



Sealed-Combustion Gas-Fired Mod/Con Water Heaters

HeatTransfer
Advanced Heating and Hot Water Systems



Certifications and Ratings:

The water heaters are UL/ULC listed and meet or exceed thermal efficiency and standby loss requirements of current ASHRAE standards. All water heaters are supplied with AGA/ASME rated temperature and pressure relief valve. The control panel is an integrated solid state temperature and ignition control device with integral diagnostics, LED fault display capability and a digital display of temperature settings. Meets all safety and construction requirements of ANSI Z21.10.3

CERTIFIED FOR A 150 PSI MAXIMUM WORKING PRESSURE.

The First Solar Water Heater with an integrated gas fired back-up ...all in one water heater!

The Phoenix Solar is truly a revolutionary product. Designed with an internal solar heat exchanger for a solar panel that combines with a highly efficient 96% Gas Fired Back-up heat exchanger all in one storage tank. The Phoenix Solar will transfer all the energy the sun can provide and also provide lots of hot water through the internal gas fired back-up when the sun is not shining. Designed with the most advanced technology available, with a 96% efficiency, these products optimize efficiency and operating reliability.

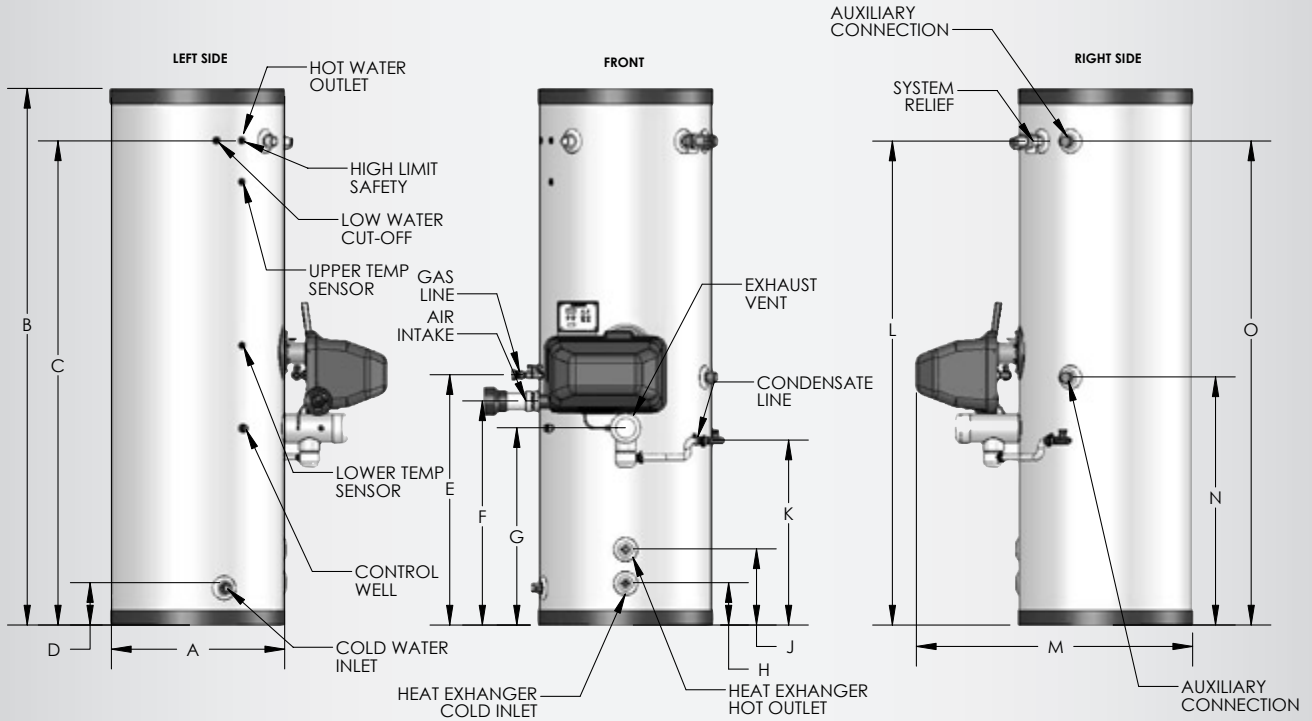
Construction Features:

- 316 L stainless steel tank construction (Requires no anode rods)
- Corrosion resistant, high efficiency with a combined Cupronickel /Stainless combustion heat exchanger.
- Internal Solar Heat Exchanger – Provides maximum heat transfer of Solar Energy into hot water.
- Highly efficient gas fired back-up – Thermal efficiency of up to 96%
- Load matching modulating gas fired burner with a 3 to 1 turndown
- Low Nox Emissions. Meets SCAQMD Rule 1146.2
- No chimney required; direct vent using plastic pipe
- Ability to vent up to 85 equivalent feet of length
- High Impact plastic jacket eliminates dents.
- 2" of non-CFC polyurethane foam insulation.
- Less than 1/2 degree per hour heat loss (R17).
- Self diagnostic electronic control with digital readout for water temperature, set point and differential settings.
- Removable front cover allows easy access to burner assembly
- Auxiliary Connections for air handlers or radiant heat.
- Gas –Back up Temperature Range from 70 F to 160 F
- Zero clearance to all combustible surfaces.
- Factory installed AGA/ASME rated T&P relief valve.





Dimensional Information



PHOENIX SOLAR WATER HEATER DIMENSIONS

MODEL #	GALLONS	A	B	C	D	E	F	G	H	J	K	L	M	N	O
PH-80S	80	23"	72"	64"	5-1/4"	32"	29"	25-1/2"	5-3/4"	9-3/4"	27-3/4"	64"	36"	32"	64"
PH-119S	119	27"	74"	66"	7-1/4"	34"	31"	27-1/2"	7-1/2"	11-1/2"	25-3/4"	66"	40"	34"	66"

ALL DIMENSIONS ARE APPROXIMATE

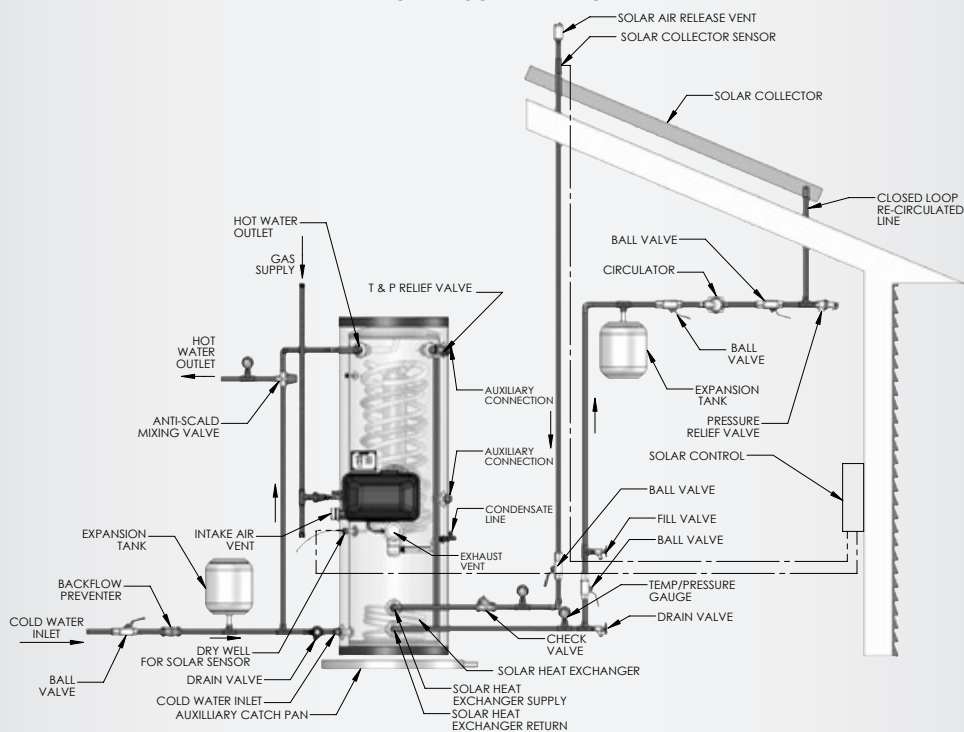
PHOENIX SOLAR WATER HEATER SPECIFICATIONS

MODEL #	GALLONS	BTU'S	AIR INTAKE/ EXHAUST VENT SIZE	WATER INLET/ OUTLET SIZE	HEAT EXCHANGER SIZE	AUXILIARY CONN.	GAS LINE CONN.	SYSTEM RELIEF PIPE SIZE	SHIPPING WEIGHT
PH-80S	80	130,000	2"	1-1/2" NPT	1"	1"	3/4"	3/4"	245 LBS.
		199,000	3"						
PH-119S	119	130,000	2"	1-1/2" NPT	1"	1"	3/4"	3/4"	415 LBS.
		199,000	3"						



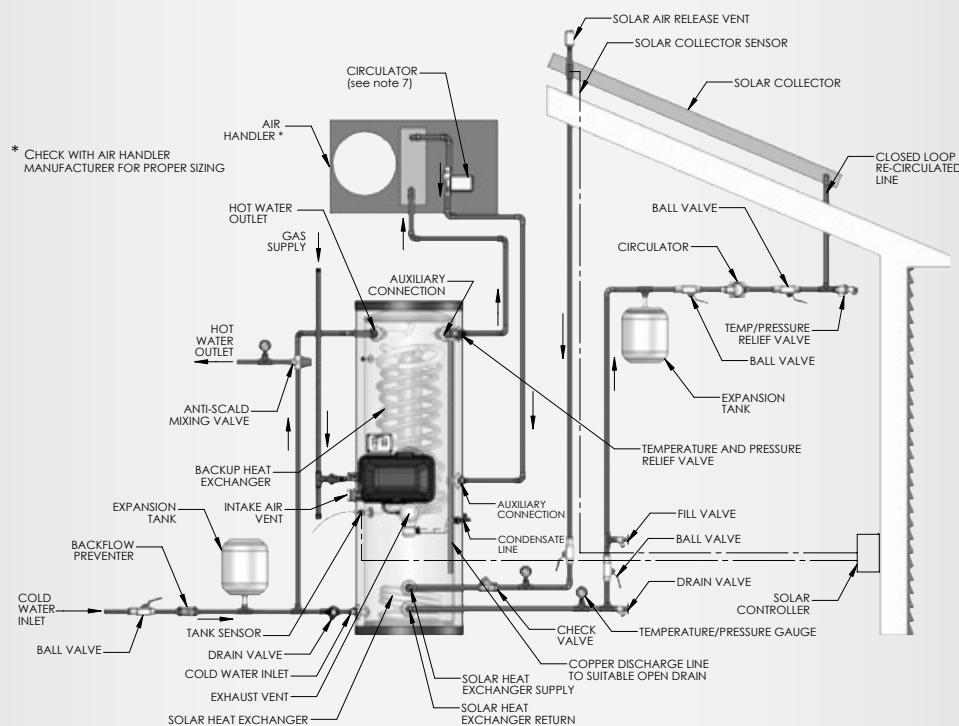
Piping Options

PHOENIX SOLAR PIPING



LP-201-A
Rev. 10/05/07

PHOENIX SOLAR PIPING WITH AIR HANDLER



NOTES:

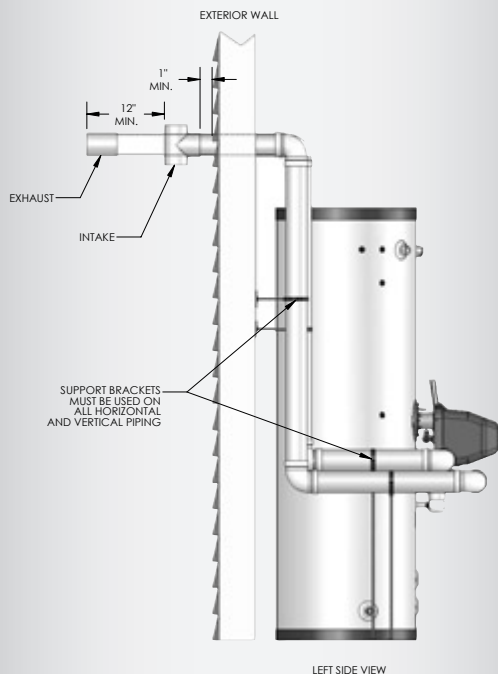
1. THIS DRAWING IS MEANT TO SHOW A SYSTEM PIPING CONCEPT ONLY. THE INSTALLER IS RESPONSIBLE FOR ALL EQUIPMENT AND DETAILING BY LOCAL CODES.
2. ANTI-FREEZE, NON-POTABLE HEAT TRANSFER FLUID SHALL BE USED FOR THE SOLAR HEAT EXCHANGER CIRCUIT ONLY. NEVER INTRODUCE ANTI-FREEZE SOLUTION TO ANY OTHER CONNECTION OTHER THAN THE SOLAR HEAT EXCHANGER.
3. IF THERE IS A CHECK VALVE ON THE COLD WATER FEED LINE, A THERMAL EXPANSION TANK SUITABLE FOR POTABLE WATER MUST BE SIZED AND INSTALLED WITHIN THIS PIPING SYSTEM BETWEEN THE CHECK VALVE AND THE COLD WATER INLET OF THE SOLAR WATER HEATER.
4. AN ANTI-SCALD MIXING VALVE IS RECOMMENDED IF THE DOMESTIC HOT WATER SETTING IS ABOVE 120F.
5. A MINIMUM OF 12 DIAMETERS OF STRAIGHT PIPE MUST BE INSTALLED UPSTREAM OF ALL CIRCULATORS.
6. MAKE SURE TANK IS FULLY PURGED OF AIR BEFORE POWER IS TURNED ON TO THE BACKUP HEAT SOURCE.
7. CIRCULATORS SHOWN IN THE HYDRONIC BOILER PIPING ABOVE SHOULD HAVE AN INTEGRAL FLOW CHECK OR ALTERNATELY USE A STOCK PUMP WITH AN EXTERNAL SPRING TYPE CHECK VALVE. (CIRCULATORS WITH INTEGRAL FLOW CHECKS ARE NOT TO BE USED IN SOLAR SYSTEMS DUE TO EXTREME TEMPERATURES.)

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Venting Options

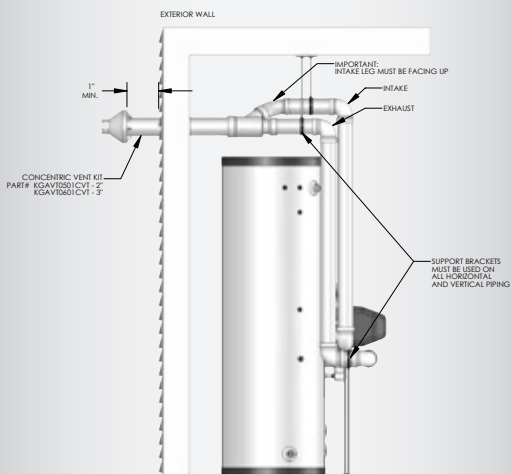
SIDEWALL VENTING WITH TEE (INTAKE) AND COUPLING EXHAUST



LEFT SIDE VIEW

LP-201-C

SIDEWALL VENTING WITH TEE (INTAKE) AND COUPLING (EXHAUST)



LEFT SIDE VIEW

LP-201-B



Solar Recovery Capacities

Model	Gallon Capacity	Input BTU/hr	Heated Water Volume of Gas Back-Up at First Draw	Recovery Of Back Up in Minutes	
				65° Rise	90° Rise
PH199-119S	119	66,000–199000	61 GAL	10 MIN	14 MIN
PH199-80S	80	66,000–199000	41 GAL	7 MIN	10 MIN
PH130-119S	119	44,000–130000	61 GAL	16 MIN	21 MIN
PH130-80S	80	44,000–130000	41 GAL	11 MIN	15 MIN



Specification

The Phoenix Water Heater shall be manufactured by Heat Transfer Products, Inc. with identification of model number PH_____. The water heater shall be a sealed combustion system, taking only outside air for combustion and exhausting the flue gas with PVC Schedule 40 or 80 PVC, or CPVC solid core pipe. The heater as well as all related intake air and exhaust intake air and exhaust gas piping shall be approved for zero clearance to any combustible surface. The units total combined equivalent venting length, including fitting allowances for both the intake air and exhaust gas shall not exceed 85' (in the units native size as manufactured and stated on the unit model product data sheet) in 2", or 3" pipe or 125' for the next size up of 3" or 4" from the heaters location.

The solar heaters tank shall be constructed of 316L stainless steel. The primary gas fired condensing heat exchanger shall be constructed of 90/10 cupronickel. The secondary gas fired heat exchanger shall be constructed of 800H stainless steel and 90/10 cupronickel. The tank insulation shall be water blown foam 2" thick in the side wall with a rating of R14.2 and 3" thick in the top with a rating of R21.3. Insulation shall be enclosed in a plastic jacket on the sides as well as the top and bottom. All components shall be located on the front of the heater for easy access and serviceability. All related hardware shall be constructed of stainless steel studs with brass nuts for serviceability. All water connection nipples shall be constructed of stainless steel and be attached to the side of the tank. The top and bottom of the tank shall be smooth with no pipe tappings on the top or legs on the bottom.

Solar models shall have an additional internal heat exchanger on the bottom of the tank to connect to a solar system.

The heaters shall be UL/ULC listed and will exceed the minimum efficiency requirements of ASHRAE 90.1b -1992. All heaters shall be approved in accordance with ANSI Z 21.10.3. All heaters will be supplied with a factory installed ASME rated temperature and pressure relief

valve. All heaters shall be supplied with a factory installed low water cutoff, and upper hot water sensor, and lower cold water sensor. All heaters shall be furnished with a factory installed condensate trap assembly ready for easy connection to a field supplied condensate drain.

The heater shall have an integrated digital controller device with integral diagnostics, LED fault and temperature settings for establishing set point, temperature differential. Ignition shall be with direct spark with ignition taking place at a pre-set ignition speed for the burner blower. The control shall utilize an algorithm to fully adjust the burner modulating firing rate while maintaining the desired temperature. The pre-mix stainless steel burner uses a 120 volt motor with pulse wave modulation control to change the fan speed, thus the combustion air volume of fuel and air through the burner to establish an infinite BTU input range equal to the water heating set point requirement. The digital LED control display shall provide means, via push buttons, for adjustments of operating temperatures, differential adjustment, ECO reset, service mode, and real time status mode. In addition there shall be provided a computer connection via laptop computer for perpetual history including all fault codes, and hours of operation above 50% of input, below 50% of input as well as real time status reporting of all operations. The burner assembly shall be mounted so as to be easily removed as an integral unit for easy serviceability.

The heater shall be in compliance with the NOx Emissions limit as set forth in SCAQMD Rule 1146.2 – 1998.

The heater shall be factory assembled; test fired for correct BTU input and adjusted for proper combustion parameters. Complete operating and installation instructions shall be furnished with every heater as packaged by the manufacturer with the heater for shipping.

