD SPAN TABLE FOR SPECIFIC MODEL.



NOT TO SCALE

CONVENTIONAL FRAMING w/ BEARING WALL
PERPENDICULAR TO SOLAR UNIT



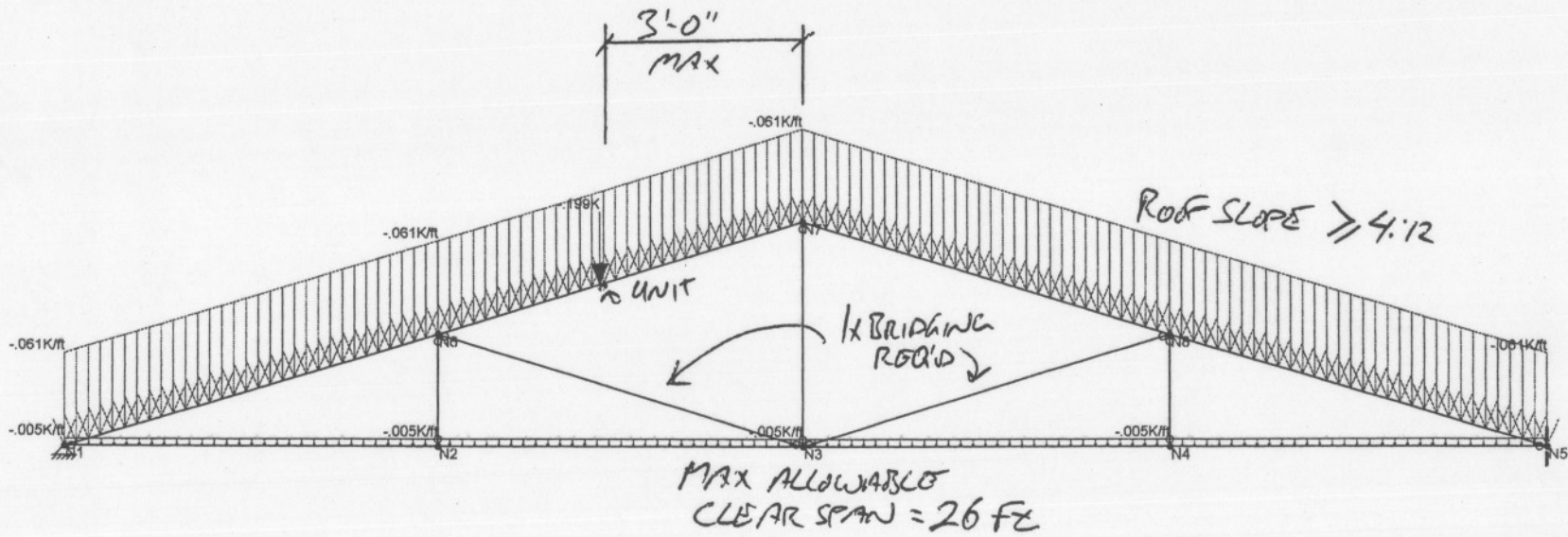
Loads: BLC 1, LIVE
Solution: LC 1, LIVE+DEAD

KRISTOPHER COLLINS, P.E.

SUN EARTH, INC. - COPPERHEART No. CP-40

NORMAL WEIGHT TILE ROOF

EPGCP-40T.R2D



Loads: BLC 1, LIVE
Solution: LC 1, LIVE+DEAD

KRISTOPHER COLLINS, P.E.

SUN EARTH, INC. - COPPERHEART No. CP-40

ASPHALT SHINGLE ROOF (3) LAYERS

EPGCP-40A.R2D

ACORD CERTIFICATE OF LIABILITY INSURANCE

OP ID CA DATE (MM/DD/YYYY)
SUNTR-2 03/01/07

PRODUCER
RMI Insurance Services, Inc.
220 Technology Drive, #110
Irvine CA 92618
Phone: 949-701-4800 Fax: 949-701-4801

INSURED

Suntrek Industries, Inc.
5 Holland Drive - Bldg 215
Irvine CA 92618

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: Clarendon America Insurance Co	
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR ADD'L LTR	INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
A		GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC	CAA001000971	03/01/07	03/01/08	EACH OCCURRENCE \$ 1000000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 50000 MED EXP (Any one person) \$ Excluded PERSONAL & ADV INJURY \$ 1000000 GENERAL AGGREGATE \$ 2000000 PRODUCTS - COMP/OP AGG \$ 1000000
		AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
		GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN AUTO ONLY: EA ACC \$ AGG \$
		EXCESS/UMBRELLA LIABILITY <input type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> DEDUCTIBLE RETENTION \$				EACH OCCURRENCE \$ AGGREGATE \$ \$ \$ \$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below				<input type="checkbox"/> W/C STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
		OTHER				

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

CERTIFICATE HOLDER

CANCELLATION

PROOF OF

Proof Of Insurance

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

[Signature]

STATE OF CALIFORNIA

Contractors State License Board

Pursuant to Chapter 9 of Division 3 of the Business and Professions Code and the Rules and Regulations of the Contractors State License Board, the Registrar of Contractors does hereby issue this license to:

SUNTREK INDUSTRIES INC

to engage in the business or act in the capacity of a contractor in the following classification(s):

C46 - SOLAR

Witness my hand and seal this day,

May 26, 2005

Issued May 25, 2005

Stephen P. Sands
Stephen P. Sands
Registrar of Contractors

859460

License Number

SIGNATURE OF LICENSEE

[Signature]

SIGNATURE OF LICENSE QUALIFIER

This license is the property of the Registrar of Contractors, is not transferrable, and shall be returned to the Registrar upon demand when suspended, revoked, or invalidated for any reason. It becomes void if not renewed.

STATE
 COMPENSATION
 INSURANCE
FUND

P.O. BOX 420807, SAN FRANCISCO, CA 94142-0807

CERTIFICATE OF WORKERS' COMPENSATION INSURANCE

ISSUE DATE: 01-01-2007

GROUP:

POLICY NUMBER: 1763719-2007

CERTIFICATE ID: 29

CERTIFICATE EXPIRES: 01-01-2008
01-01-2007/01-01-2008
 CONTRACTORS STATE LICENSE BOARD
 ATTENTION: WORKMANS COMPENSATION UNIT
 P. O. BOX 26000
 SACRAMENTO, CA 95826

SG

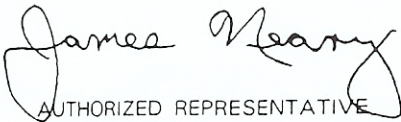
 LIC PERMIT#: 859460
 INCEPTION DATE: 01-01-2007
 DO: SG

This is to certify that we have issued a valid Workers' Compensation insurance policy in a form approved by the California Insurance Commissioner to the employer named below for the policy period indicated.

This policy is not subject to cancellation by the Fund except upon 30 days advance written notice to the employer.

We will also give you 30 days advance notice should this policy be cancelled prior to its normal expiration.

This certificate of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by the policy listed herein. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate of insurance may be issued or to which it may pertain, the insurance afforded by the policy described herein is subject to all the terms, exclusions, and conditions, of such policy.



AUTHORIZED REPRESENTATIVE



PRESIDENT

EMPLOYER'S LIABILITY LIMIT INCLUDING DEFENSE COSTS: \$1,000,000 PER OCCURRENCE.

ENDORSEMENT #1600 - ROY HEINE, P,S,T,VP - EXCLUDED.

ENDORSEMENT #2065 ENTITLED CERTIFICATE HOLDERS' NOTICE EFFECTIVE 01-01-2005 IS ATTACHED TO AND FORMS A PART OF THIS POLICY.

EMPLOYER

 SUNTREK INDUSTRIES INC. DBA: SUNTREK
 INDUSTRIES
 5 HOLLAND STE 215
 IRVINE CA 92618

SG



State Of California
CONTRACTORS STATE LICENSE BOARD
ACTIVE LICENSE



License Number **859460**

Entity **CORP**

Business Name **SUNTREK INDUSTRIES INC**

Classification(s) **C46**

Expiration Date **05/31/2009**

