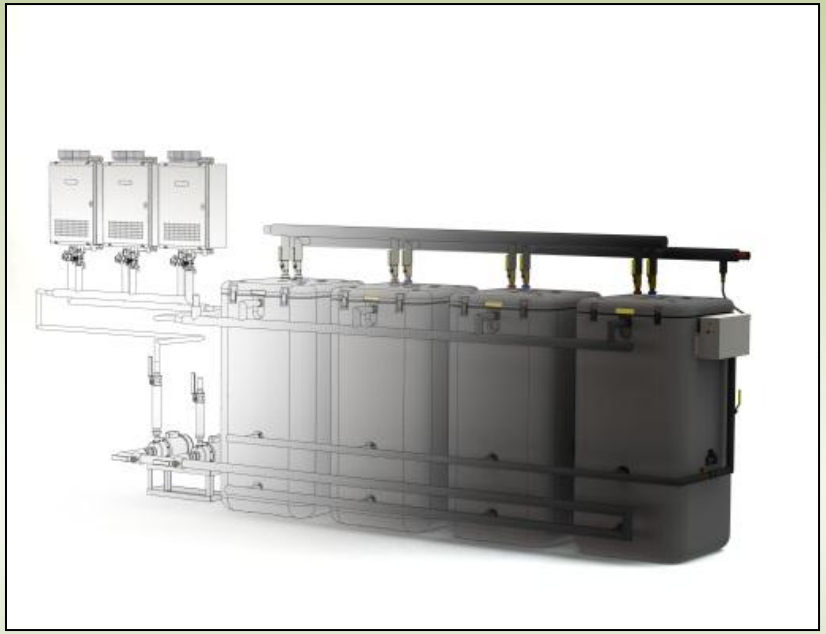
SUN EQUINOX HEATING SYSTEMS



DESIGN PACKAGE

Why a Design Package?

The Design Package was developed by Thom Blake, the owner of our Company. The goal was to give Specifiers a clear understanding of the SUN Equinox Heating System and the different combinations of pre-engineered plug and play systems which can be utilized to provide the best "Hot Water Solution" for your client. Thom was also receiving inquiries from a number of Specifiers from across the United States regarding solar thermal projects which were ambiguous. Adding to this confusion was the fact mechanical contractors, who were bidding on the projects, knew little about solar thermal installations.

The first problem is many of these systems would not work. The designer chose products they were familiar with and tried to piece them together as a solar solution. What they ended up with were systems that will not work, would overheat or at best be very inefficient. These systems would have required a good deal of maintenance and they would have a very short life-cycle.

The second problem is that most of the systems quoted were not sized correctly and commanded huge amounts of collectors. The designers were trying to utilize as many collectors as possible to gain the very maximum solar gain achievable. This would be a recipe for disaster, as the cost of these systems were very high and not within the budget of most concerns. So, when the project was presented to the client, the solar programs were dropped for budgetary reasons.

These issues, if not addressed, could have devastating effects on the solar thermal industry.

The SUN Equinox Heating System Summary

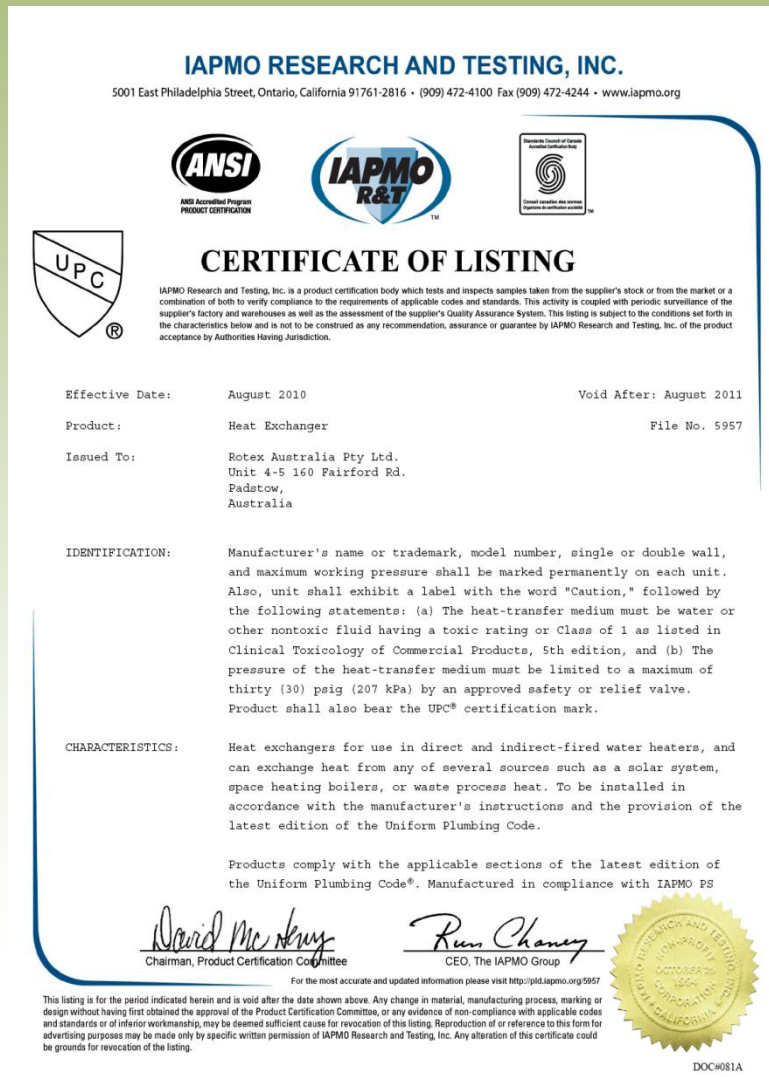
The SUN Equinox Heating System is known in Europe, Asia and Australia as the Rotex Storage Heat Exchanger. It is a revolutionary thermal storage battery. First, and foremost, the SUN Equinox is a stand alone water heating system. The heart of the system is the Rotex tank, which was introduced into Germany twenty years ago. From Germany, the system migrated to solar minded Australia. The Rotex Australian team developed the solar combination systems that are part of this Design Package. These are tested systems, having been in operation for over fifteen years. They are designed and tested for solar integration and will provide years of reliable service.

The atmospheric tank is designed to be a drain back unit. There is no need for glycol and the systems will not overheat. The heat exchanger coils carry the fresh water supply. The bio-safe setting on the controller erases the dangers of legionella viruses. These are important issues to address when designing a hybrid or non-hybrid water heating system.

The SUN Equinox Heating System is a pre-engineered plug and play "Hot Water Solution" built to design specifications and guaranteed to perform. It is preassembled at our factory, broken down into modular parts for shipping and then easily re-assembled at the job site. All the guess work by the contractor is eliminated.

- **40 year life span**
- **25 year tank warranty**
- **Non-corrosive**
- **Non-pressurized**
- **Can resist all weather**
- **Provides hot water and space heating**
- **Legionella killing system**
- **No lime scale**
- **Can be used with any heat source**
- **Very low stand-by loss**
- **Solar thermal and/or heat recovery can be added**
- **Modular system able to meet any water demand**
- **Minimum energy use**
- **Environmentally friendly – No anti-freeze agents**
- **Easy integration into existing systems**
- **Easy installation - lower labor costs**

The SUN Equinox Heating System
IAPMO Approved



IAPMO RESEARCH AND TESTING, INC.

5001 East Philadelphia Street, Ontario, California 91761-2816 • (909) 472-4100 Fax (909) 472-4244 • www.iapmo.org

CERTIFICATE OF LISTING

IAPMO Research and Testing, Inc. is a product certification body which tests and inspects samples taken from the supplier's stock or from the market or a combination of both to verify compliance to the requirements of applicable codes and standards. This activity is coupled with periodic surveillance of the supplier's factory and warehouses as well as the assessment of the supplier's Quality Assurance System. This listing is subject to the conditions set forth in the characteristics below and is not to be construed as any recommendation, assurance or guarantee by IAPMO Research and Testing, Inc. of the product acceptance by Authorities Having Jurisdiction.

Effective Date: August 2010 Void After: August 2011

Product: Heat Exchanger File No. 5957

Issued To: Rotex Australia Pty Ltd.
Unit 4-5 160 Fairford Rd.
Padstow,
Australia

IDENTIFICATION: Manufacturer's name or trademark, model number, single or double wall, and maximum working pressure shall be marked permanently on each unit. Also, unit shall exhibit a label with the word "Caution," followed by the following statements: (a) The heat-transfer medium must be water or other nontoxic fluid having a toxic rating or Class of 1 as listed in Clinical Toxicology of Commercial Products, 5th edition, and (b) The pressure of the heat-transfer medium must be limited to a maximum of thirty (30) psig (207 kPa) by an approved safety or relief valve. Product shall also bear the UPC® certification mark.

CHARACTERISTICS: Heat exchangers for use in direct and indirect-fired water heaters, and can exchange heat from any of several sources such as a solar system, space heating boilers, or waste process heat. To be installed in accordance with the manufacturer's instructions and the provision of the latest edition of the Uniform Plumbing Code.

Products comply with the applicable sections of the latest edition of the Uniform Plumbing Code®. Manufactured in compliance with IAPMO PS

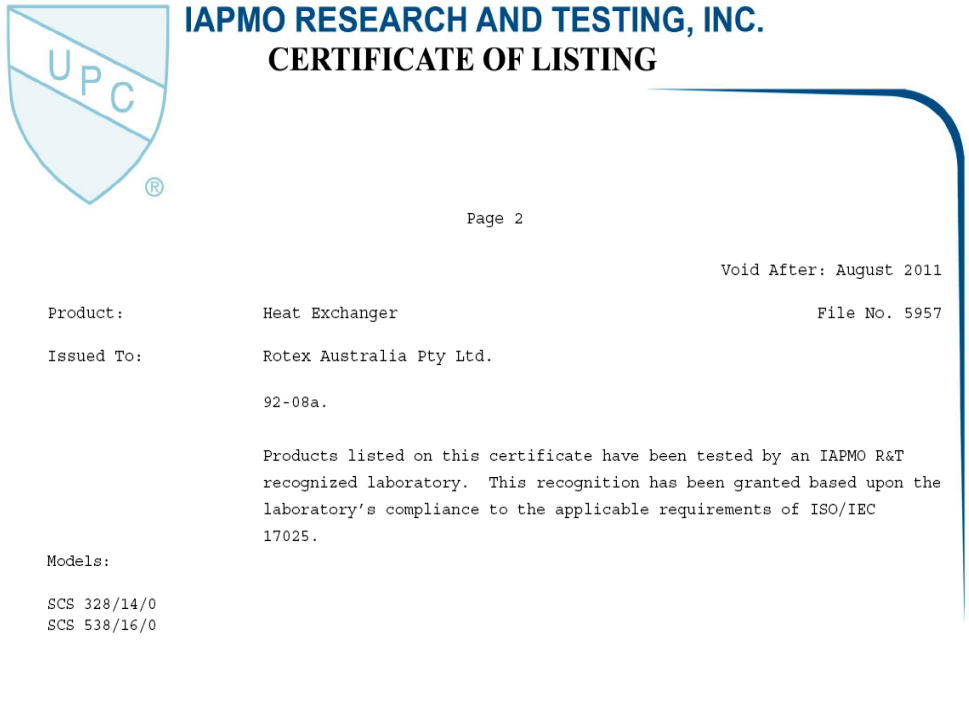
Chairman, Product Certification Committee

CEO, The IAPMO Group

For the most accurate and updated information please visit http://pld.iapmo.org/5957

This listing is for the period indicated herein and is void after the date shown above. Any change in material, manufacturing process, marking or design without having first obtained the approval of the Product Certification Committee, or any evidence of non-compliance with applicable codes and standards or of inferior workmanship, may be deemed sufficient cause for revocation of this listing. Reproduction of or reference to this form for advertising purposes may be made only by specific written permission of IAPMO Research and Testing, Inc. Any alteration of this certificate could be grounds for revocation of the listing.

DOC#081A



IAPMO RESEARCH AND TESTING, INC.

CERTIFICATE OF LISTING

Page 2

Void After: August 2011

Product: Heat Exchanger File No. 5957

Issued To: Rotex Australia Pty Ltd.

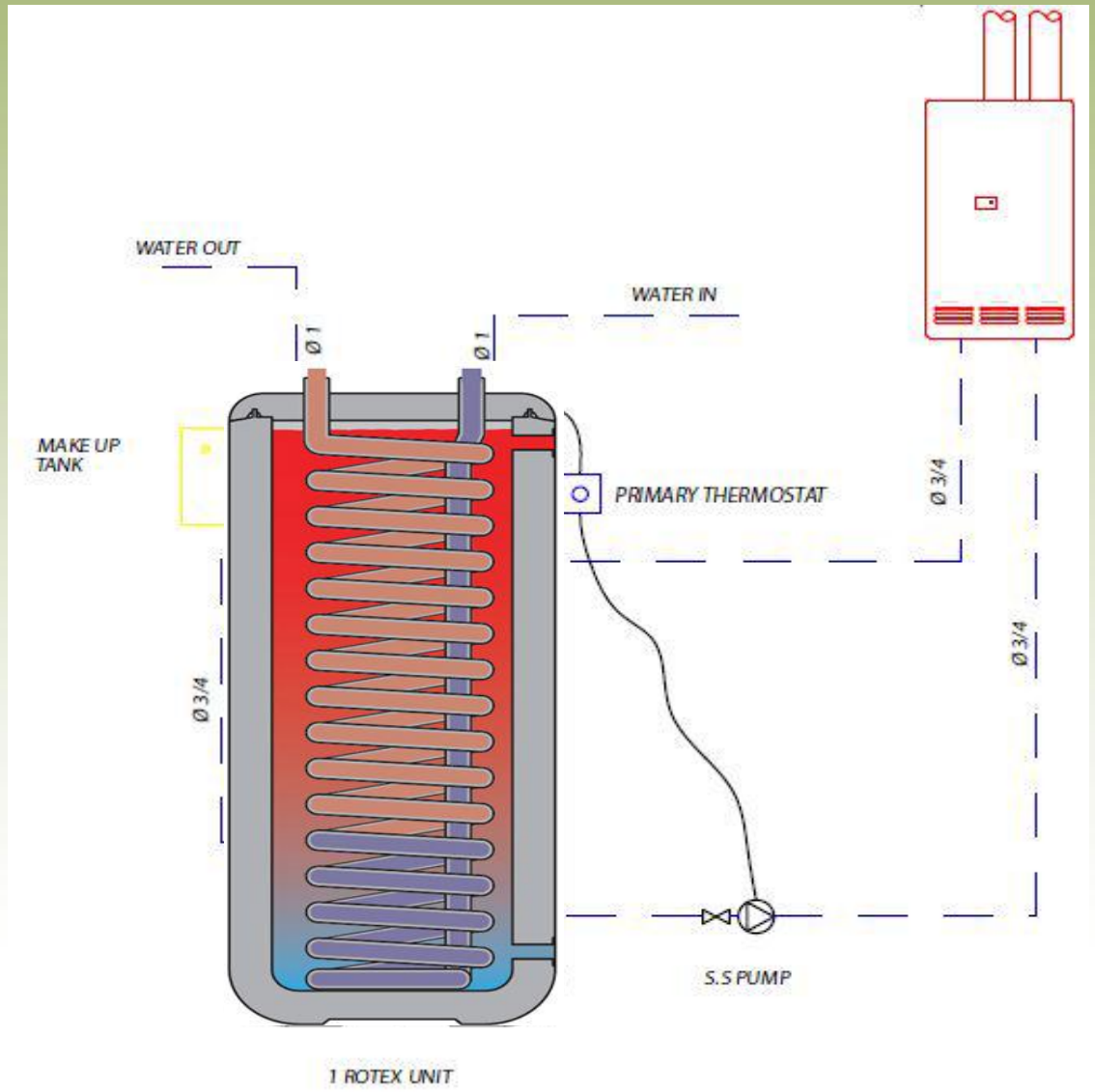
92-08a.

Products listed on this certificate have been tested by an IAPMO R&T recognized laboratory. This recognition has been granted based upon the laboratory's compliance to the applicable requirements of ISO/IEC 17025.

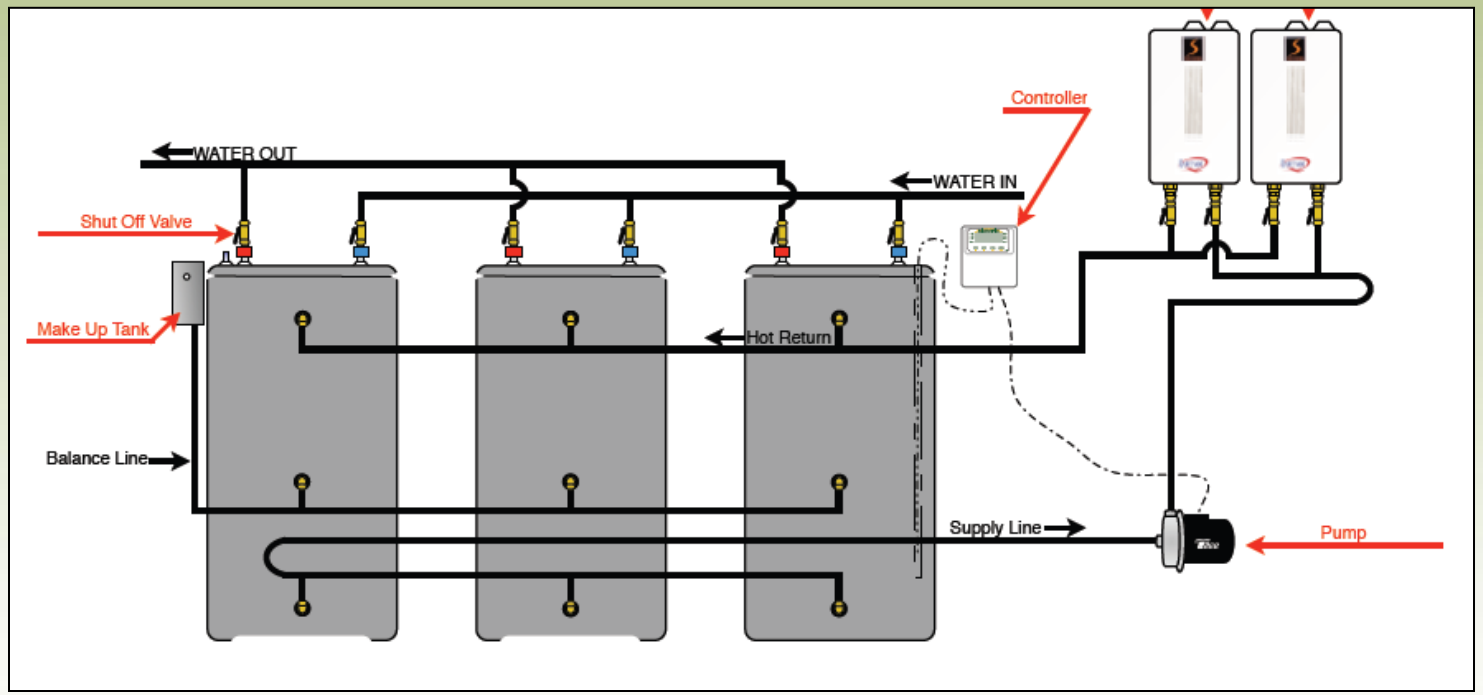
Models:

SCS 328/14/0
SCS 538/16/0

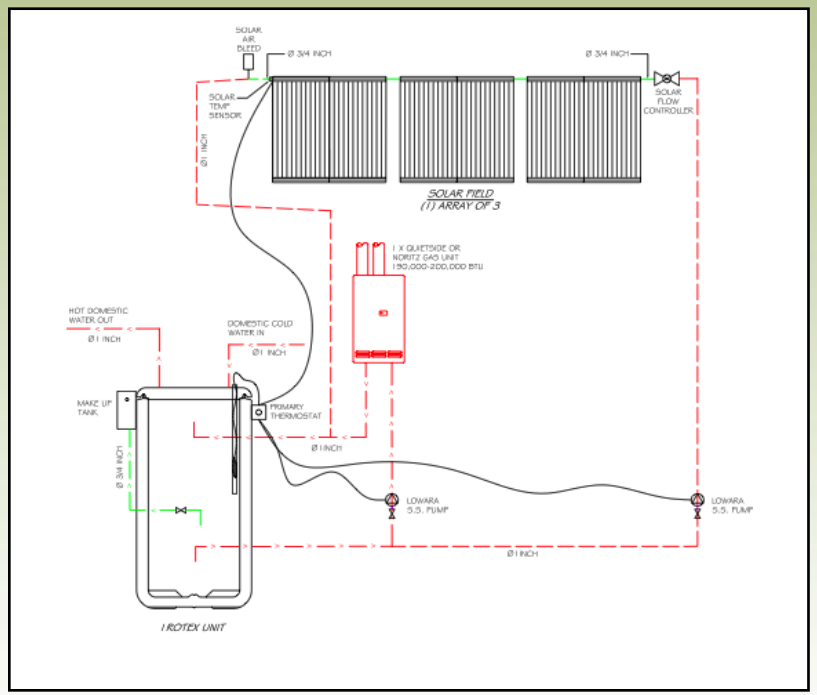
The SUN Equinox Heating System
How It Works

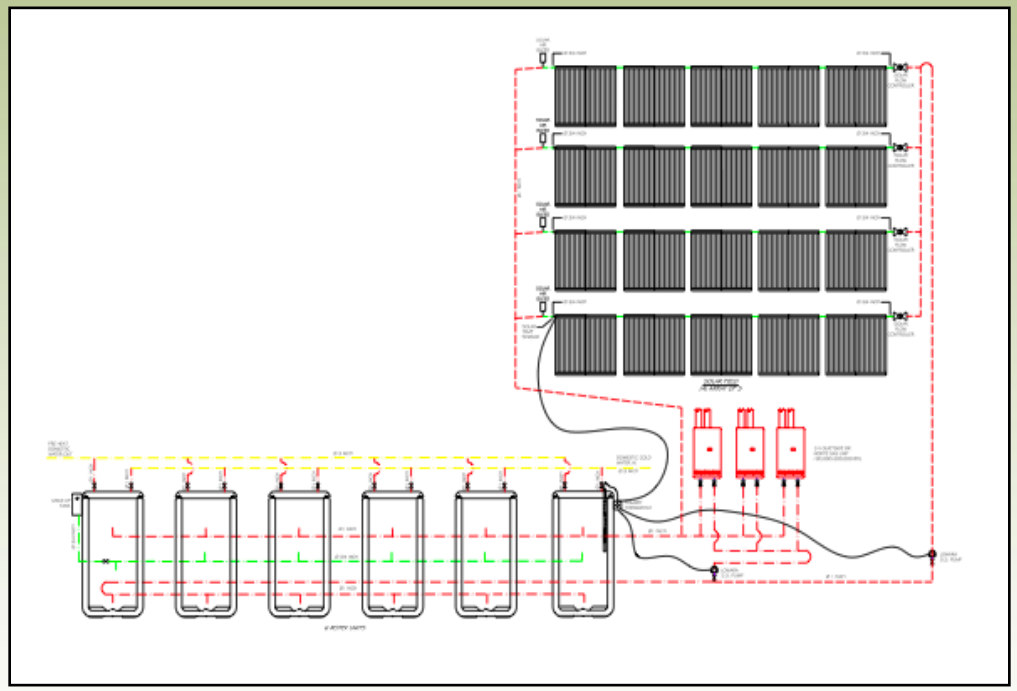


The SUN Equinox Heating System
Stand Alone System

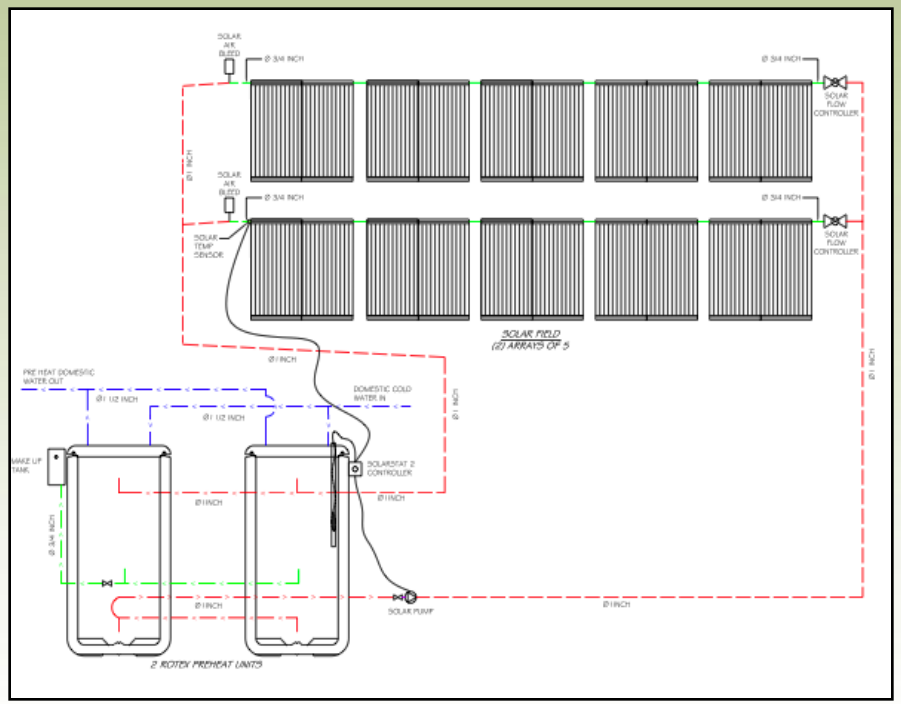


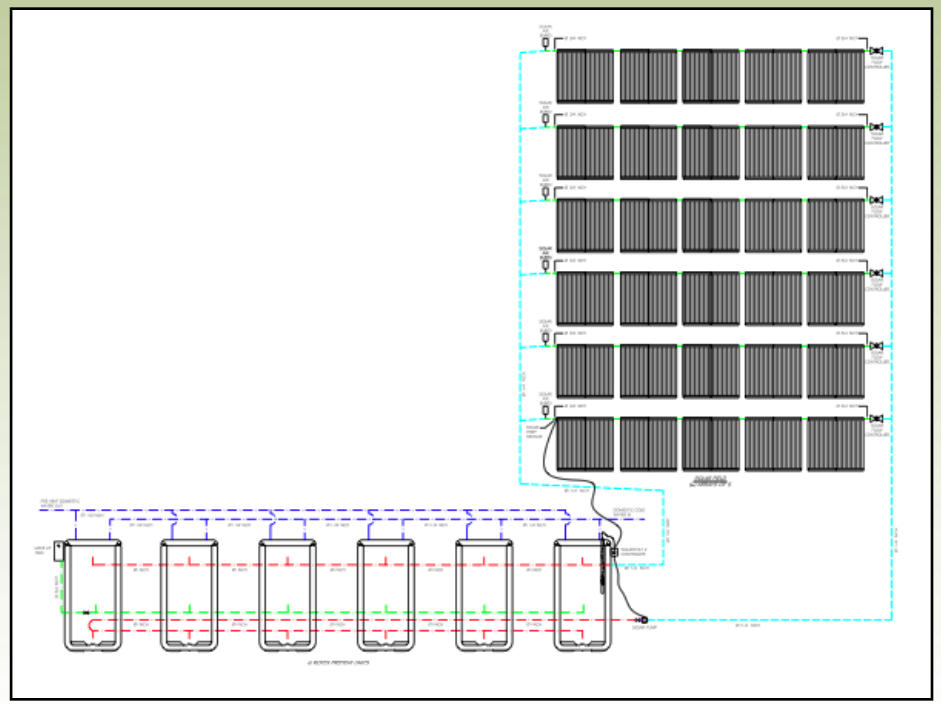
The SUN Equinox Heating System
Combination Heating System



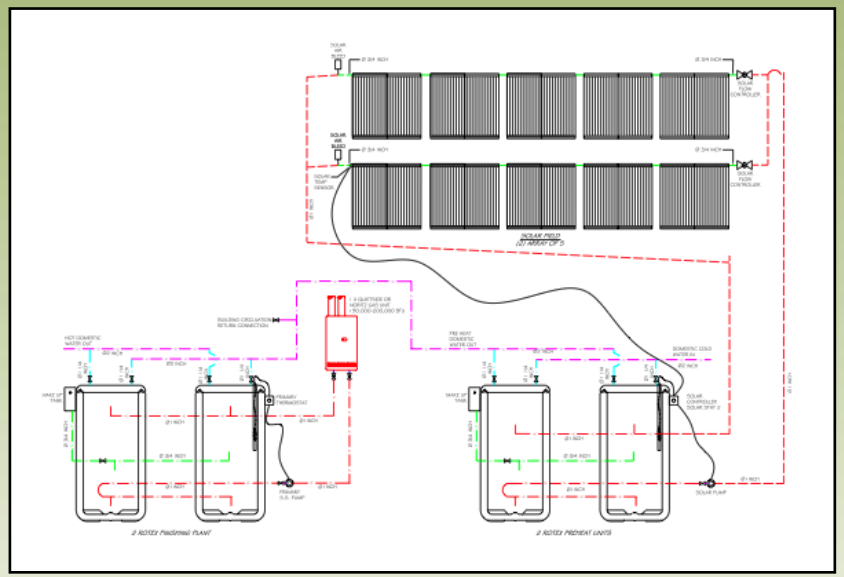


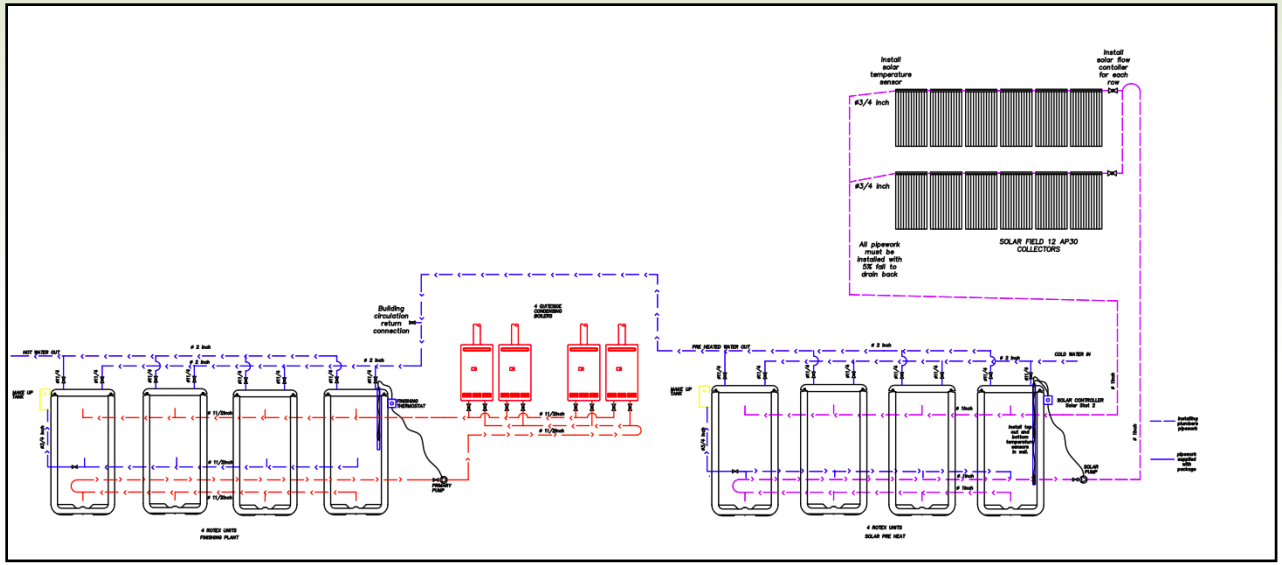
The SUN Equinox Heating System
Solar Preheating System



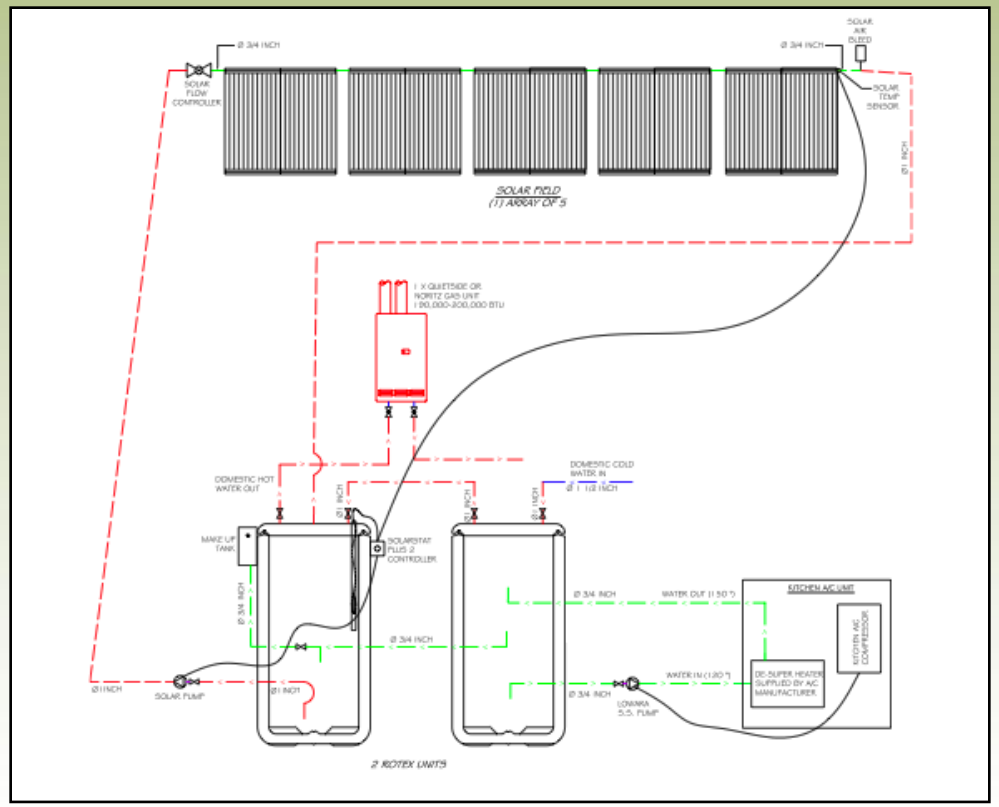


The SUN Equinox Heating System
Combination Solar Preheating and Gas Finishing System

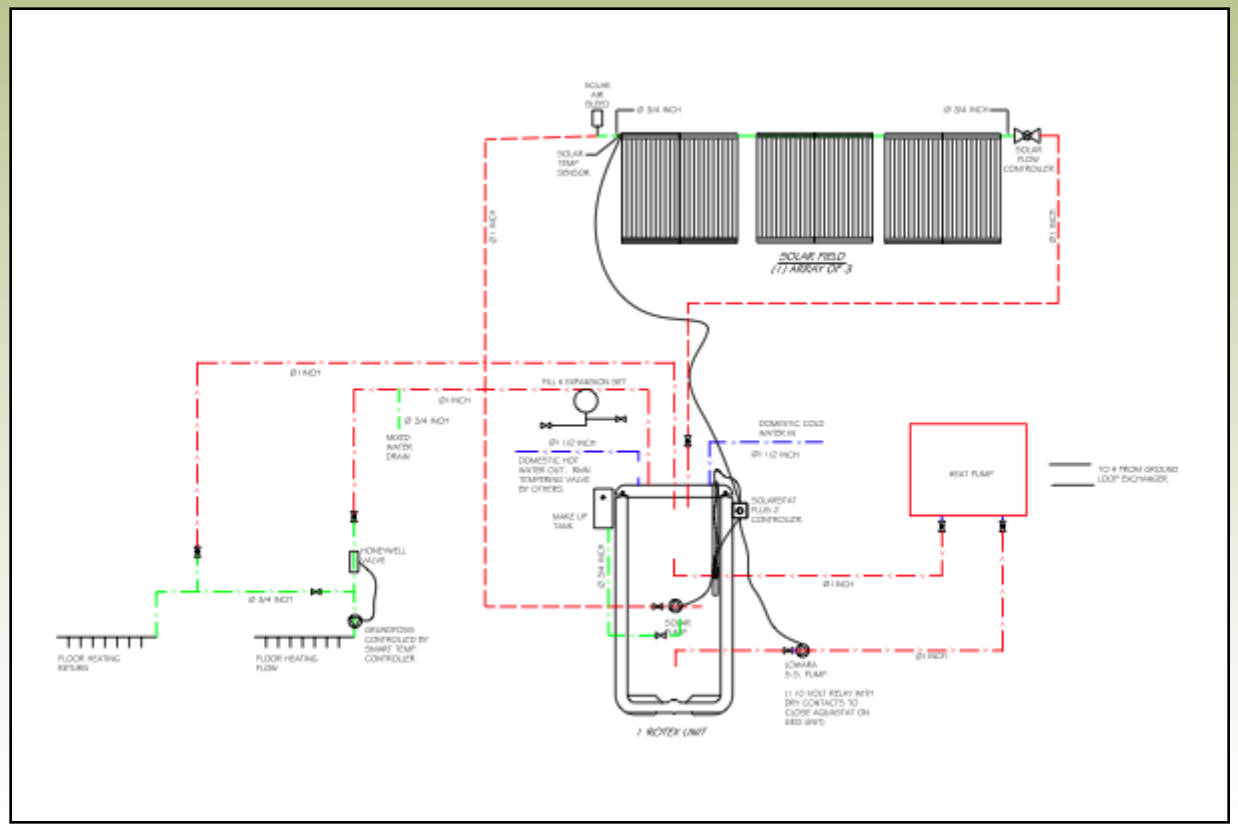




The SUN Equinox Heating System
Combination Solar and Heat Recovery System



The SUN Equinox Heating System
Geo Solar System



SUN EQUINOX HEATING SYSTEMS

Specifications – Page 1

SECTION 22 35 00 – SOLAR WATER HEATER SYSTEM PART 1 - GENERAL

1.1 **SUMMARY**

A. This Section includes the following solar water heating equipment:

1. Solar water storage drain-back tanks.
2. Solar collectors (drain-back).
3. Mounting kits.
4. Controller(s).
5. Piping.
6. Wiring.

1.2 **SUBMITTALS**

A. Product Data: For each type of equipment. Include rated capacities, operating characteristics, furnished specialties, and accessories.
B. Shop Drawings: Diagram power, signal, and control wiring.
C. Installation instructions.
D. Operation and maintenance data.
E. Warranty.

1.3 **QUALITY ASSURANCE**

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. ASME Compliance:
C. Comply with NSF 61, "Drinking Water System Components – Health Effects; Sections 1 through 9" for all components that will be in contact with potable water.

1.4 **WARRANTY**

A. Special Warranty: Manufacturer shall agree to repair or replace components of solar water heating systems that fail in materials or workmanship within specified warranty period.

Specifications – Page 2

1. Failures include, but are not limited to, the following:
a. Structural failures including storage tanks, collectors and support.
b. Faulty operation of controls.
c. Deterioration of metals, metal finishes, and other materials beyond normal use.
d. Producing rusty water.

2. Warranty Period(s): From date of Substantial Completion:
a. Solar collectors -10 year.
b. Water heat exchanger – 5 year.
c. Storage tank – 25 years.
d. Controls, pump, and piping – 1 year.

PART 2 - PRODUCTS

2.1 **SOLAR COLLECTORS**

A. Solar Collectors shall utilize twin glass evacuated tube as the solar absorber. Copper heat pipes shall be used to transfer the heat from within the evacuated tube to a drain back heat transfer manifold, with metal fins positioned within the evacuated tube to aid heat transfer and hold the heat pipes firmly in place.

B. The heat transfer manifold consists of a copper header pipe through which heat transfer liquid (water) is circulated. The header is designed with dry contact ports in which the heat pipes plug, allowing efficient heat transfer. There is no water inside the evacuated tubes and no direct contact between the heat pipes and the heat transfer liquid; as such the system is suitable mains pressure.

C. Continuous, insulated, galvanized steel mounting rails as indicated by Pate, Thycurb, or approved equal.

D. Basis of design is ten collectors, each consisting of 30 tubes, nominally 80” x 86” with an absorber area of 25.8 sq. ft. and an Aperture area of 30.3 sq. ft. and a fluid capacity of 24 fluid oz.

E. Copper header shall be constructed of minimum 99.93% copper with lead content of less than 0.003%;

1. Recommended flow rate: 0.76 gpm per collector.
2. Design flow rate: 3.04 gpm at 0.52 psi drop (for four collectors).
3. Maximum Flow rate: 3.9 gpm.
4. Maximum operating pressure: 116 psi.

Specifications – Page 3

F. Evacuated tubes:

1. Material: Borosilicate glass 3.3.
2. Absorber material: Graded Index coating Al-N on Al on glass.
3. Absorbance: >92%.
4. Emittance: <8%.
5. Stagnation temperature: >395°F.

G. Heat pipes:

1. Material: 99.99% oxygen free copper.
2. Heat transfer liquid: Purified water.
3. Maximum working temperature: 577°F.
4. Startup temperature: <86°F.
5. Installation angle: 52 - 60° from horizontal.

H. Manifold:

1. Casing shall be 0.8 mm Aluminum with black powder coating.
2. Insulation shall be glass wool, minimum R = 6.6.

I. Mounting hardware:

1. Frame: 439 Stainless Steel – 0.059" thick, minimum.
2. Tube clips: 301 Stainless Steel.
3. Bolts, washers, and nuts, 304 stainless steel.
4. Wood screws (to mounting rails): 304 stainless steel.

J. Performance: SPF Report #C632LPEN:

1. Stagnation: 477°F when G=317 Btu/sq. ft., ambient temp = 86°F.
2. Efficiency: ŋo (-) = 0.717, a1 (W/m2K) = 1.52, a2 (W/m2K2) = 0.0085, G = 800W/ m2 based on absorber area.

Specifications – Page 4

2.2 **SOLAR SYSTEM STORAGE TANKS**

A. Solar Storage tanks shall store 132 gallons of water at atmospheric pressure and be equipped with heat exchanger tubing.

B. Storage tanks shall be drain back.

C. Materials:

1. Inner tank: Polypropylene.
2. Insulation: 3” thick polystyrene foam.
3. Outer shell: Polypropylene.
4. Heat exchanger: Main coil 144 lf. Secondary coil 104 lf. Stainless steel corrugated tubing.

2.3 **PIPING**

A. Provide type M (minimum) copper tubing from tanks to collectors with the following:

1. 1-1/2” thick fiberglass insulation.
2. PVC Jacket for piping above roof.
3. Automatic air vent at system high point.

2.4 **PUMP**

A. Provide circulating pump, 120v/ 1 ph.

2.5 **CONTROLS**

A. Provide control panel(s) and all required sensors and wiring. All 120 volt wiring shall run in conduit in accordance with division 24.

Specifications – Page 5

PART 3 - EXECUTION

3.1 **INSTALLATION**

A. Install collectors in accordance with manufacturer's instructions.

B. Install tanks in accordance with manufacturer's instructions.

C. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.3 **FIELD QUALITY CONTROL**

A. Engage a factory-authorized service representative to commission installation.

B. Perform the following field tests and inspections:

1. Leak Test: After installation, test for leaks. Repair leaks and retest until no leaks exist.
2. Operational Test: After electrical circuitry has been energized, confirm proper operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.4 **DEMONSTRATION**

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain commercial water heaters. Refer to Division 01 Section "Demonstration and Training."

B. Provide a written report, through channels and on company letterhead, that ignition is proper, safety controls have been checked, and operating controls are set and functioning properly. Report the actual and design water flow.

END OF SECTION 22 35 00

SUN EQUINOX HEATING SYSTEMS

Submittals - Page 1

SUBMITTAL DATA INFORMATION

Job: _____ Engineer: _____ Contractor: _____ Rep: _____

SUN EQUINOX MAXI TANK — SINGLE COIL

FEATURES

Atmospheric Vessel: The water inside the storage tank is unpressurized, allowing for a long tank life.

Plastic Construction: The storage tank itself is made entirely of plastic, the inner and outer walls are impact-resistant Polypropylene (PP), the space in-between is filled with high heat insulating foam.

Low Heat Loss: The storage tank material (PP) and the all-round heat insulation using PU foam keep these heat losses to a minimum.

Solar Ready: The unit can accommodate any solar collector as long as it is drain back, the unit also functions as a drain back tank, so there is no need for an additional tank.

Water Hygiene: Domestic water is exclusively located in one pipe so that deposits of sludge, rust or other sediments, as can occur in containers with a large volume, are not possible. The water stored first is also taken out first (First-in-first-out principle).

Low Scaling: On commissioning, the storage tank is filled with tap water without the use of additives. This water serves as the heat storage medium and is not consumed during operation. Thus, on the storage water side, the lime contained in the water can only be deposited once. All the heat exchanger pipes in the storage tank therefore remain free of lime scale. In addition, on the inner surface of the heat exchanger pipes, there is only a low tendency to scaling because of the high flow speeds when water is removed.

Modular Configuration: 1-20 units can be linked together and act as a large thermal storage cell.

SPECIFICATIONS

Storage Tank Volume:
132 Gallons

Empty Weight:
189 lbs

Weight:
1291 lbs

Max. permissible storage tank water temperature:
185 °F

Heat Exchanger Length:
144 ft.

Heat Exchanger Capacity:
7.66 Gallons

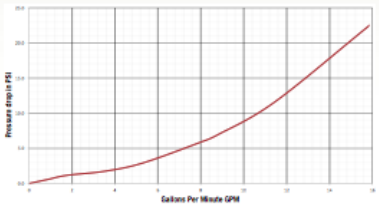
Heat Exchanger Maximum Operating Pressure:
145 PSI

Heat Exchanger Material:
Corrugated Stainless Steel

Heat Exchanger Surface Area:
64.58 (Sq. ft.)

Average specific heat capacity:
2860 W/K

HEAT EXCHANGER PRESSURE DROP OFF CHART



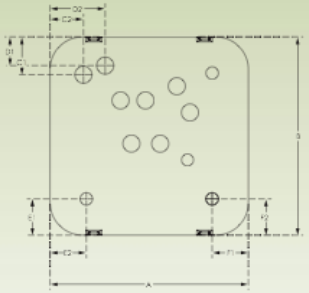
PARTS DIAGRAM

ITEM #	ITEM DESCRIPTION	NUMBER USED	MATERIALS OF CONSTRUCTION
1	Domestic Cold Water Supply	1	Brass
2	Domestic Hot Water Supply	1	Brass
3	Tank Lid	1	Polypropylene
4	Lid Fastener	4	Plastic
5	Fastener Screw	4	Stainless Steel
6	Rubber Seal	1	Rubber
7	Sensor Well	1	Aluminum
8	Heat Exchanger Coil	1	Stainless Steel
9	Tank	1	Polypropylene
10-12	Side Port Connections	3	Plastic
13	Overflow Port	1	Plastic

LID DIMENSIONS

ITEM #	DESCRIPTION	OFFSET (in.)
A	Width	31.10
B	Height	31.10
C1	Domestic Hot Water Supply	5.94
C2		5.24
D1	Domestic Cold Water Supply	4.50
D2		8.65
E1	Sensor well port	5.69
E2		5.69
F1	Sight glass port	5.69
F2		5.69

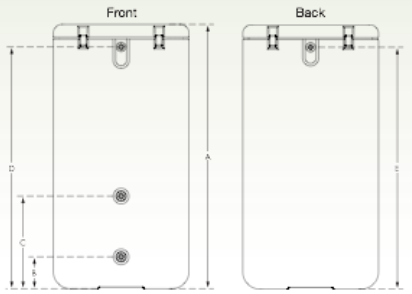
Actual size and weight may vary by configuration and manufacturing process.



DIMENSIONS DIAGRAM

ITEM #	DESCRIPTION	LENGTHS (INCHES)
A	Tank Height	60.62
B	Side Port	7.31
C	Side Port	21.25
D	Side Port	55.48
E	Overflow Port	55.48

Actual size and weight may vary by configuration and manufacturing process.

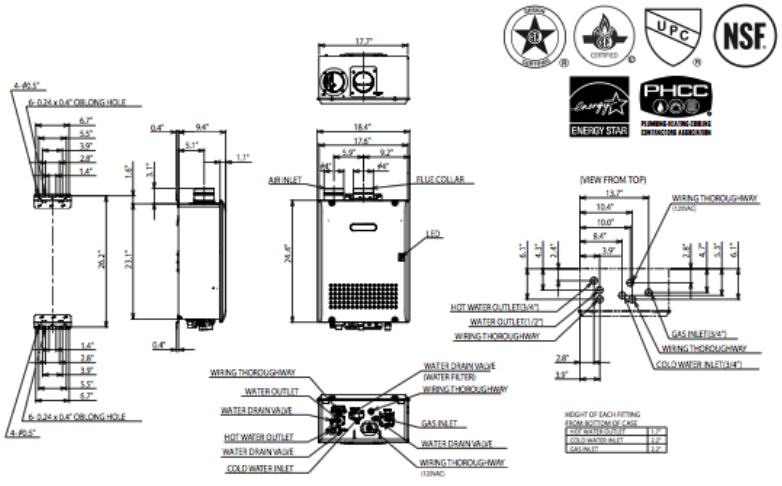


Solar Usage Now | 12120 Water St., Harlan Indiana, 46743 | phone: (260)-657-5605 | fax: (260)-657-1004
email: info@solarusagenow.com | website: www.solarusagenow.com

Submittals - Page 2

NORITZ

Model N-0841MC-DV
Condensing Tankless Water Heater



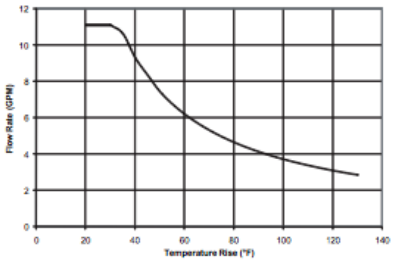
* This model is eligible for the Federal tax credit of up to 30% of the water heater and installation costs (up to $1,500) when installed in a residence between 1/1/2009 through 12/31/2010.

Item		Specification
Model Name		N-0841MC-DV
Type	Installation	Indoor, Wall Hung
	Air Supply/Exhaust	Direct Vent (Sealed Combustion)
Ignition		Direct Ignition
Operating Water Pressure		15 - 150 PSI
Minimum Flow Rate		0.5 GPM
Gas Supply Pressure		NG : 4.0" - 10.5" LP : 8.0" - 14.0"
Dimensions		24.4"(Height) x 18.4"(Width) x 9.4"(Depth)
Weight		73 (pounds)
Water Holding Capacity		0.5 Gallon
Connection Sizes	Water Inlet	3/4"
	Hot Water Outlet	3/4"
	Gas Inlet	3/4"
	Condensate Drain	1/2"
Power	Supply	120 VAC (60Hz)
	Consumption	NG: 115W LP: 120W Freeze Prevention 213W
Material	Casing	Stainless Steel
	Flue Collar	Stainless Steel
	Heat Exchanger	Copper Sheeting, Copper Tubing (Primary), Stainless Steel (Secondary)
Safety Devices		Flame Rod, Thermal Fuse, Lightning Protection Device (ZNR), Overheat Prevention Device, Freezing Prevention Device, Fan Rotation Detector, Neutralizer Overfill Sensor
Included Accessories		Remote Controller, Remote Controller Cord, Anchoring Screws, Condensate Neutralizer
Optional Accessories		Isolation Valves (#IK-WV-4), Remote Controller Outdoor Junction Box (#RC-OJ8), ScaleShield (#SS-HB-1), Quick-Connect Cable (#QC-1M), Multi-System Controller (#SC-201-6M, -12M, -24M)

NORITZ AMERICA CORPORATION
11160 Grace Avenue, Fountain Valley, CA 92708 Tel. 1-866-7NORITZ www.noritz.com

Model N-0841MC-DV
Product Performance

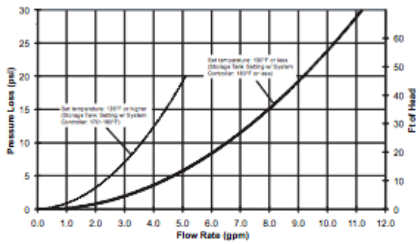
Flow Rates



Temperature Rise (°F)	20	30	40	45	50	60	70	80	90	100	110	120	130
Flow Rate (GPM)	11.1	11.1	9.3	8.4	7.4	6.2	5.3	4.6	4.1	3.7	3.4	3.1	2.9

*For peak flow rates in shaded areas, contact Noritz for proper setting.

Pressure Loss



Item		Maximum Performance	Minimum Performance
Gas Consumption	NG	199,900 btuh	11,000 btuh
	LP	199,900 btuh	11,000 btuh
Thermal Efficiency		NG: 93.3% LP: 93.9%	
Energy Factor		NG: 0.92 LP: 0.94	
Hot Water Capacity	35°F Rise	10.6 Gal/min.	
	45°F Rise	8.4 Gal/min.	
	77°F Rise	4.8 Gal/min.	
	100°F Rise	3.7 Gal/min.	
Capacity Range		0.5 - 11.1 Gal/min.	
Temperature Settings		100-150°F (In 5°F intervals) ,160, 170, 180°F (14 Options)	
Default Temperature Options		120, 130, 140, 180°F (Default is 120°F)	
Features		Quick-Connect (2 units), Multi-System (Up to 24 units), Pump Control, Temperature Lockout, High Elevation Adjustment	
Warranty		12/5- Residential, 3/5- Commercial or Circulation Use	
Approvals		CSA, UPC, NSF, Low NOx Approved By SCAQMD, Suitable for Installation in a Manufactured (Mobile) Home	

Rev. 2/09

Submittals - Page 3

solarH2Ot

SOLARHOT Equinox 4x8

Size	4x6.5	4x8	4x10
	Length: 80.3 in	96 in	120 in
	Width: 47.2 in	47.2 in	47.2 in
	Depth: 3.9 in	3.9 in	3.9 in
Weight	98 lbs	121 lbs	137 lbs
Gross Front Area	26.4 sq ft	31.5 sq ft	39.4 sq ft
Aperture	24.5 sq ft	30.0 sq ft	36.7 sq ft
Volumetric Fluid Capacity	1.0 gal	1.1 gal	1.2 gal
Enclosure Material	Black Anodized Aluminum		
Insulation	1 inch polyisocyanurate, 1 inch glass wool + radiant barrier		
Gaskets	EPDM rubber		
Glazing	4mm low iron tempered glass with transmittance of 91.6%		
Absorber	Type: harp style		
	Material: copper waterway with aluminum fin		
	Number of Flow Tubes: 11		
	Flow Pattern: parallel		
	Riser Tube: 1/2 inches OD		
	Header Tube: 1-1/8 inch OD		
	Riser Spacing: 3.89 inches		
Absorber Coating	Vapor Deposition Selective Coating		
	Absorptivity: 95%		
	Emissivity: 5%		
Recommended Flow Rate	0.8-4.5 gallons per minute		
Pressure Rating	Maximum pressure: 150 PSI		
Energy Collection	Y intercept: 0.729		
	Slope: -0.757 BTU/(hr ft² °F)		

		4x6.5			4x8			4x10	
Category	Clear	Mildly Cloudy	Cloudy	Clear	Mildly Cloudy	Cloudy	Clear	Mildly Cloudy	Cloudy
A	40.7	30.8	21.0	45.1	34.1	23.2	56.4	42.7	29.0
B	35.9	26.0	16.2	40.9	29.9	19.0	51.2	37.5	23.8
C	29.0	19.3	9.8	34.6	23.9	13.2	43.3	29.9	16.6
D	16.3	7.5	0.9	22.7	12.8	3.8	28.5	16.1	4.8
E	5.6	0.2	0.0	12.1	3.9	0.0	15.2	5.0	0.0

SOLARHOT I PO Box 1154 Morrisville, NC 27560 I 919.439.2387 I http://www.solarhotusa.com

Apricus AP-30 Solar Collector

Product Specifcations Sheet

Apricus SOLAR HOT WATER

Overview

Apricus solar collectors use high efficiency twin-glass evacuated tubes to absorb solar energy and convert it into usable heat. Freeze protected heat pipes transfer heat from within the evacuated tube up to an insulated copper header pipe through which a heat transfer liquid is circulated.

Suitable for domestic or commercial applications, Apricus solar collectors maintain strong efficiency levels even at high delta-t temperatures. For this reason Apricus collectors are ideal for cold regions and high temperature applications.

Physical Specifications

Overall Length 1980mm / 80"	
Overall Height	156mm / 6.14"
Overall Width	2196mm / 86.4"
Absorber Area 2.4m	² / 25.8ft²
Aperture Area 2.82m	² / 30.3ft²
Gross Area 4.35m	² / 46.8ft²
Gross Dry Weight 95kg / 209lb	
Fluid Capacity 710ml / 24fl oz	
Max Operating Pressure	800kPa / 116psi
Stagnation Temperature < 220	°C / 432°F

Performance Variables (aperture area)

Eta0 (y-intercept) 0.656	
a1 [W/(m²K)] 1.4*	
a2 [W/(m²K²)]	0.007*
Heat Capacity [kJ/](m²/K)] 44.89	
Peak Power Output 1850W / 6312Btu	

Key Material Specifications

Evacuated Tubes Borosilicate 3.3 Glass	
Absorber	Al-N on Al on Glass
Heat Pipes	High Purity Copper
Heat Transfer Fins	Aluminum
Rubber Components	HTV Silicone Rubber
Mounting Frame	439 Stainless Steel
Manifold Casing	5005-H16 Aluminum

Installation Guidelines

Max Flow Rate 15L/min / 3.9gpm	
Max Tubes in Series	150 tubes
Install Angle Range	20-70

* Performance values internally verified

Internationally Certified Product

 AS-1.2.5.6-PB-1.3

Submittals - Page 4

GRUNDFOS

Wet-Rotor, In-Line, Single Stage, Maintenance Free, Circulator Pumps

Submittal Data

SERIES UP
CLOSED SYSTEMS
UP15-100F

JOB or CUSTOMER:	
ENGINEER:	
CONTRACTOR:	
SUBMITTED BY:	DATE:
APPROVED BY:	DATE:
ORDER NO:	DATE:
SPECIFICATION REF:	

QUANTITY	TAG NO.	MODEL NO.	GPM	FEET	VOLT	PHASE	COMMENTS

Technical Data

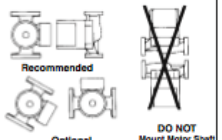
FLOW RANGE: 0 to 8.5 U.S. GPM **MIN. FLUID TEMPERATURE:** 36°F (2°C)
HEAD RANGE: 0 to 33.5 Feet
MOTORS: 2 Pole, Single Phase
MAXIMUM FLUID TEMPERATURE: 205°F (96°C), Maximum design temperature.

Ambient Air Temp.	95°F (35°C)	130°F (55°C)	140°F (60°C)	160°F (71°C)
Maximum Water Temp.	205°F (96°C)	195°F (90°C)	185°F (85°C)	175°F (79°C)

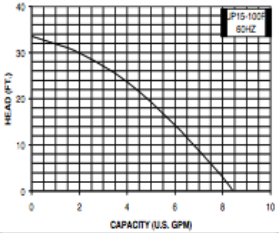
MAXIMUM WORKING PRESSURE: 145 PSI
MINIMUM REQUIRED INLET PRESSURE:

Temperature	205°F (96°C)	190°F (88°C)	140°F (60°C)
Pressure	20 Ft. (11m)	9.0 Ft. (2.8m)	3.0 Ft. (0.9m)
	8.7 psi	4.0 psi	1.3 psi

Mounting Positions



FOR INDOOR USE ONLY

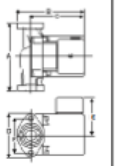


Materials of Construction

DESCRIPTION	MATERIAL
Inlet Cone, Bearing Plate, Bearing Retainers, Rotor Can, Rotor Cladding, Shaft Retainer.	304 Stainless Steel
Stator Housing	Aluminum
Shaft, Upper & Lower Radial Bearings	Aluminum Oxide Ceramic
Thrust Bearing	Metal Impregnated Carbon
O'Ring & Gaskets	EP (Ethylene Propylene Rubber)
Pump Housing (Volute)	Cast Iron
Impeller	PP (Polypropylene 30% Glass Filled)
Terminal Box	Noryl®

Dimensions, and Weights

Closed System Model	A	B	C	D	E	F*	Connection Type and Sizes	Shipping Wt. (Lbs.)
UP15-100F	6 1/8	5 1/4	4	4 3/16	3 1/4	3 5/32	Flange -(2) 1/2" Dia. Bolt Holes	7 1/4



Electrical Data

MODEL	VOLTS	AMPS	WATTS	HP	CAPACITOR
UP15-100F	115	1.1	135	1/25	12µF/160V

NOTES: All dimensions are in inches. "F*" dimension is the flange bolt centerline to centerline. Subject to change without notice.

Grundfos Pumps Corporation • 17100 W. 118th Terrace • Olathe, KS 66061
Customer Service Phone: 800.333.7366 • Fax: 800.333.7363
Canada: Oakville, Ontario • Mexico: Apodaca, N.L.
Visit our website at www.grundfos.com

L-UP-TL-045 Rev. 03/02
PRINTED IN USA

Taco

Submittal Data Information

301-1044

SCX1700 Stainless Steel Close-Coupled Centrifugal Pump (½ to 2½ HP)

Effective: January 1, 2001 **Supersedes:** September 15, 1994

Job: _____ Engineer: _____ Contractor: _____ Rep: _____

ITEM NO.	MODEL NO.	IMP. DIA.	G.P.M.	HEAD/FT.	H.P.	ELEC. CHAR.

FEATURES

- **Compact Design:** Close-coupled design saves space and simplifies maintenance and installation.
- **Superior Materials of Construction:** Complete AISI 304 Stainless Steel housing for corrosion resistance, smooth flow path, quality appearance, and improved strength and ductility.
- **Installation Flexibility:** Can be mounted horizontally or vertically.
- **High Efficiency Impeller:** Enclosed impeller of precision molded Noryl with ultra-smooth flow ports maximizes performance and efficiency.
- **Mechanical Seal:** Standard carbon on ceramic seal faces with Viton elastomers. Optional seal faces and elastomers are available to handle a variety of working fluids.
- **Motors:** Rugged ball bearing design NEMA standard open drip proof or totally enclosed, fan cooled motors are available for continuous duty under all operating conditions.
- **Drain/Vent Ports:** Stainless steel vent and drain ports facilitate priming and draining the pump.

APPLICATIONS

Specifically designed for a broad range of general applications traditionally requiring various materials such as all iron, bronze fitted or all bronze construction.

- Water circulation
- Booster service
- Liquid transfer
- Jockey pumps
- OEM applications
- General water services

SPECIFICATIONS

- **Capacities to:**

  100 GPM
- **Heads to:**

  135 feet TDH
- **Working pressures to:**

  125 PSIG
- **Maximum temperatures to:**

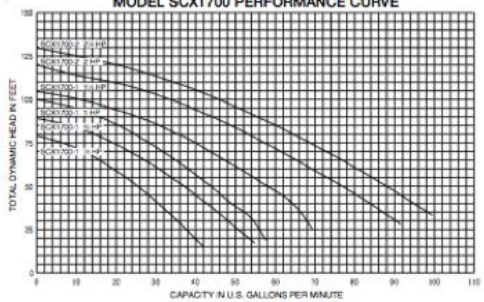
  185°F (85°C)
- **Direction of rotation:**

  Clockwise when viewed from the motor end
- **Motors:**

  NEMA 56J Frame, ½ through 3 HP
  Single phase
  Voltage 115/230 VAC ODP and TEFC
  Three phase
  Voltage 208-230/460 VAC ODP and TEFC

NOTE: Overload protection must be provided. Contactor with overload for 1-phase or starters with heaters for 3-phase units ordered separately.

MODEL SCX1700 PERFORMANCE CURVE



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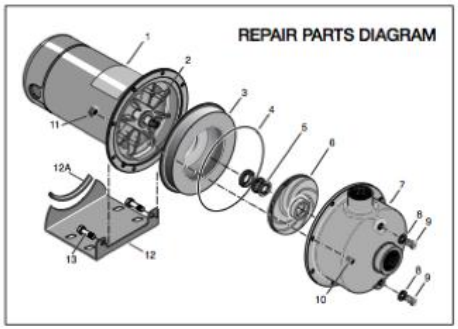
REPAIR PARTS DIAGRAM



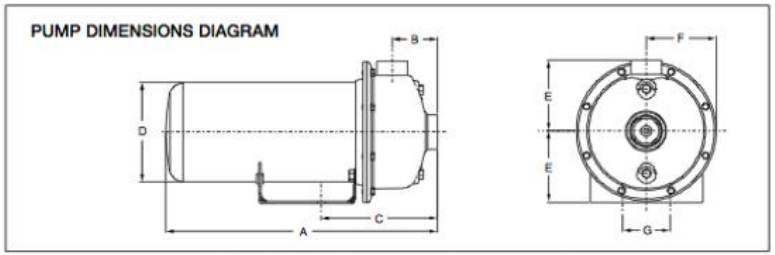
MATERIALS OF CONSTRUCTION

PART NO.	PARTS DESCRIPTION	NO. USED	MATERIALS OF CONSTRUCTION
1	Motor *	1	
2	Water Slinger	1	Neoprene
3	Seal Plate	1	AISI 304 SS
4	O-ring	1	Viton
5	Shaft Seal	1	See Table
6	Impeller	1	Noryl
	Impeller Screw (3 phase motors only)	1	18-8 SS
7	Casing/Diffuser Assembly	1	AISI 304 SS
8	Plug Gasket	2	Nylon
9	Stainless Steel Plug	2	AISI 304 SS
10	Socket Head Capscrew	8	18-8 SS
11	Nut, M6 x 1	8	18-8 SS
12	Base	1	Painted Steel
12A	Motor Pad	1	Natural Rubber
13	Capscrews, ⅜" - 16 x ¾"	2	Zinc Coated Steel

* For repair of service to motors, always give the motor Model Number and any other data found on the Motor Model Plate.

Mechanical Seal John Crane Type 21					
Seal Number	Rotary	Stationary	Elastomers	Metal Parts	Casing O-Ring
0	Carbon	Ceramic	Buna-N	18-8 SS	Buna-N
3		Ceramic	Viton	18-8 SS	Viton
5		Silicon Carbide	Viton	18-8 SS	Viton

PUMP DIMENSIONS DIAGRAM



PUMP DIMENSIONS & WEIGHTS (DIMENSIONS IN INCHES)

MODEL	HP	PUMP SIZE-NPT		A				B	C	D		E	F	G	WEIGHT	
		SUCT.	DISCH.	1 PHASE		3 PHASE				ODP	TEFC				ODP	TEFC
				ODP	TEFC	ODP	TEFC									
SCX1700-1	½	1¼	1	13.2	14.0	13.5	14.2	2.43	6.51	5.63	6.44	4.13	4.06	4.875	29	32
SCX1700-1	¾	1¼	1	13.2	14.9	13.5	14.2	2.43	6.51	5.63	6.44	4.13	4.06	4.875	38	41
SCX1700-1	1	1¼	1	14.2	15.7	14.0	15.2	2.43	6.51	5.63	6.44	4.13	4.06	4.875	47	50
SCX1700-1	1½	1¼	1	14.5	16.2	14.5	15.2	2.43	6.51	5.63	6.44	4.13	4.06	4.875	62	65
SCX1700-2	2	1½	1¼	16.0	16.4	15.7	16.4	2.63	6.71	5.63	6.44	4.13	4.06	4.875	77	80
SCX1700-2	2½	1½	1¼	16.9	16.9	16.4	16.4	2.63	6.71	5.63	6.44	4.13	4.06	4.875	90	93

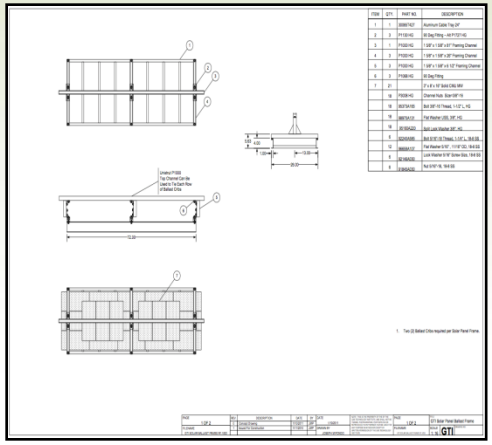
Do it Once. Do it Right.

Taco, Inc., 1160 Cranston Street, Cranston, RI 02920 Telephone: (401) 942-8000 Fax: (401) 942-2360
Taco (Canada), Ltd., 6180 Ordan Drive, Mississauga, Ontario L5T 2B3 Telephone: (905) 564-9422 Fax: (905) 564-9436
Visit our website at: www.taco-hvac.com

Non-Penetrating Roof Mounts

Adding a solar contribution to the system also requires planning for the installation of collectors on the roof of the structure. Solar Usage Now provides a non-penetrating ballast system that is affordable and easy to install. This ballast system was developed in conjunction with The Gas Technology Institute.

- Light weight
- Non-penetrating
- Even Weight distribution
- Dramatically increases installation productivity
- Protects the surface membrane and the structure
- Fast rate of installation creates tremendous labor savings
- System is modular, allowing for easy expansion or movement
- System can avoid roof impediments without endangering its integrity
- Low/no maintenance
- Non-penetrating system provides for longer term stability on roof



SUN EQUINOX HEATING SYSTEMS

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