SolarCon™
solar water heater tank
series NAS200

Function
The solar water heater has either one or two internal coils and a backup electric heating element in the single coil units. A heating medium is passed through the solar panels and internal coil as long as there is an adequate temperature difference between the heating medium and stored water in the tank. The internal coil is located as close to the bottom to facilitate the transfer of heat even at lower solar panel temperatures.

During periods of water flow through the water heater, hot water is drawn from the top of the heater and cold water comes into the bottom of the tank (by a dip tube or bottom inlet). On single coil tanks, if the hot water demand should exceed the solar heat input or there is an insufficient temperature difference between the heating medium and stored water, the heating element thermostat will activate the electrical heating element for backup heat. On double coil tanks, the upper tank is connected to the boiler for backup heat.

Solar heat output from the internal coil will vary depending on outside conditions and the temperature of the stored water.

Product range
NAS20053 Storage tank with lower coil and back up electric element 50 gallon
NAS20083 Storage tank with lower coil and back up electric element 80 gallon
NAS20123 Storage tank with lower coil and back up electric element 119 gallon
NAS20082 Storage tank with lower coil and top coil for boiler back up 80 gallon
NAS20122 Storage tank with lower coil and top coil for boiler back up 119 gallon
NAS20124 Storage tank with lower coil and top coil heat exchanger with back up electric element 119 gallon

Technical specifications
Tank materials: porcelain coated steel
Tank insulation: 2" non-CFC foam
Tank external cover: powder-coated steel (20-24 ga.)
Insulation thermal conductivity: R16
Anode rods: 2 each magnesium
Internal heat exchanger coil (lower): 1-1/2" x 30' (50 gallon)
Internal heat exchanger coil (top): 1-1/2" x 24' (80,119 gallon)
Internal heat exchanger test pressure: 450 psi
Connections: 3/4" NPT (50 gal.), 1" NPT (80, 119 gal.)
Maximum working pressure: 150 psi
Testing pressure: 300 psi
Temperature and pressure relief valve: 210°F/150 psi max
Maximum tank temperature: 180°F
Recommended maximum delivery hot water temperature: 120°F
Power requirements (electric element): 240 VAC
Power consumption (electric element): 4.5 KW
Agency approval: UL listed

Capacity and performance
<table>
<thead>
<tr>
<th>Model</th>
<th>Actual Tank Volume (gal)</th>
<th>Coil Volume Solar/Boiler (gal)</th>
<th>Coil Surface Area Solar/Boiler (ft²)</th>
<th>Coil Friction Loss* Solar/Boiler (ft. of head)</th>
<th>First Hour Rating (gal)</th>
<th>Recovery Rate Solar &amp; Backup* (gal/hr)</th>
<th>Standby Loss Rating °F/hr</th>
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NOTES:
* Based on 5 GPM flow rate.
# Based on solar input of 140°F @ 2 GPM. Depending on model, backup heat recovery is calculated with either a 4500W heating element or a boiler with output of 180°F at 14 GPM. Potable water temperature rise is 77°F.
### Dimensions

- **NAS20053 TOP**
- **NAS20083, NAS20123 TOP**

#### Figure 1: NAS20053, NAS20083, NAS20123

#### Figure 2: NAS20082, NAS20122, NAS20124

<table>
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<th>Model</th>
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### Characteristic components

**NAS20053**

1. Immersion Well
2. Leak Detector
3. J-Box Cover
4. J-Box Cover (w/ conduit hole)
5. Hot Outlet with Anode 3/4" NPT
6. Finish Ring
7. Cap (blank)
8. Cap (ANODE)
9. Cold Inlet with Dptube 3/4" NPT
10. Anode Rod
11. T&P Relief Valve
12. 1" NPT x 3" Nipple
13. Drain Valve
14. Access Cover
15. Foam Dam Cover
16. Thermostat Cover
17. Heating Element
18. Thermostat Mounting Bracket
19. Thermostat
20. Heating Element Gasket
21. Plug
**Characteristic components**

1. Immersion Well
2. Leak Detector
3. J-Box Cover
4. J-Box Cover (w/conduit hole)
5. Anode Rod
6. Cap (φNODEφ)
7. Finish Ring
8. Cap (blank)
9. 1” NPT x 3” Nipple
10. T&P Relief Valve
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12. Access Cover
13. Foam Dam Cover
14. Thermostat Cover
15. Heating Element
16. Thermostat Mounting Bracket
17. Thermostat
18. Heating Element Gasket
19. Plug

**Application diagrams**

**Single tank system with electric backup**

![Diagram of single tank system with electric backup]

**Single tank system with boiler backup**

![Diagram of single tank system with boiler backup]
Application diagrams

Two tank system with existing heater

Two tank with solar preheat to indirect boiler fired water heater

SPECIFICATION SUMMARIES

Code NAS20053

Code NAS20083
80 gallon Tank with lower coil and back up electric element. Connections 1" NPT. Porcelain coated steel tank. 2" non-CFC foam tank insulation. Powder-coated steel (20-24 ga.) external tank cover. R16 Insulation thermal conductivity. 2 magnesium Anode rods. 1-1/2" x 36' lower Internal heat exchanger coil. Maximum tank temperature 180°F. Maximum working pressure 150 psi. Testing pressure 300 psi. Temperature and pressure relief valve 210°F/150 psi max. Recommended maximum delivery hot water temperature 120°F. Power requirements 240 VAC. Power consumption 4.5 KW.

Code NAS20123
119 gallon Tank with lower coil and back up electric element. Connections 1" NPT. Porcelain coated steel tank. 2" non-CFC foam tank insulation. Powder-coated steel (20-24 ga.) external tank cover. R16 Insulation thermal conductivity. 2 magnesium Anode rods. 1-1/2" x 36' lower Internal heat exchanger coil. Maximum tank temperature 180°F. Maximum working pressure 150 psi. Testing pressure 300 psi. Temperature and pressure relief valve 210°F/150 psi max. Recommended maximum delivery hot water temperature 120°F. Power requirements 240 VAC. Power consumption 4.5 KW.

Code NAS20082
80 gallon Tank with lower coil and top coil for boiler back up. Connections 1" NPT. Porcelain coated steel tank. 2" non-CFC foam tank insulation. Powder-coated steel (20-24 ga.) external tank cover. R16 Insulation thermal conductivity. 2 magnesium Anode rods. 1-1/2" x 36' lower Internal heat exchanger coil. 1-1/2" x 24' top Internal heat exchanger coil. Maximum tank temperature 180°F. Maximum working pressure 150 psi. Testing pressure 300 psi. Temperature and pressure relief valve 210°F/150 psi max. Recommended maximum delivery hot water temperature 120°F.

Code NAS20122
119 gallon Tank with lower coil and top coil for boiler back up. Connections 1" NPT. Porcelain coated steel tank. 2" non-CFC foam tank insulation. Powder-coated steel (20-24 ga.) external tank cover. R16 Insulation thermal conductivity. 2 magnesium Anode rods. 1-1/2" x 36' lower Internal heat exchanger coil. 1-1/2" x 24' top Internal heat exchanger coil. Maximum tank temperature 180°F. Maximum working pressure 150 psi. Testing pressure 300 psi. Temperature and pressure relief valve 210°F/150 psi max. Recommended maximum delivery hot water temperature 120°F.

We reserve the right to change our products and their relevant technical data, contained in this publication, at any time and without prior notice.