

VIESMANN

climate of innovation

Vitosol Solar Heating Systems

Solar Energy Harvesting with Vitosol

Solar Thermal



Liquid heating

Glazed collectors



Vitosol Flat plate and Tube collectors

Pool heating

DHW heating

Space heating

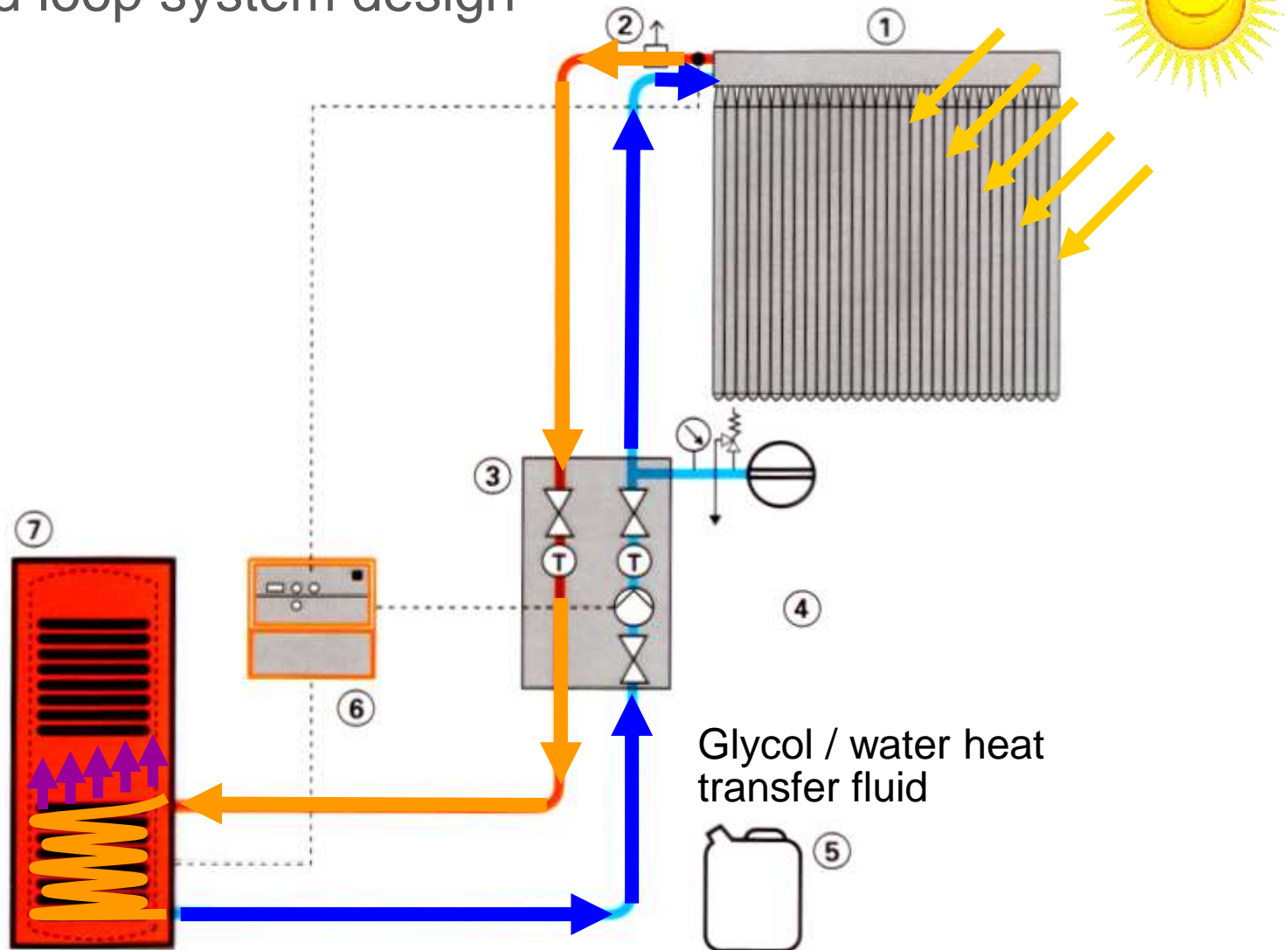
Space cooling



*The **best** and most **cost effective** solar water heating applications*

Vitosol Solar Thermal Systems

Closed loop system design



Vitosol Solar Systems



Vitosol 100-F
Vitosol 200-F
Vitosol 200-T



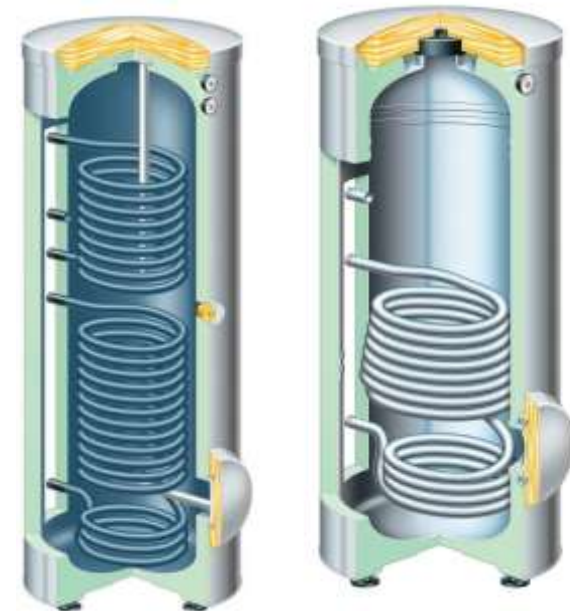
SCU Solar Controls



Solar-Divicon Pump Stations



Accessories and Tools

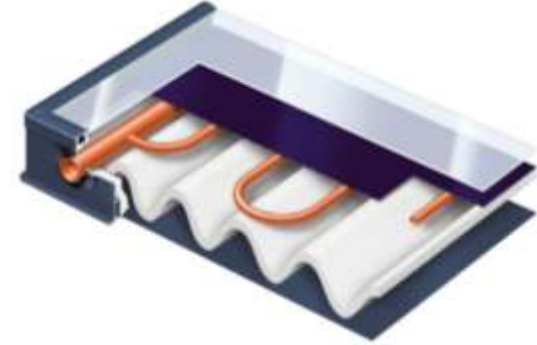


Vitocell Solar DHW Tanks

Vitosol Flat Plate Collector Comparison



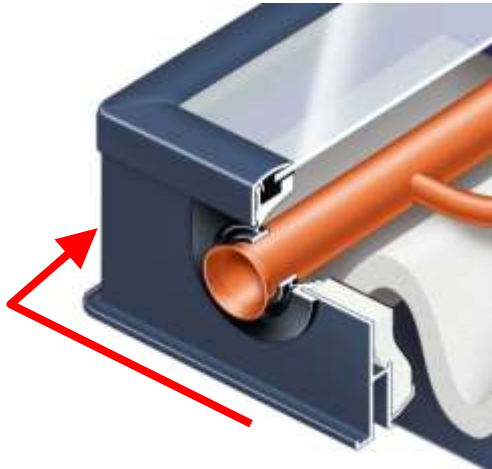
Vertical and Horizontal versions



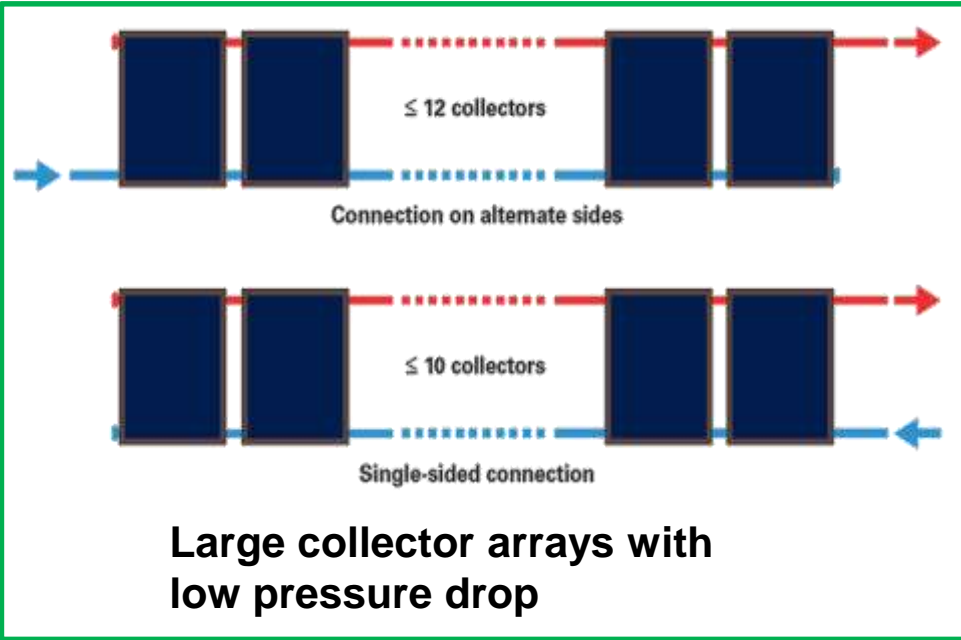
	VITOSOL 100-F	VITOSOL 200-F
Dimensions	94" x 41.6" x 2.8"	94" x 41.8" x 3.5"
Aluminum frame	Bare aluminum	Painted aluminum
Glass trim	Corners only	Continuous
Absorber sheet coating	Black Chrome	Sol-Titanium
Insulation	Bottom (1.2")	Bottom (2") and sides
Weight	97 lb	115 lb
List price	15% less than 200-F	

Vitosol 100-F / 200-F

Your best flat plate collector choices



One piece wraparound frame with no screws or rivets visible



Large collector arrays with low pressure drop

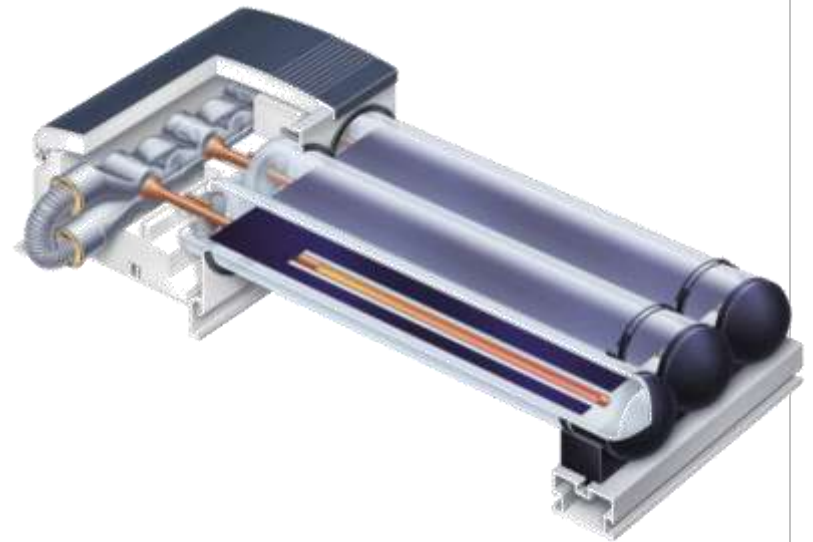
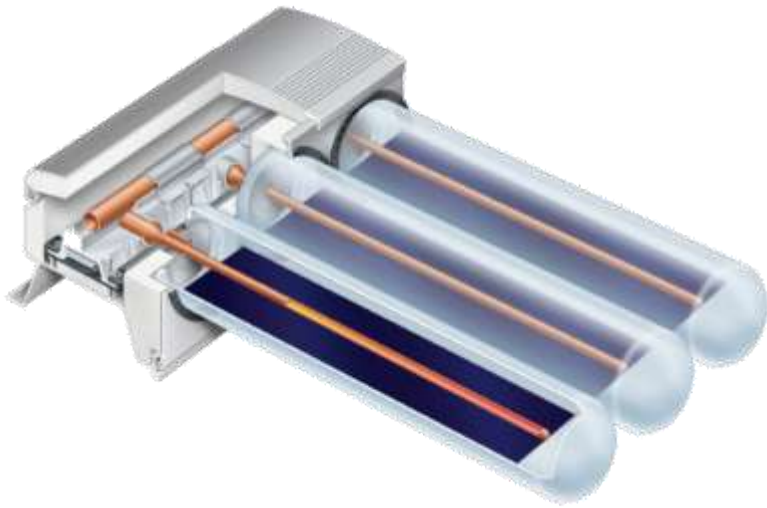


Horizontal and Vertical versions



Leak-free quick connect fittings

Vitosol Vacuum Tube Collector Comparison



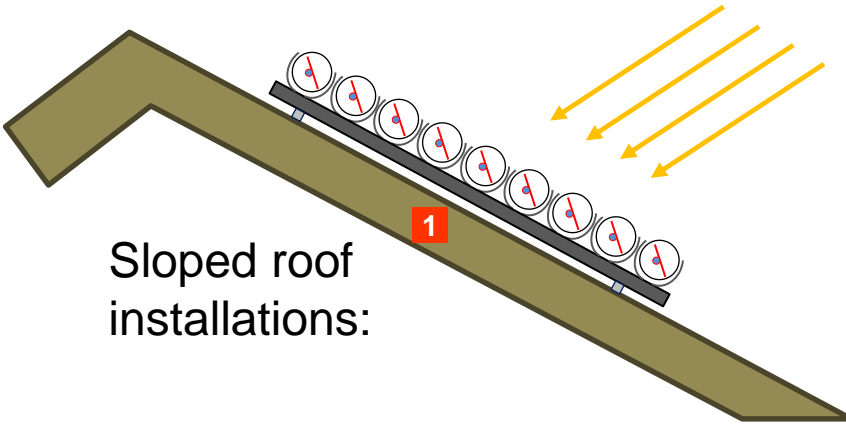
	VITOSOL 200-T, SPE	VITOSOL 200-T, SP2A
Header design	One pipe copper	Two pipe stainless steel
Tube diameter	4"	2.75"
Tube rotation	45	25
Header cover	Bare aluminum	Painted aluminum
Models	9 tube, 18 tube	10 tube, 12 tube, 24 tube

Vitosol 200-T, SPE / SP2A

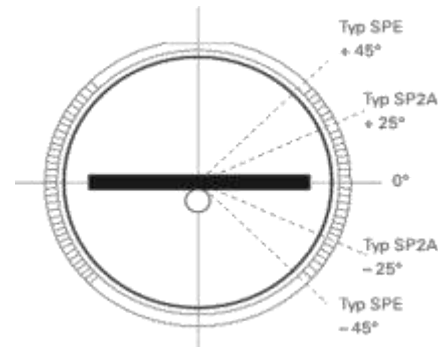
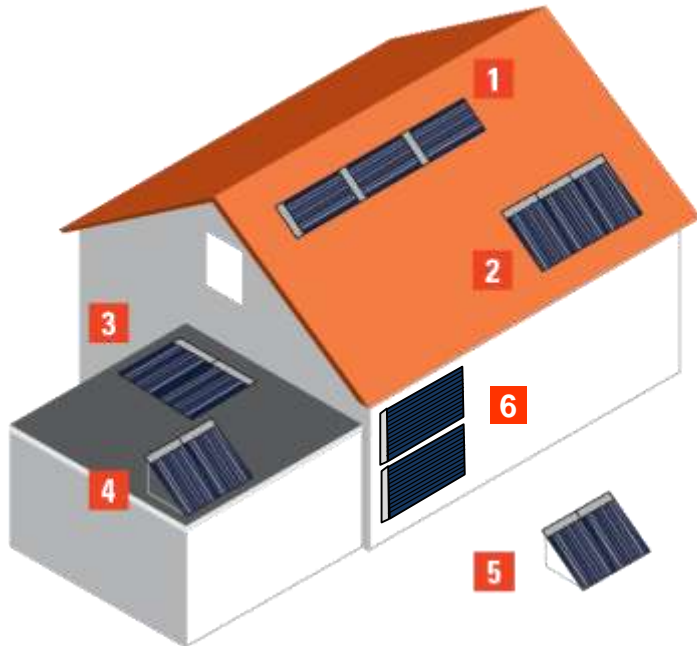
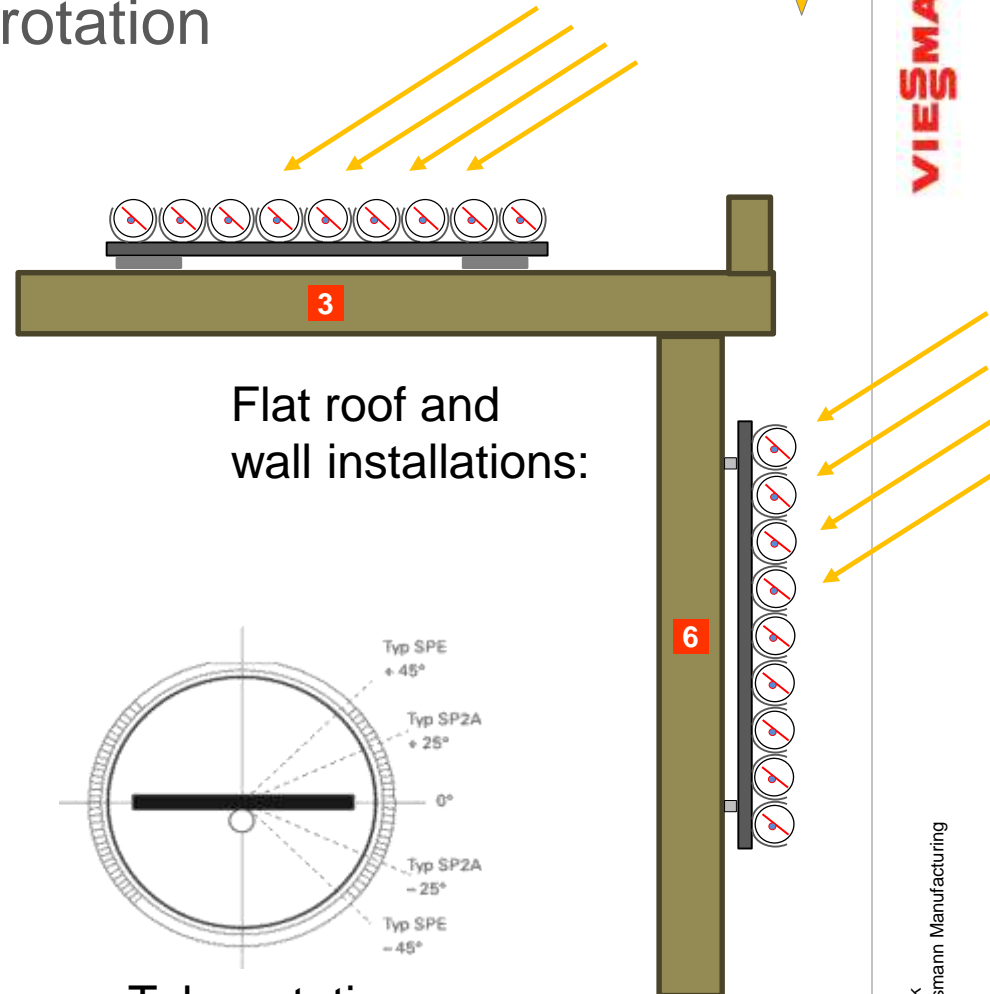
Mounting versatility with tube rotation



Sloped roof installations:



Flat roof and wall installations:


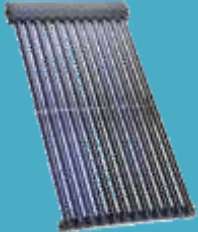







Tube rotation

SPE - 45°

SP2A - 25°

Solar Panel Comparison

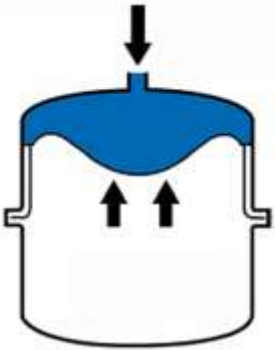
	Flat Plate collectors 	Vacuum Tube collectors 			
Cost	Low / medium cost	Medium / high cost			
Performance	<ul style="list-style-type: none"> ▪ Excellent in mild or warm weather ▪ Drops off in colder conditions 	<ul style="list-style-type: none"> ▪ Excellent in mild or warm weather ▪ Good in colder conditions 			
Applications / temperature range	<ul style="list-style-type: none"> ▪ DHW heating ▪ Indoor pool heating 	<ul style="list-style-type: none"> ▪ Space heating supplement ▪ Process heating ▪ Solar cooling 			
Other variables:	 Mounting location	 Space available	 Aesthetics	 Wind loads	 Snow loads

Vitosol System Components:



Tyfocor high temperature non-toxic solar fluid

- Frost protection to -31°F (-35°C)
- Temperature stable to 338°F (170°C)
- Reverse evaporatable propylene glycol



Solar Expansion tank

- High temperature resistance 248°F (120°C)
- 30-40 psi precharge
- 4 sizes available

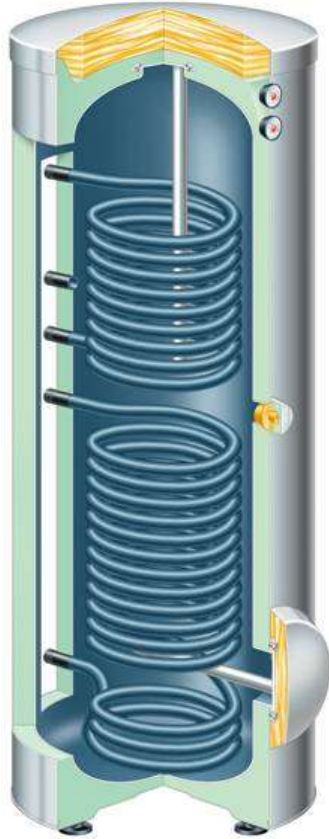


Solar Divicon pre-assembled pumping station

- Pump, PRV, flow meter, system fill manifold, air separator, flow check valves, temperature and pressure gages
- 2 sizes available

Vitocell 100 /300

Solar storage tanks



Dual Coil

- 300 series stainless
- 100 series enamel
- Sizes:
 - 80 (300L)
 - 120 gal (450 L)



Single Coil

- 300 series stainless
- 100 series enamel
- Sizes:
 - 42 gal (160 L)
 - 53 gal (200L)
 - 80 gal (300L)
 - 120 gal (450 L)

Solar Differential Temperature Controls



SCU124

SCU224

Features:

- Variable speed pump control
- Pre-programmed configurations
- Illuminated display with layout picture and status information



SCU345

	SCU124	SCU224	SCU345
Relay outputs	2	2	4
Variable speed pump	Yes	yes	yes
Sensor inputs	4	4	5
System configurations	3	10	9
# Heat loads (tanks)	1	2	3
# of differentials	1	2	3
Heat dump layout	yes	yes	yes
Energy meter	yes	yes	yes
Pump hour counter	yes	yes	yes
Collector cooling	yes	yes	yes
Night tank cooling	yes	yes	yes
V-Bus accessories	yes	yes	yes
Internal SD Card	no	no	yes
Flow meter option	no	no	yes

Compact Mobile Charge Station

The essential system commissioning tool



- *Flushes, Vents air, and Fills* solar loop in one step
- Save valuable time:
 - Speed up flushing / filling
 - Eliminate air problems at start-up
 - Reduce call backs
- Filters solar glycol to remove debris
- Compact and mobile
- Use for any hydronic system

VITOSOL

Solar Thermal Heating Systems

Collector Installation Details



Vitosol 100-F / 200-F / 200-T

Sloped roof installations



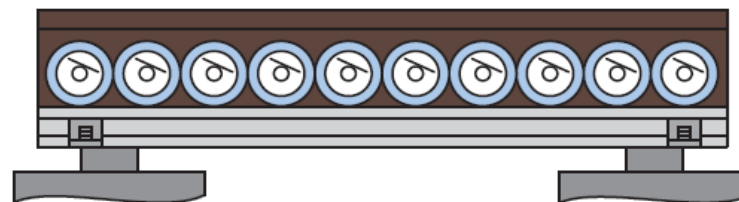
Vitosol 100-F / 200-F / 200-T

Flat roof installations



Vitosol 200-T, SPE / SP2A

Flat roof, laid flat mounting



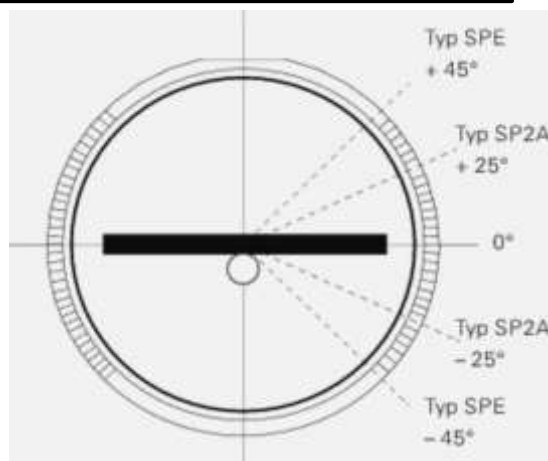
Note:

VITOSOL 200-T, SP2A

- Maximum tube rotation is 25°
- Angle of inclination 0° to 25°

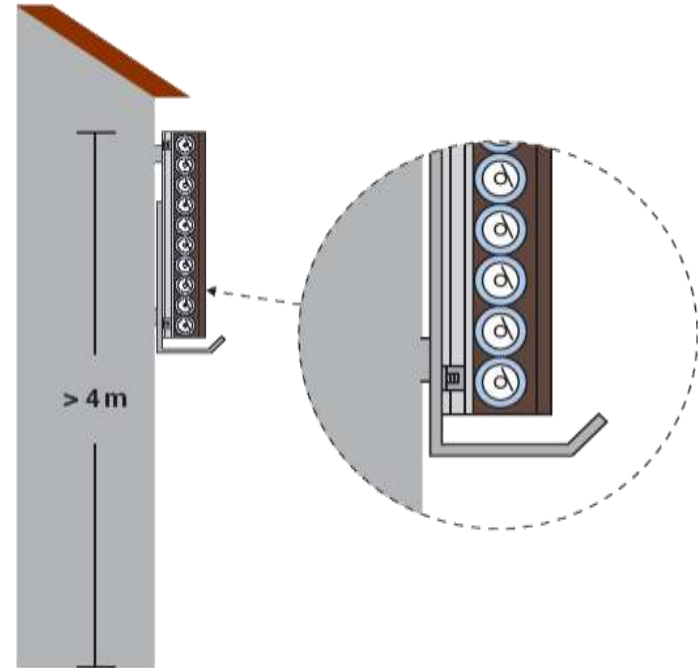
VITOSOL 200-T, SPE

- Maximum tube rotation is 45°
- Angle of inclination 0° to 45°



Vitosol 200-T, SP2A

Wall mounting - Vacuum tube collectors

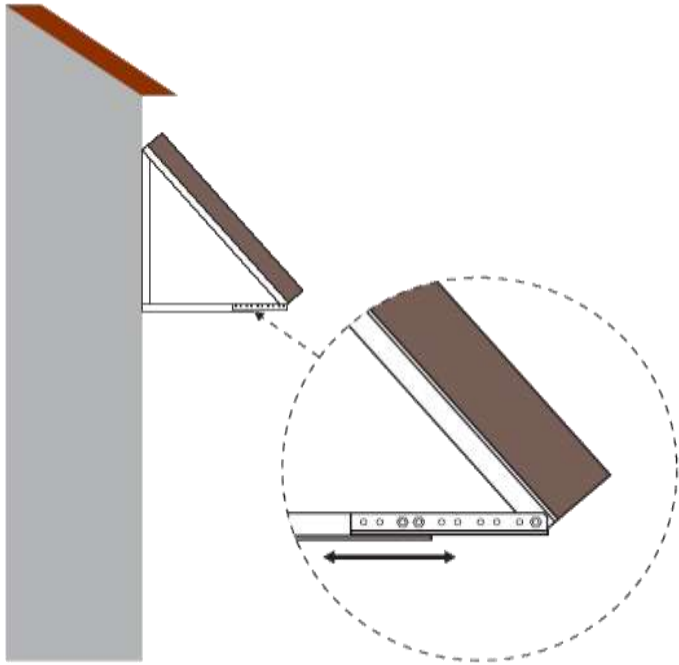


Note:

- *Viessmann hardware only available for SP2A*
- Maximum tube rotation is 25°
- Angle of inclination 65° to 90°

Vitosol 100-F / 200-F

Wall mounting - Flat plate collectors



- Angle of inclination adjustable between 10 - 45°
- *Viessmann hardware only available for SH series*



VITOSOL Solar Thermal Heating Systems

DHW Solar PACK



Vitosol DHW Solar PACK

Packaged solar water heating systems

- Closed loop Solar water heating system
- Pre-assembled components and simple design
- For residential DHW applications
- 2 tank versions available:
 - Dual coil
 - Single coil with electric element



Vitosol DHW Solar PACK

Package includes:

- 2 x Vitosol 200-F, SVK collectors
- Vitocell100-W, CVBA or CVSA tank
- Factory integrated pumping station and control
- Sloped roof mounting hardware
- Other required system components*



* Piping between collectors and tank not included in Solar PACK. Optional pre-insulated SS piping available.

Vitosol DHW Solar PACK

Features:

- High performance solar collectors and storage tank
- Design matched components
- Pre-assembled pump/control station factory mounted to solar tank
- Expansion tank mounting bracket on tank
- Only 2 collector tee-fittings to install on the roof with *no tools required*
- Use Viessmann stainless steel piping system for a “solderless” solar loop
- *Low package pricing*



Vitosol DHW Solar PACK

Fast and easy to install:

- Smaller, lighter panels easy to handle and install
- Pre-assembled components
- Pre-wired control, pump and sensors
- Quick connect fittings



Vitosol DHW Solar PACK

Simple and easy to order:

- Complete solar system with *all required components*
- One part number *for easy ordering*
- Packaged on *one skid*
- *Compact footprint* with solar panels standing vertical



48" x 48" x 92"

Solar PACK Tank Versions



Vitocell 100-W, CVBA Dual coil tank

- 250L / 66 gal solar tank
- Top coil for reheating by boiler

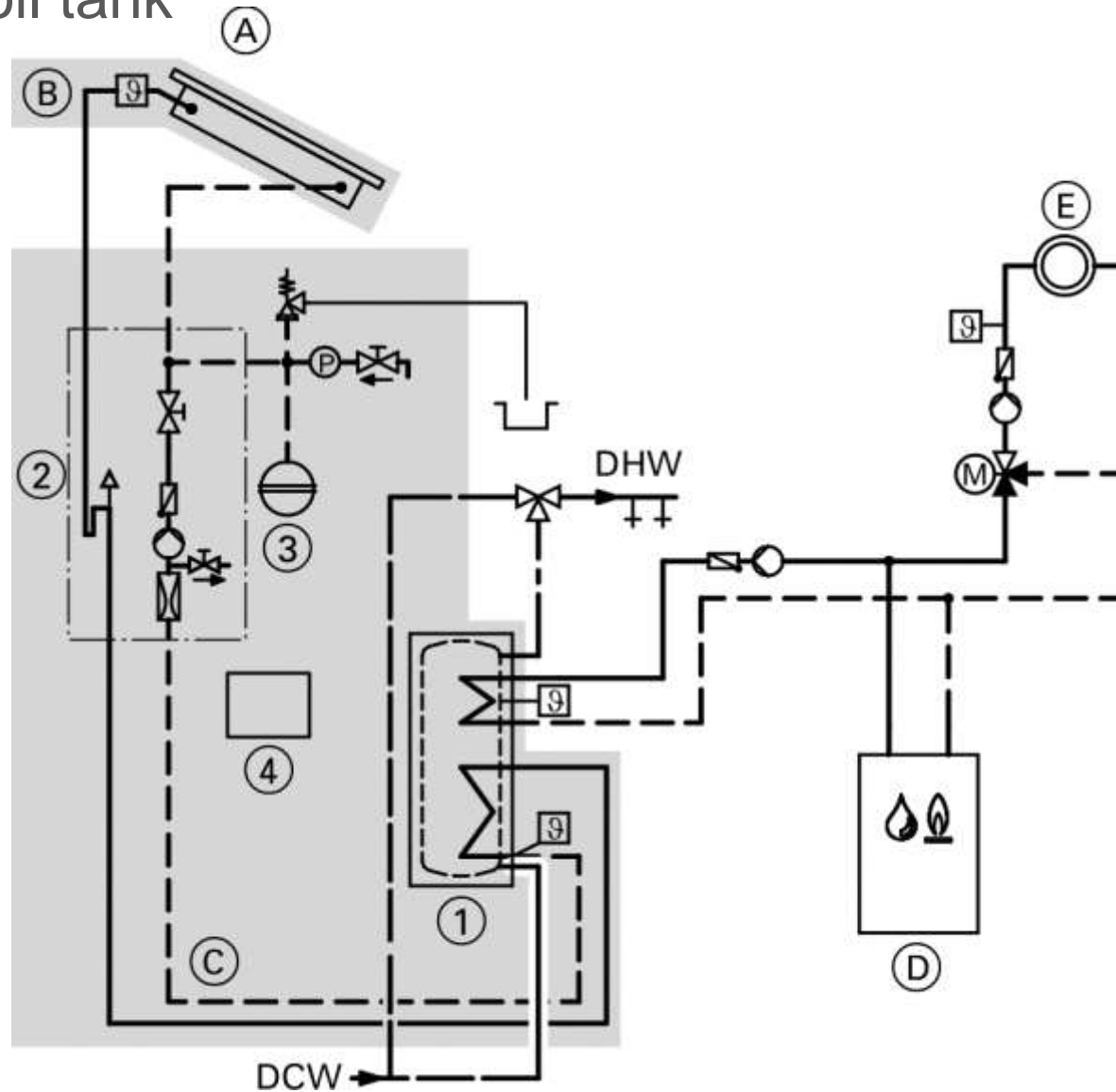


Vitocell 100-W, CVSA Single coil tank

- 260L / 69 gal solar tank
- 4.5 kW electric Immersion element

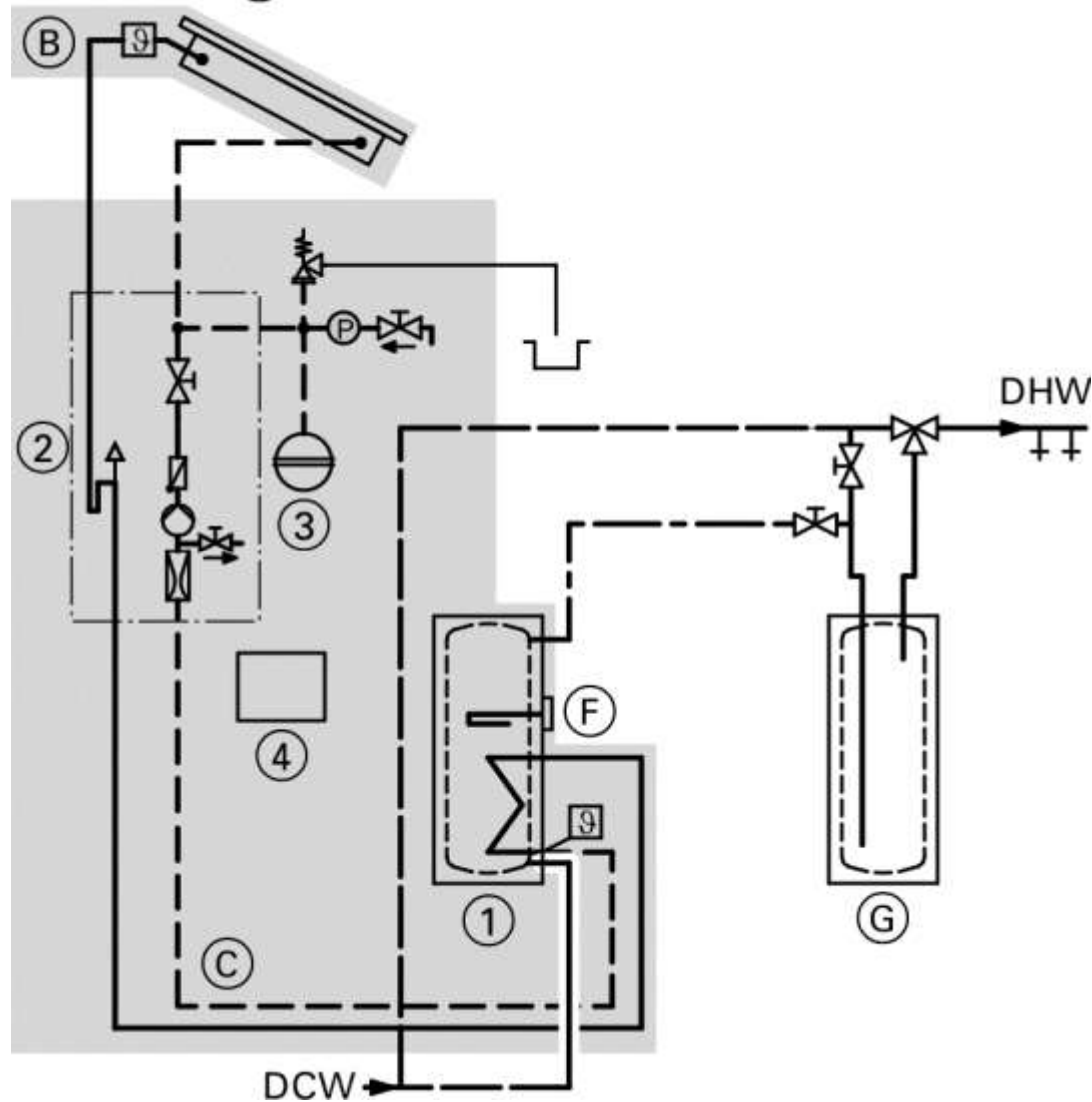
Solar PACK Sample Piping Layout

CVBA dual coil tank



Solar PACK Sample Piping Layout

CVSA Single coil tank



Vitosol Solar PACK

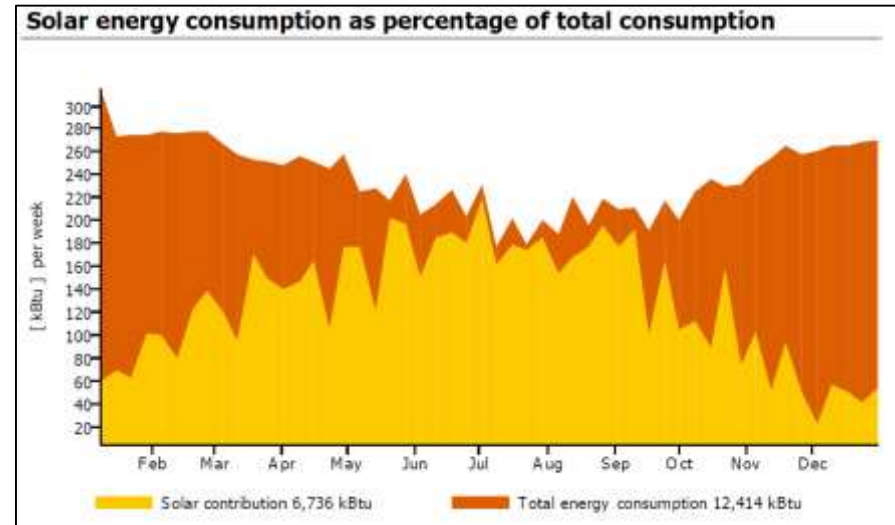
Sample T*SOL Simulation results



- Domestic hot water usage for 3-4 person household
- 54% solar fraction

Results of annual simulation

Installed collector power:		10.42 kBtu/hr
Installed solar surface area (gross):		46.97 ft ²
Irradiation on to collector surface (active):	20.77 MMBtu	479.15 kBtu/ft ²
Energy delivered by collectors:	8.73 MMBtu	201.37 kBtu/ft ²
Energy delivered by collector loop:	6.93 MMBtu	159.93 kBtu/ft ²
DHW heating energy supply:		11.61 MMBtu
Solar contribution to DHW:		6.71 MMBtu
Energy from auxiliary heating:		5.7 MMBtu
Natural gas (H) savings:		8.3 MMBtu
CO2 emissions avoided:		1,094.58 lbs
DHW solar fraction:		54.3 %



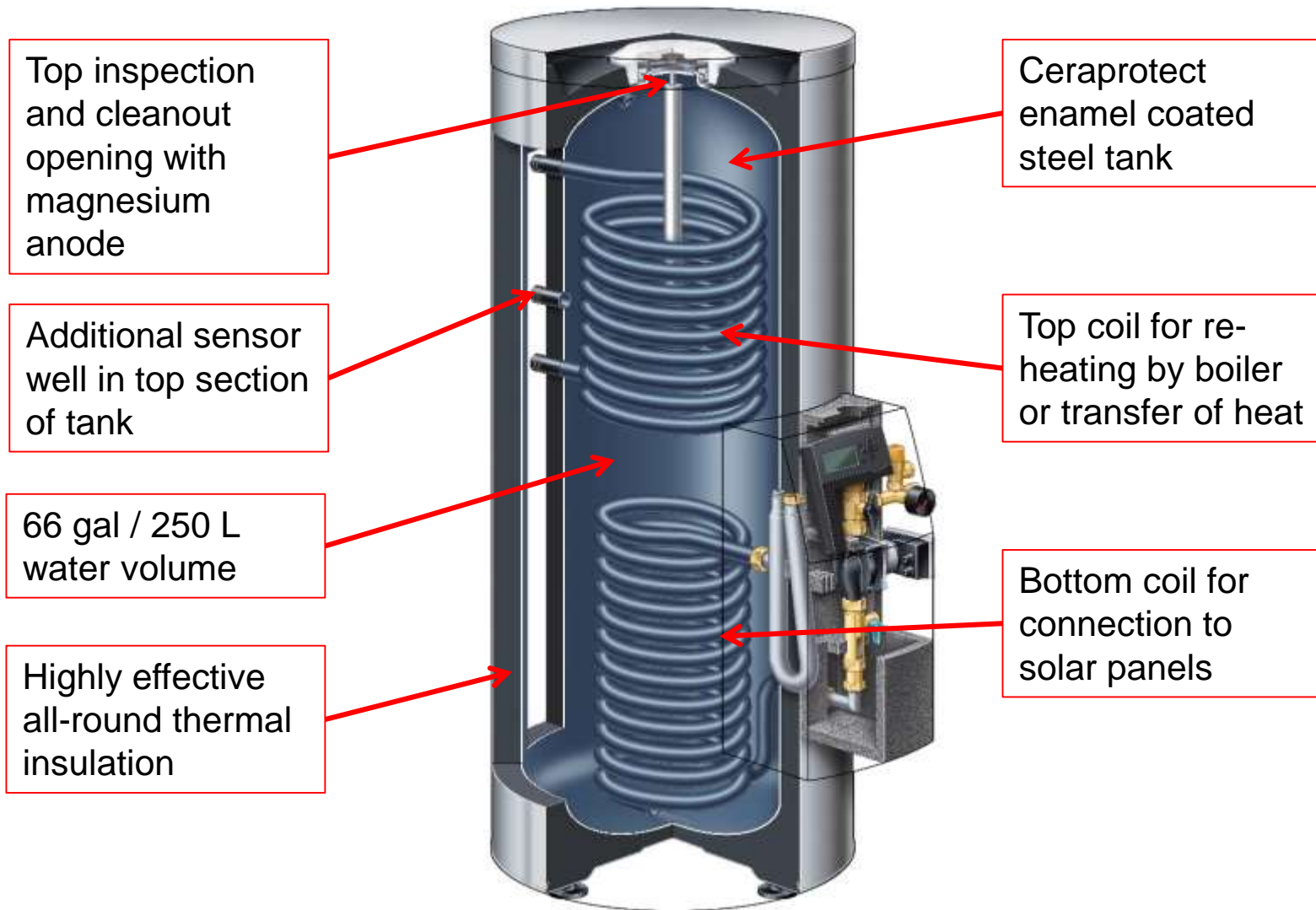
Simulation location: Waterloo, ON
Results will vary by location

What's in the Solar PACK?



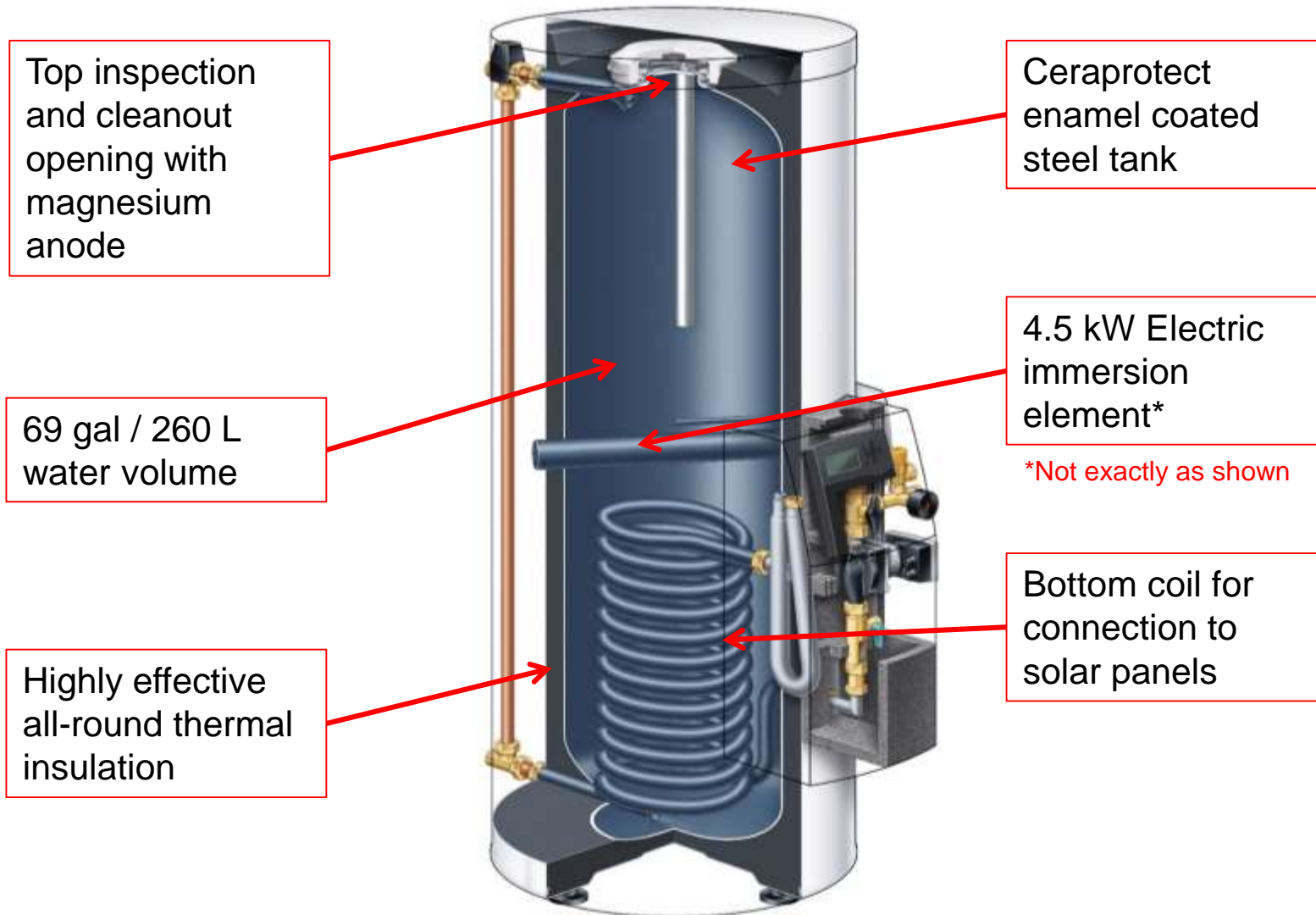
Solar PACK Components

Vitocell 100-W, CVBA - 66 gal solar tank



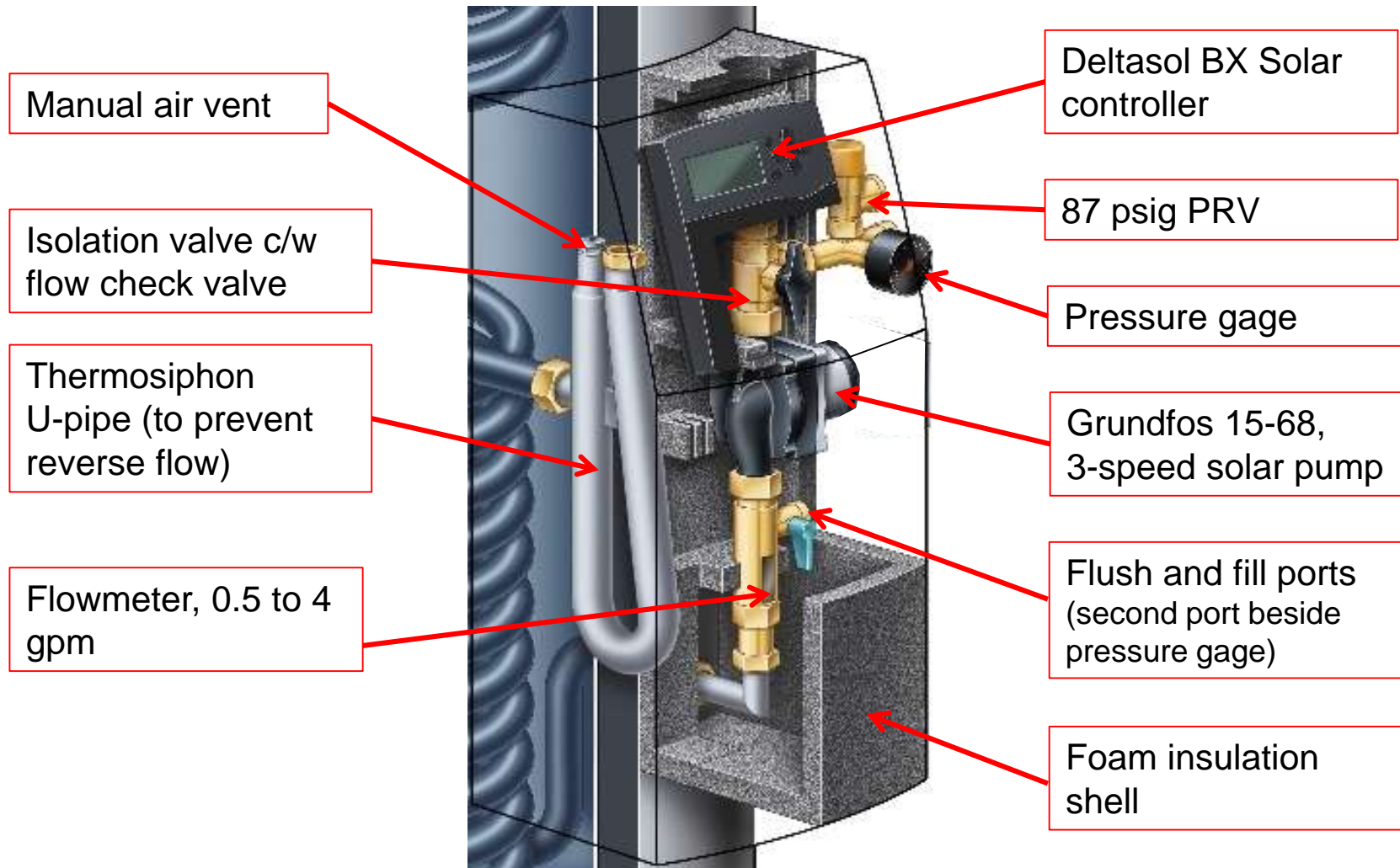
Solar PACK Components

Vitocell 100-W, CVSA - 69 gal solar tank



Solar PACK Components

Solar-Divicon pumping station



Solar PACK Components

Viessmann Deltasol BX Solar Controller

- Powerful, easy to use solar control
- Power cord, solar pump, and tank sensors: *all factory wired*
- 4 relay outputs, 7 sensor inputs; allows for control of additional loads and functions
- PWM relay outputs for variable speed control of solar pump
- Data logging onto SD card
- VBus connection for accessories



*SD card is field supplied

Solar PACK Components

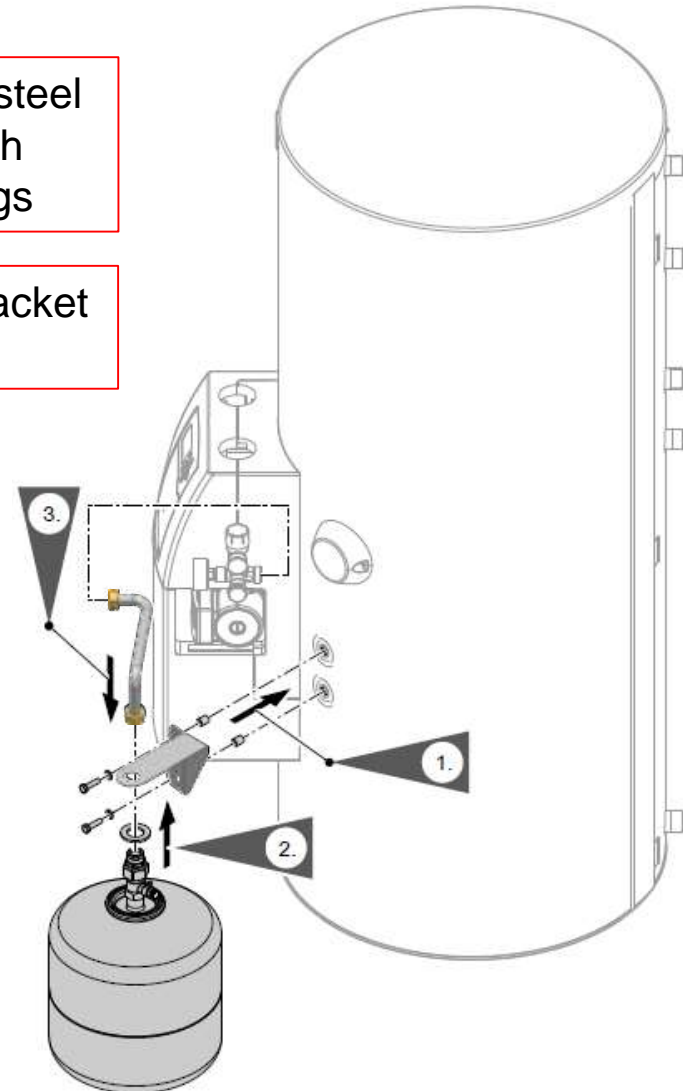
Solar expansion tank and mounting bracket



Flexible stainless steel connector pipe with compression fittings

Tank mounting bracket and hardware

4.7 gal / 18L Solar expansion tank with service fitting



Solar PACK Components

Vitosol 200-F, SVK collectors

Construction:

- Highly selectively coated one-piece aluminum absorber
- Meander shaped copper piping
- One piece wrap around aluminum frame
- Low iron solar glass with permanent seal

Gross area – 23.5 ft²
Aperture area – 21.7 ft²
Dimensions – 81"x41"x 2.8"

No side pipe connections (eliminates use of brass plug fittings)

All pipe connections in middle of two collectors

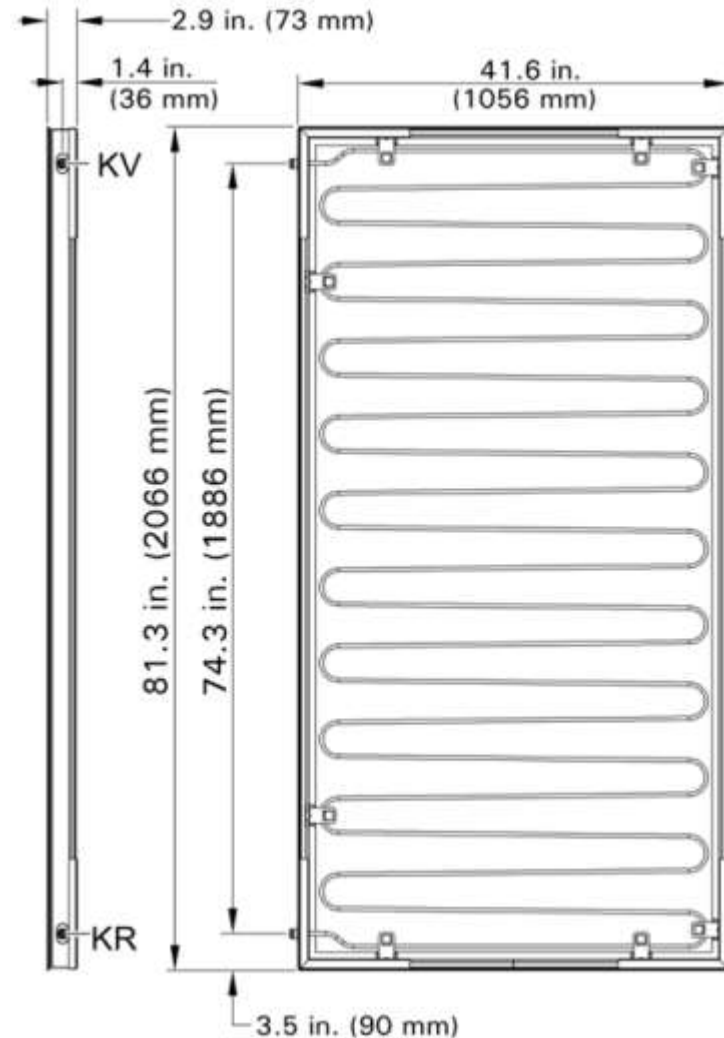


Solar PACK Components

Vitosol 200-F, SVK collectors

Differences from existing collectors:

- No internal header pipe
- Connection fittings on one side of collector only
- 12.4" / 314 mm shorter than SV1 and SV2



Solar PACK Components

Vitosol 200-F, SVK collector connection set

Step 1: Attach collector mounting clip



Step 2: Insert Tee-fitting



Step 3: Push collectors together



Step 4: Tighten collector clip...that's it!



Solar PACK Components

Vitosol 200-F, SVK collector connection set



Supply connector: 31" insulated SS pipe
c/w Tee fitting and sensor well



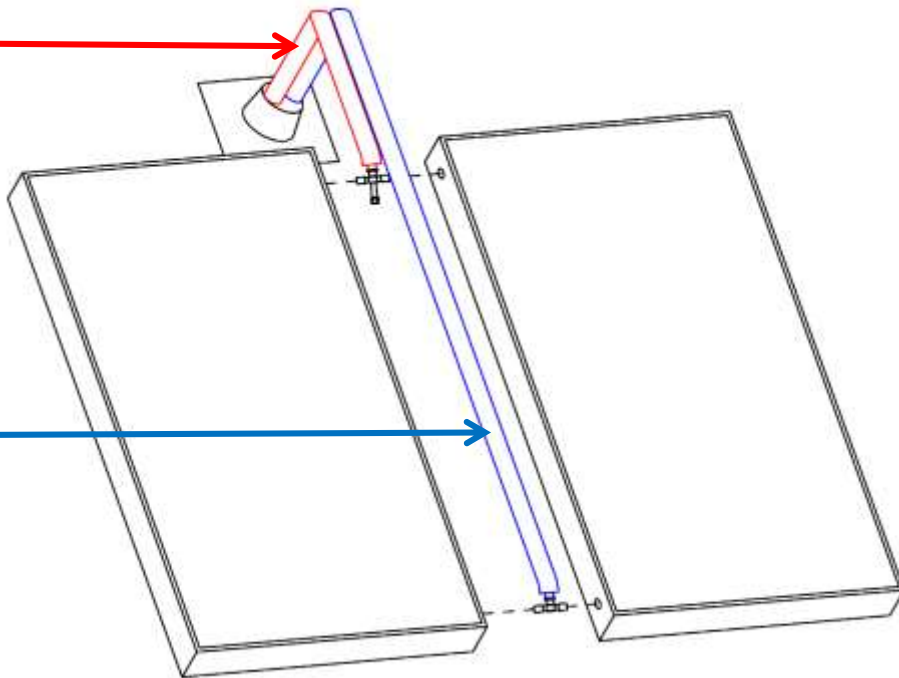
Return connector: 105" insulated SS pipe
c/w Tee fitting

Solar PACK Components

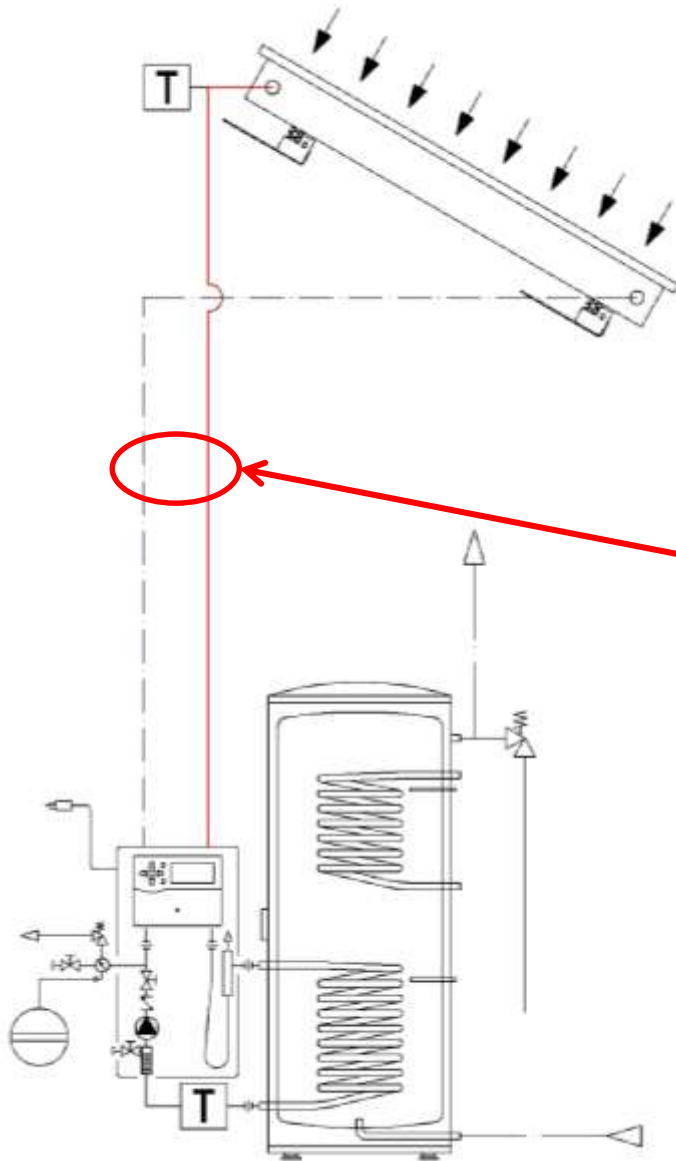
Vitosol 200-F, SVK collector connection set

Pre-insulated stainless steel
supply pipe with Tee-fitting and
built-in sensor well

Pre-insulated stainless steel
return pipe with Tee-fitting



Solar PACK Collector Piping



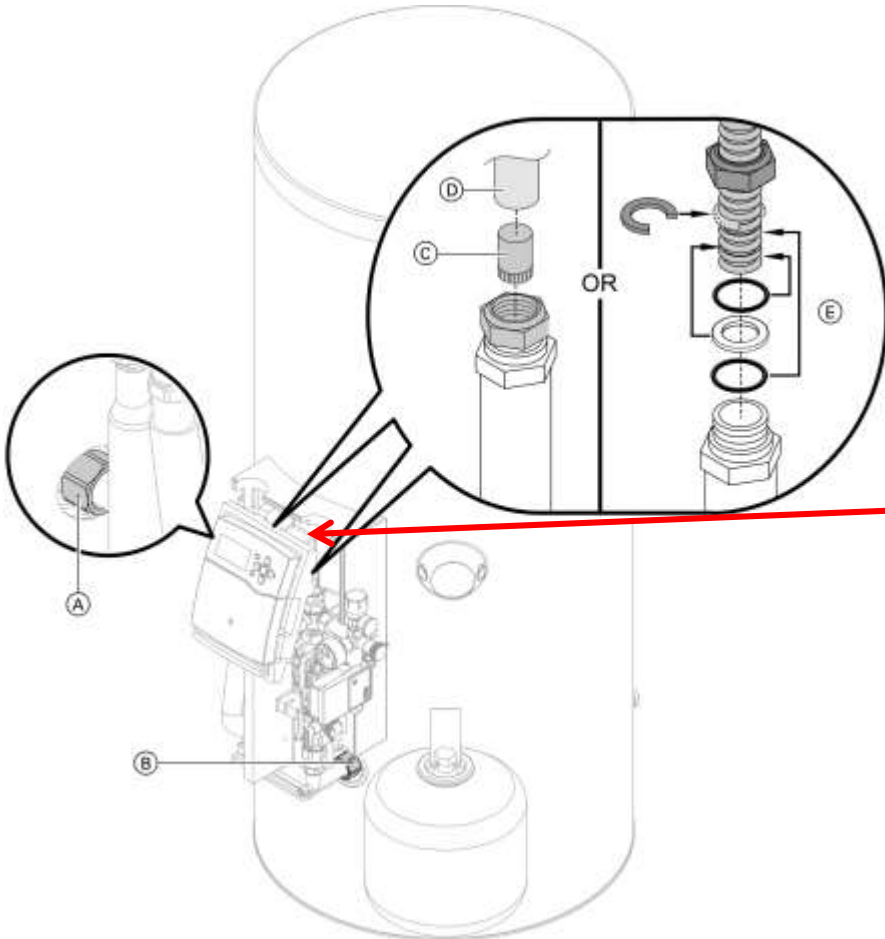
Supply / return piping:

- **Option 1:** Viessmann pre-insulated stainless steel 1/2" lineset. Available in 20', 40' and 50' coils
- **Option 2:** 1/2" Copper + insulation + wire



* Supply and return piping between collectors and tank not included in Solar PACK, and must be field supplied.

Solar PACK Collector Piping



Supply / return piping connections:

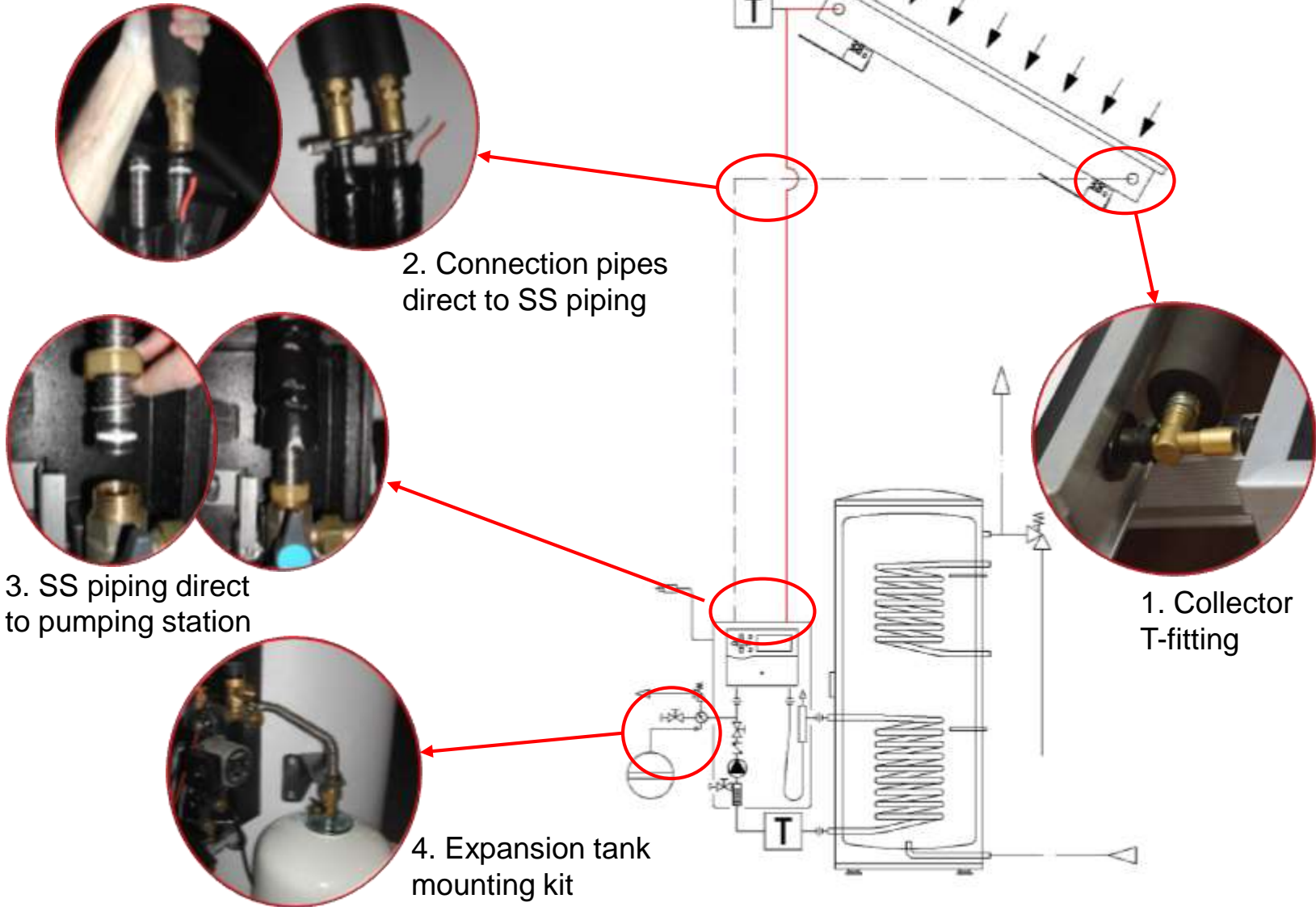
- **Option 1:** 1/2" Stainless steel lineset – compression fitting with O-rings
- **Option 2:** 1/2" Copper - with copper adaptor 22 mm x 3/4"



* Supply and return piping between collectors and tank not included in Solar PACK, and must be field supplied.

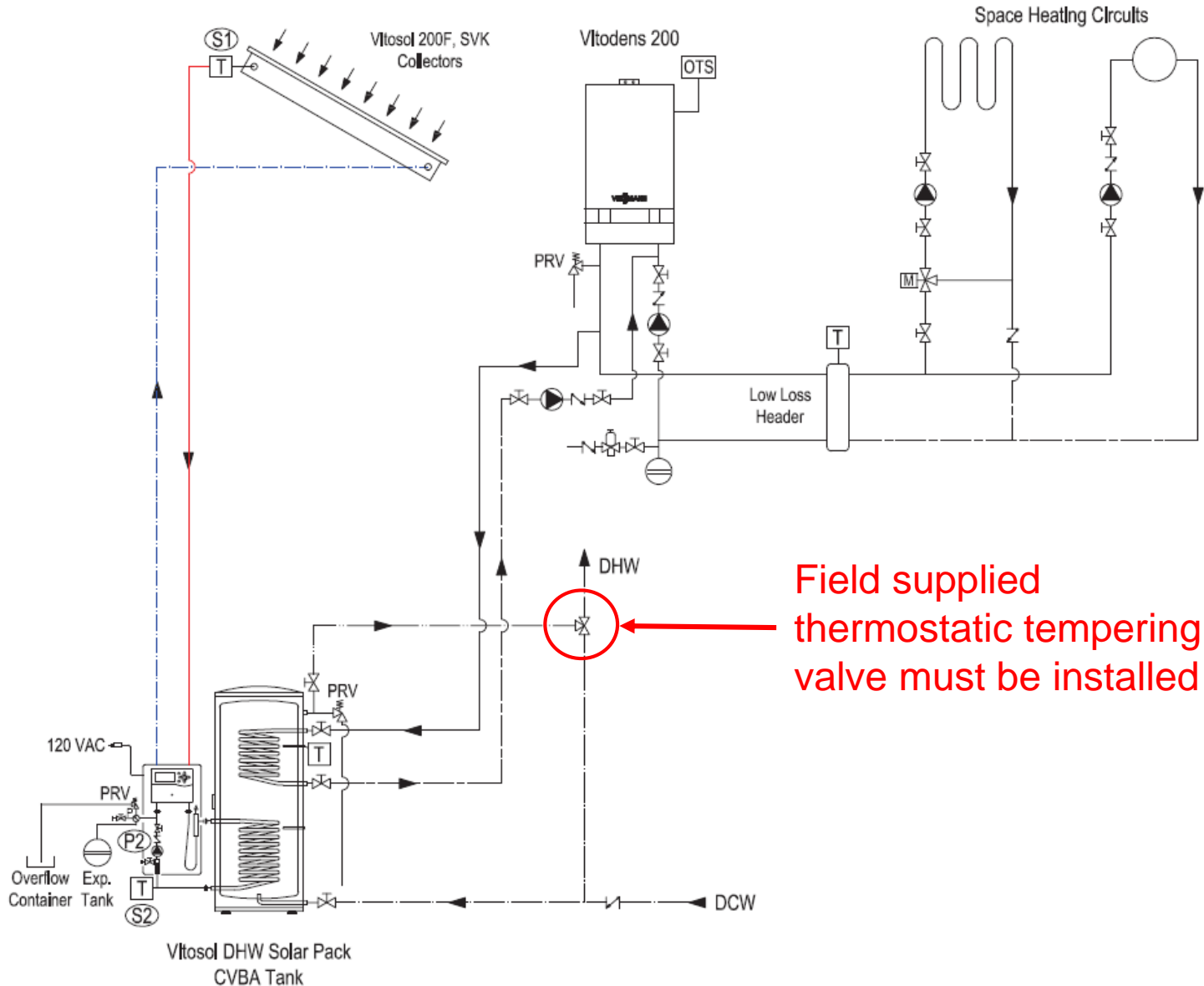
Solar PACK – A complete “No-Solder System”

With SS pre-insulated piping



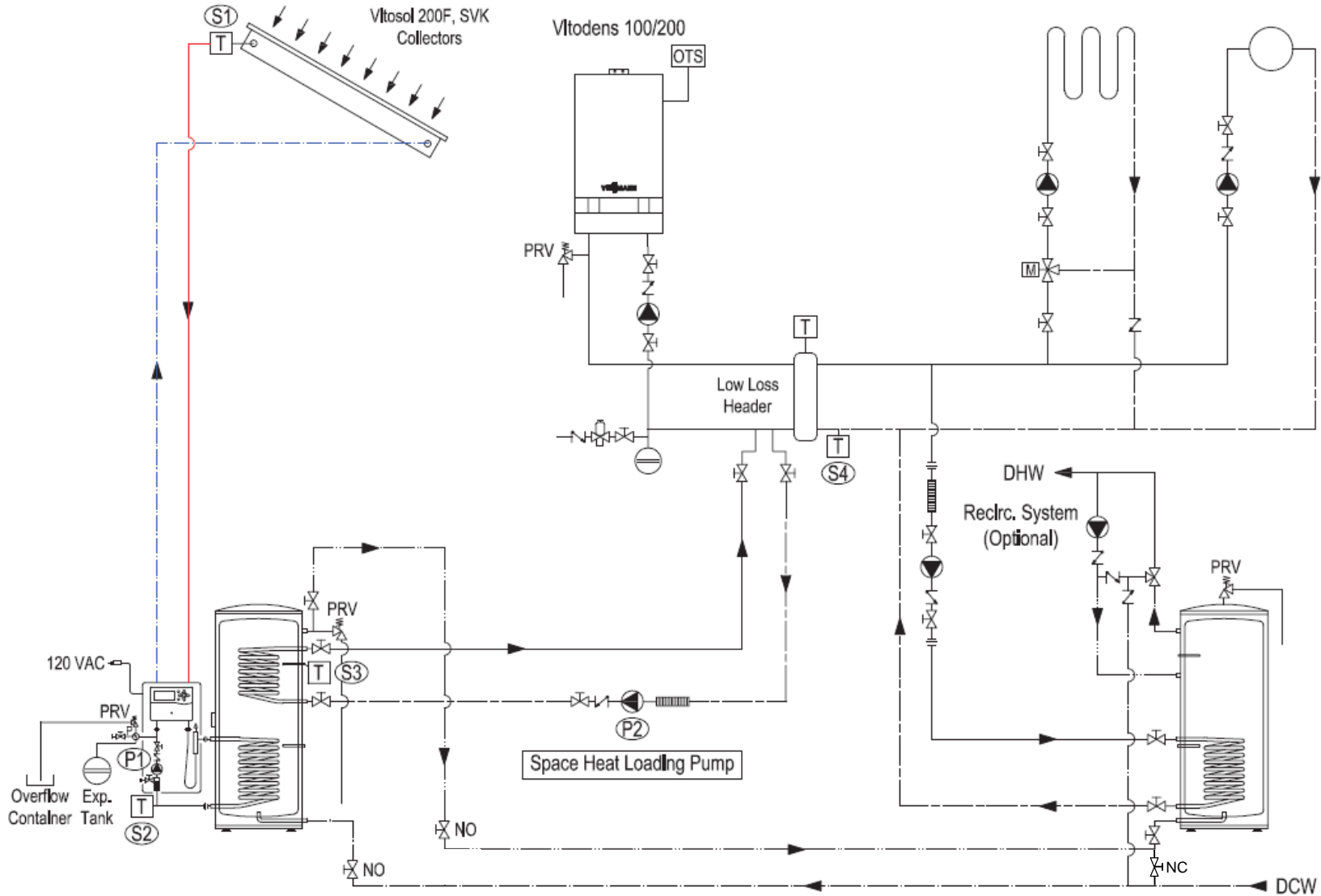
Solar PACK Sample Piping Layout

Solar DHW only



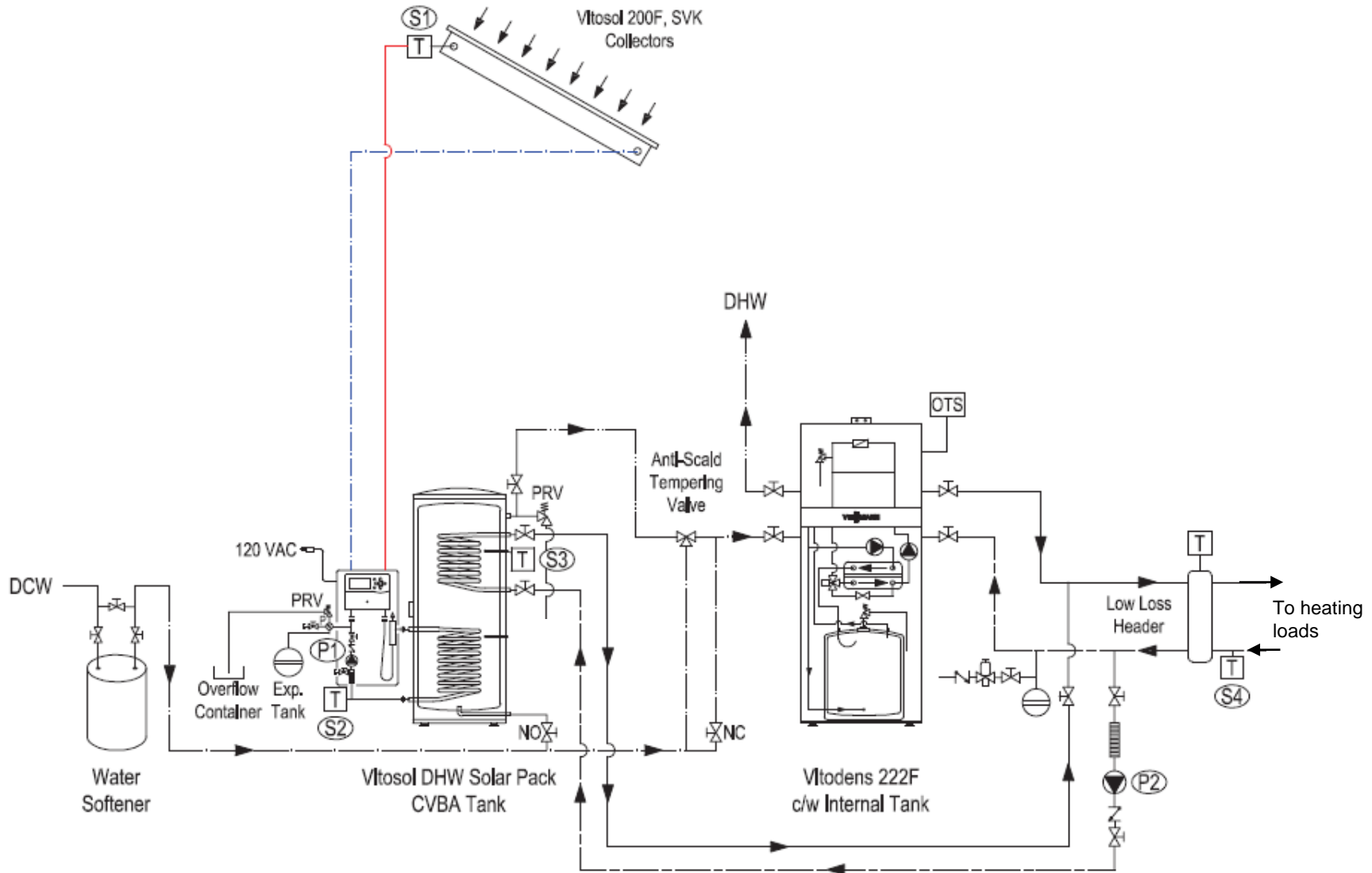
Solar PACK Sample Piping Layout

Solar DHW + Space heating supplement



Solar PACK Sample Piping Layout

Solar DHW + Space heating supplement (with 222-F)



Vitosol DHW Solar PACK

Benefits:

- Highly efficient solar collection with high solar fraction
- Easy to order and simple to install
- Reduced number of fittings for installer to assemble
- Reduced on-site installation labor
- Reduced cost makes solar affordable for your customers



Vitosol Solar PACK

Sales Promotion: Feb – Sept, 2015

\$150 Rebate on Vitosol DHW Solar Pack

Viessmann Value, for our Valued Customers

Receive a \$150 rebate for each Vitosol DHW Solar Pack you buy, just follow these three simple steps.

1 Purchase

Purchase a Vitosol DHW Solar Pack between February 1, 2015 – September 30, 2015

2 Enter

Enter your company info and enter the serial number from the peel off serial number sticker for each Solar Pack (located on Vitocell Solar tank).

3 Submit

Click submit once the form is completed. Submit by October 15, 2015 at the latest.

Vitosol Solar PACK

Sales Promotion: Feb – Sept, 2015

Promotion Terms and Conditions

The following terms and conditions only apply to Viessmann's **\$150 Rebate on Vitosol DHW Solar Pack**

1. Vitosol DHW Solar Pack must be purchased from an Authorized Viessmann Stocking Wholesalers.
2. Serial numbers from the CVBA Solar tank must be provided for all claimed solar products.
3. Serial numbers will be verified with our Wholesalers for valid purchase dates.
4. Promotion valid for purchases between: February 1, 2015 - September 30, 2015.
5. Rebate cheques will be issued by December 1, 2015.
6. For Canadian contractors only.
7. Cannot be combined with any other Viessmann promotion.

Viessmann Manufacturing Company Inc.

750 McMurray Road
Waterloo, ON N2V 2G5, Canada

Telephone: (519) 885-6300

Toll Free: (800) 387-7373

Fax: (519) 885-0887

Viessmann Manufacturing Company Inc.

6350 204th Street
Langley, BC V2Y 2V1, Canada


Telephone: (604) 533-9445

Toll Free: (877) 853-3288

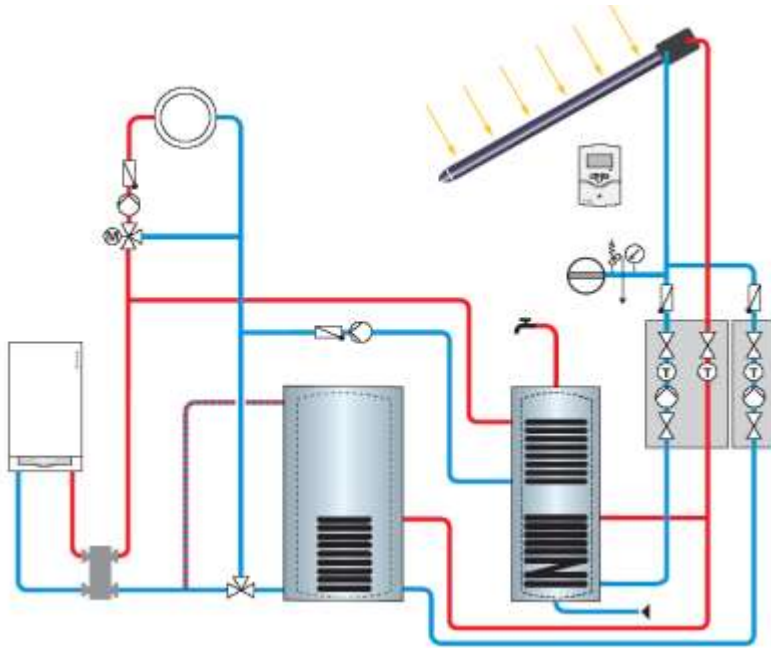
Fax: (604) 533-9439

Vitosol Solar PACK

Sales Promotion: Feb – Sept, 2015

Company Name	Name
<input type="text"/>	<input type="text"/>
Street Address	Email
<input type="text"/>	<input type="text"/>
City	Work Phone Number
<input type="text"/>	<input type="text"/>
Province	
<input type="text" value="Please Select"/>	<input type="text"/>
Postal Code	
<input type="text"/>	
<small>All fields must be filled out.</small>	
 Earn Partner Program points when you submit your installation claim	
Serial Number(s):	
<input type="text" value="Enter Serial Number"/>	<input type="text" value="Enter Serial Number"/>
<input type="text" value="Enter Serial Number"/>	<input type="text" value="Enter Serial Number"/>

Vitosol Support Services



We're here to help!

- Solar project sizing
- T*Sol simulations
- Material list / quotation
- CAD layout drawings
- Collector spacing calcs/
Roof layouts
- Project submittals
- System troubleshooting
- Product training
- In-field support

Solar Project Checklist

Two versions available:

- Excel Spreadsheet
- Pdf documents

- ***Send in to our support team if you have a solar project***

Solar Project Checklist



7. SWIMMING POOL HEATING

a) Pool Size:

Length: _____ ft. Width: _____ ft. Average Depth: _____ ft. Pool volume: _____ gal

b) Pool location:

Outdoor Pool

Swimming season:

Opening date: _____

Closing date: _____

Geographic location:

Unsheltered

Sheltered

Well sheltered

Windshield:

None

Partial

Full

Indoor Pool

Pool room climate:

Air temperature: _____ °F

Relative Humidity: _____ %



c) Pool heating data:

Desired pool temperature: _____ °F

Maximum pool temperature: _____ °F

Is a pool cover used? Yes No

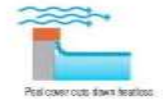
If yes, hours/day used: _____ hrs

of swimmers/day: _____

Make-up water per day: _____ gal

Is backup heating used? Yes No

If yes, what type: _____



8. SPACE HEATING SUPPORT

Size of heated area: _____ ft²

Design building heat load: _____ btu/hr @ _____ °F

High temp heating (radiator/fan coil)

System temp: _____ °F

% of building heated: _____ %

Low temp heating (radiant floor)

System temp: _____ °F

% of building heated: _____ %

Installed boiler output: _____ MBH

Fuel type: _____



9. SPACE COOLING SUPPORT

Size of cooled area: _____ ft²

Design building cooling load: _____ (btu/hr / tons / kW)

Installed chiller output: _____ tons

Cooling season (which months): _____

Existing cooling tower? Yes No

Existing reheating type: Electric

Gas

Steam

Capacity: _____ btu/hr

Additional comments:

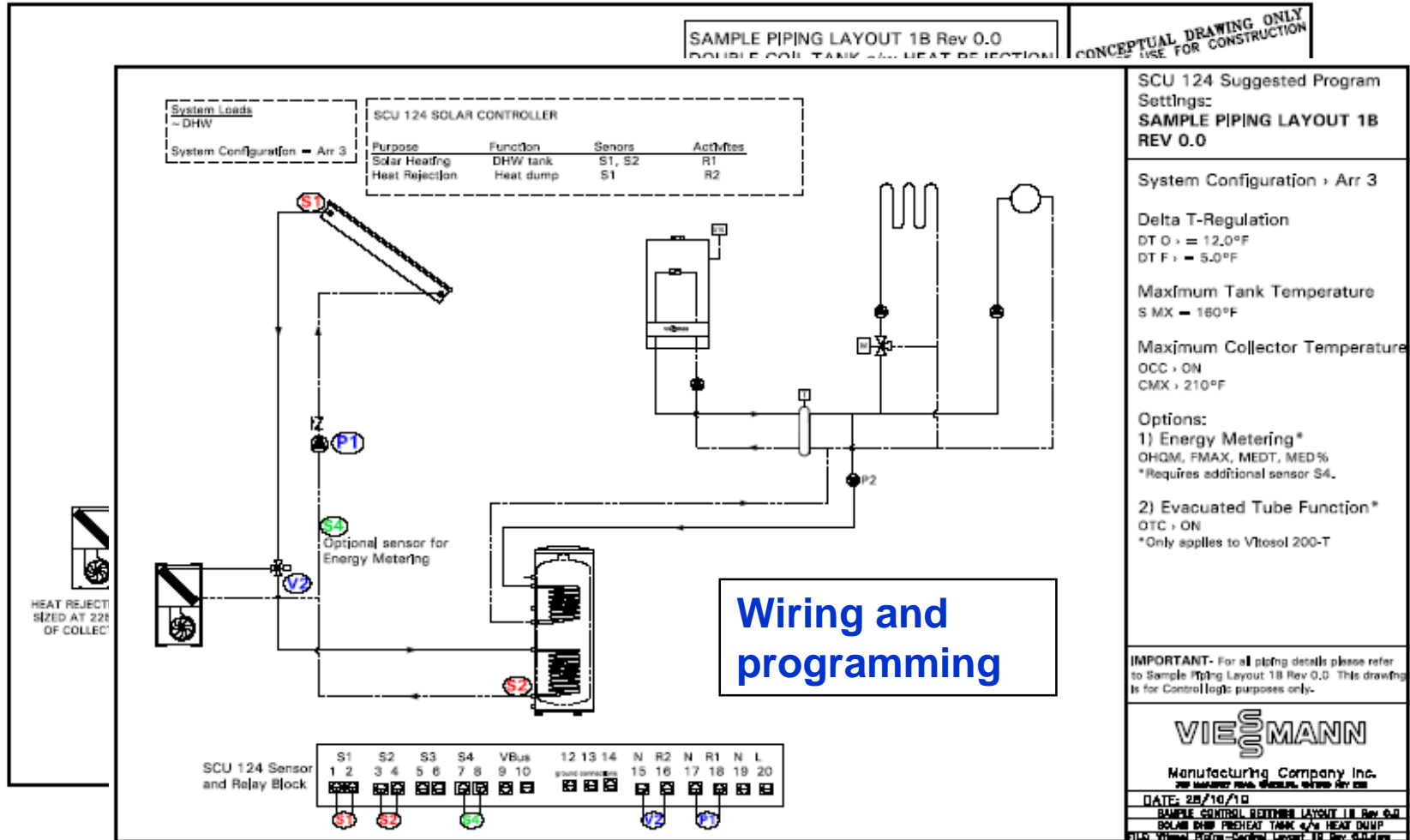
Please fill out as completely as possible, then return to the appropriate Solar Project Support department at Viessmann:

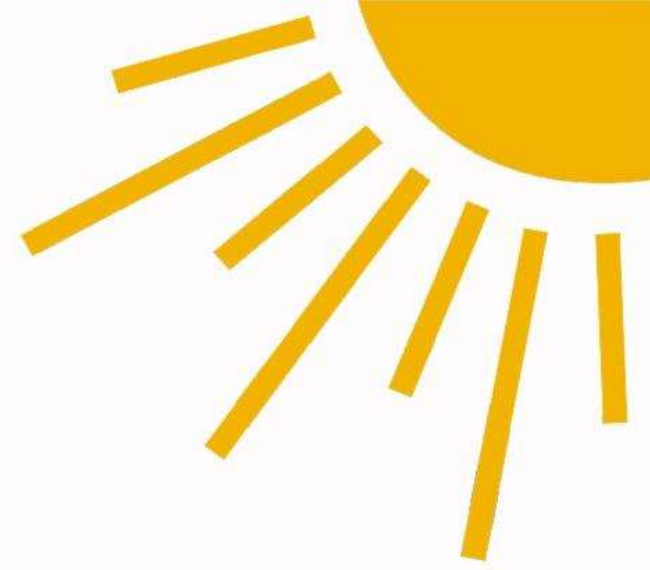
USA:	Warwick, RI,	email us_solar@viessmann.com	Fax (401) 732-0590,	Phone (401) 732-0667.
Canada:	Waterloo, ON	email roy@viessmann.com	Fax (519) 885-5432,	Phone (885) 885-6300.
	Langley, BC	email bous@viessmann.com	Fax (604) 533-9439	Phone (604)-533-9445

Include separately all necessary site drawings, sketches, utility bills, photos and project notes. The Checklist is reviewed and you will be contacted with receipt acknowledgement and questions within 48 hrs. An analysis of solar performance, list of Viessmann materials, and generic system schematic will usually be returned to you within five to seven business days of receipt of ALL information.

NOTICE: Any information that is unknown, or not supplied, will require us to make assumptions. This may result in inaccurate performance estimates, and can sometimes lead to oversized systems. Viessmann strongly encourages that all buildings seriously considering installing a Solar System have the hot water consumption metered, to ensure a properly sized and efficient SDHW system.

Sample Piping Layout Drawings





VIESSMANN

climate of innovation