SOLAR GAS BACKUP
INTEGRATED SOLAR & HIGH EFFICIENCY GAS
BACKUP WATER HEATERS
The Solar Gas Backup blends all of the features of our Commercial High Efficiency Gas water heaters with a storage tank optimized for solar thermal applications. The integrated space-saving design provides a single tank solution combining storage for heat captured by solar thermal collectors with 96% thermally efficient gas backup. This innovative hybrid technology takes efficiency and performance to their highest levels.

Solar Features
• Designed for commercial or large residential with 200-500 gallons daily hot water usage
• Solar loop side connections - supply and return from collectors
• Direct and Indirect models
• SCG3 direct models have open tank solar loop connections and are suitable for open loop systems or closed loop systems using an external heat exchanger
• SCX3 indirect models have an integrated single wall heat exchanger coil and are suitable for closed loop systems using Propylene Glycol and distilled water mixture as the heat transfer fluid
• Combine with our new two, three and four collector solar package systems that are SRCC certified OG-300 for a complete solar hot water system (package systems available October 2012)
• Compatible with our integrated standard and double wall solar pump stations
• Recirculation loop side connection
• Factory-installed lower tank temperature sensor for field supplied solar controls

Tank Features
• 100-gallon storage
• Powered anode rod - maintenance free protection against corrosion - permanent design that does not require replacement unless damaged
• Commercial grade glasslined tank provides superior protection against corrosion

Gas Backup Features
• Maximum operating set point for the gas backup burner is 140°F – allows for optimum solar contribution
• Exclusive American designed control system provides detailed operational information, precise temperature control and built-in diagnostics
• 96% thermally efficient 120,000 Btu/hr gas backup burner - available in natural gas and propane
• Top mounted, down-fired pre-mix burner provides optimum efficiency and quiet operation
• Complies with SCAQMD Rule 1146.2 and other Air Quality Management Districts with similar requirements for low NOx emissions
• Meets the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition of ASHRAE/IESNA 90.1
• Design-certified by CSA International,
• Conventional power venting or power direct venting
• Vents vertically or through sidewall
• Direct vent intake and exhaust pipe can terminate separately outside building, or through single opening, using concentric vent assembly
• Uses inexpensive PVC, CPVC, pipe for intake and exhaust
• Flexible venting uses 3” or 4” pipe – up to 120 equivalent feet

These models are eligible for a 30% federal tax credit for the total installed costs (no cap) when installed as part of a complete commercial or residential solar thermal hot water system. State and local incentives may also apply.

*For complete warranty information consult the written warranty of American Water Heaters found at www.americanwaterheater.com, or call (800) 456-9805.
Solar loop connections are 1 1/2" NPT female on SCG3 100T 120 models and 1" NPT female on SCX3 100T120 3N models.

These designs comply with the current edition of the American National Standard for Gas Water Heaters, Volume III, ANSI Z21.10.3 / CSA 4.3 as an automatic circulating tank water heater, and automatic storage water heaters.

**SC3 MODEL HEAT EXCHANGER COIL DATA**

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>TUBE SIZE L.D. (inches)</th>
<th>SURFACE AREA (square feet)</th>
<th>COIL CAPACITY (gallons)</th>
<th>TUBE LENGTH (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCX3 100T120 3N</td>
<td>1.63</td>
<td>18.8</td>
<td>4</td>
<td>43.5</td>
</tr>
</tbody>
</table>

Heat exchanger must only be used with a propylene glycol heat transfer fluid containing corrosion inhibitors such as Dowfrost®.

Working pressure of the internal heat exchanger coil is 150 PSI.

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>FLOW RATE (gallons per minute)</th>
<th>PRESSURE DROP THROUGH COIL (feet of H2O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCX3 100T120 3N</td>
<td>2</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>0.15</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>0.25</td>
</tr>
</tbody>
</table>

* Center line of water outlet on top of the water heaters is approximately 7 inches from the front edge of the water heater.
TYPICAL APPLICATION SCX3 100T120 3N

LEGEND

- TEMPERATURE & PRESSURE RELIEF VALVE
- PRESSURE RELIEF VALVE
- CIRCULATING PUMP
- TANK OR LINE TEMPERATURE CONTROL
- EXPANSION TANK
- FULL PORT BALL VALVE
- MIXING VALVE
- CHECK VALVE
- DRAIN
- TEMPERATURE GAUGE

<table>
<thead>
<tr>
<th>SOLAR SYSTEM PACKAGE MODEL</th>
<th>SOLAR GAS BACKUP MODEL</th>
<th>NUMBER OF COLLECTORS</th>
<th>COLLECTOR SIZE (FT)</th>
<th>HEAT EXCHANGER TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSX 62AC1220LC</td>
<td>SCX3 100T120 3N</td>
<td>2</td>
<td>3.5' x 7'</td>
<td>Single Wall Internal Coil</td>
</tr>
<tr>
<td>CSX 62AC1320LC</td>
<td>SCX3 100T120 3N</td>
<td>3</td>
<td>3.5' x 7'</td>
<td>Single Wall Internal Coil</td>
</tr>
<tr>
<td>CSX 62AC420LC</td>
<td>SCX3 100T120 3N</td>
<td>4</td>
<td>3.5' x 7'</td>
<td>Single Wall Internal Coil</td>
</tr>
</tbody>
</table>

Solar system packages available October 2012

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TYPICAL APPLICATION SCG3 100T120 3N

LEGEND

- Temperature & Pressure Relief Valve
- Pressure Relief Valve
- Circulating Pump
- Tank or Line Temperature Control
- Expansion Tank
- Full Port Ball Valve (Valve shown in fully open position)
- Mixing Valve
- Check Valve
- Drain
- Temperature Gauge

<table>
<thead>
<tr>
<th>SOLAR SYSTEM PACKAGE MODEL</th>
<th>SOLAR GAS BACKUP MODEL</th>
<th>NUMBER OF COLLECTORS</th>
<th>COLLECTOR SIZE (FT)</th>
<th>HEAT EXCHANGER TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSY 62ACE220LC</td>
<td>SCG3 100T120 3N</td>
<td>2</td>
<td>3.5' x 7</td>
<td>Double Wall External Plate</td>
</tr>
<tr>
<td>CSY 62ACE320LC</td>
<td>SCG3 100T120 3N</td>
<td>3</td>
<td>3.5' x 7</td>
<td>Double Wall External Plate</td>
</tr>
<tr>
<td>CSY 62ACE420LC</td>
<td>SCG3 100T120 3N</td>
<td>4</td>
<td>3.5' x 7</td>
<td>Double Wall External Plate</td>
</tr>
</tbody>
</table>

Solar system packages available October 2012
HEAT INPUT SOLAR LOOP - SOLAR THERMAL COLLECTORS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>APERTURE AREA</th>
<th>THERMAL PERFORMANCE</th>
<th>MAXIMUM SOLAR THERMAL INPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR-110-AP FLAT PLATE</td>
<td>Square Feet</td>
<td>SRCC Data</td>
<td>Maximum Number</td>
</tr>
<tr>
<td>COLLECTOR</td>
<td>Square Meters</td>
<td>Warm Climate</td>
<td>CR-110-AP Collectors</td>
</tr>
<tr>
<td>(3.5' X 7')</td>
<td></td>
<td>Clear Day</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SRCC Data</td>
<td>Maximum kBtu/day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cool Climate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clear Day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25.5</td>
<td>25.1kBTU/day</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2.37</td>
<td>15.5kBTU/day</td>
<td>100.4kBTU/day</td>
</tr>
</tbody>
</table>

Notes: CR-110-AP collector model specification sheet available for download on company website. Contact your local distributor or sales representative for more information.
If other collectors are used in place of CR-110-AP do not exceed maximum Btu/day input above.

GAS BACKUP RECOVERY CAPACITY

<table>
<thead>
<tr>
<th>MODEL</th>
<th>TYPE OF GAS</th>
<th>INPUT</th>
<th>THERMAL EFFICIENCY</th>
<th>APPROX. CAPACITY</th>
<th>MAXIMUM SOLAR THERMAL INPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCG3 100T120 3N / SCX3 100T120 3N</td>
<td>NATURAL/PROPANE</td>
<td>120,000</td>
<td>35</td>
<td>96%</td>
<td>60 U.S. Gal GPH 461</td>
</tr>
</tbody>
</table>

Notes:
- Change “N” to “P” in model number for propane.
- Recovery capacities are based on heater performance at 96% thermal efficiency.
- Maximum gas supply pressure: 10.5” W.C. natural gas 14” W.C. propane.
- Electrical requirements: 120 VAC/60Hz, Blower 2.2 Amps FL, Igniter 4.0 Amps.

MAXIMUM EQUIVALENT VENT LENGTHS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>TYPE OF GAS</th>
<th>INPUT</th>
<th>THERMAL EFFICIENCY</th>
<th>APPROX. CAPACITY</th>
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<td>120,000</td>
<td>35</td>
<td>96%</td>
<td>60 U.S. Gal GPH 461</td>
</tr>
</tbody>
</table>

Notes:
- Change “N” to “P” in model number for propane.
- Maximum number of 90° elbows allowed for the vent (exhaust) pipe is four (4) when installing 3 inch pipe and six (6) when installing 4 inch pipe. Maximum number of 90° elbows allowed for intake air pipe is four (4) when installing 3 inch pipe and six (6) when installing 4 inch pipe. Two (2) 45° elbows equal one (1) 90° elbow.
5. Operation of the water heater(s) in a closed system where thermal expansion has not been compensated for (with a properly sized thermal expansion tank) will void the warranty.

For conventional-vent specification: The water heater(s) shall be suitable for venting in 3˝ PVC pipe for a total equivalent distance of 50 ft and 4˝ PVC pipe for a total equivalent distance of 120 ft.

For sealed-combustion direct vent specification: The water heater(s) shall be suitable for venting with (3˝ or 4˝) _______diameter PVC pipe for a total equivalent distance of (50 ft or 120 ft) _______feet. [Alternative venting: the heater(s) shall be suitable for sealed combustion direct venting using a (3˝ or 4˝) _______diameter PVC exhaust pipe for a total distance of (50 ft or 120 ft) _______equivalent feet of vent and (50 ft or 120 ft) _______equivalent feet of intake.]

Operation of the water heater(s) in a closed system where thermal expansion has not been compensated for (with a properly sized thermal expansion tank) will void the warranty.

**Order Entry and Sales**

500 Princeton Road (FEDEX, UPS)
Johnson City, TN 37601-2030
P.O. Box 4808 (Mailing)
Johnson City, TN 37602-4808
(800) 937-1037
FAX (800) 581-7224

**Warranty and Service**

500 Princeton Road (FEDEX, UPS)
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FAX (800) 999-5210

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