OWNER'S GUIDE AND INSTALLATION MANUAL

Geyser C-Series

Commercial Air Sourced Heat Pump Water Heater

This heat pump water heater must be installed and serviced by a licensed technician.

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Safety Information

PLEASE READ THIS SECTION CAREFULLY TO PREVENT ACCIDENTS AND/OR CAUSE INJURIES.

Examine your water tank. Make sure it is not rusty or leaking. Depending on the condition and age of the tank, this may be the best time for replacement. Before installing your Geyser C-Series heat pump water heater, make sure that both the Geyser and the storage tank are on flat surfaces and properly secured.

The Geyser C-Series heat pump water heater must be installed in accordance with local and national codes as well as the instructions within this manual. Before beginning the installation, read the entire manual and check the local and national building, electrical, and plumbing codes that fit your application. Failure to install according to these codes and instructions may result in property damage, personal injury, or death.

- ⊗ An air discharge blower is located on the unit. Extreme caution must be exercised to ensure that any foreign objects do not enter the blower area.
- ⊗ Do not stand or sit on the unit. Do not allow children to play on or around the unit.
- ⊗ Disconnect all power before removing the control panel.
  *Note: There is no need to remove the control panel unless there is a malfunction internally. Only a licensed technician is to remove the control panel.
- ⊗ Disconnect all power before installing or servicing the Geyser C-series heat pump water heater.
- ⊗ Ensure the power receptacle is rated for the appropriate load. See Data Sticker on the unit.
- ⊗ Ensure that the electrical supply has proper overload fuse or breaker protection rated for at least the appropriate amperage. See Data Sticker on the unit.
- ⊗ Wear eye protection during installation.
- ⊗ All lifting of the Geyser C-series heat pump water heater should be done with a fork lift or pallet jack to prevent back injuries. Never move the unit alone.
- ⊗ If the pressure relief valve on the existing water heater tank is leaking or dripping, call a licensed plumber for repair. Do not plug or remove valve as this could result in an explosion.
- ⊗ Water temperature over 125 °F can cause severe burns resulting in scalding. The Geyser C-series is shipped at the default set point of 120 °F in accordance with the Department of Energy standards.
- ⊗ Follow all safety instructions provided by the manufacturer of the existing water heater.
- ⊗ The Geyser C-series is **not** to be installed in a location where it is exposed to temperatures below 45 °F (7.2 °C) or above 120 °F (49 °C).
- ⊗ Please read this entire manual before beginning installation.

PLEASE KEEP THESE INSTRUCTIONS FOR REFERENCE!

System Requirements

- ✓ The Geyser C-Series Heat Pump Water Heater (HPWH) should only be installed in a dry/covered location. The Geyser C-series is not designed to be installed outside where it can be exposed to adverse weather conditions. The ambient air temperature in the installation area should not drop below 45 °F (10 °C).

- ✓ The Geyser C-series is to be wired to its' own isolated circuit. The Geyser C-series comes available with a number of power options.

- ✓ The Geyser C-series is recommended for installation on storage tanks of at least 80 gallons (302.8 liters).

- ✓ A drain must be available to accommodate condensate generated during operation of the Geyser C-series. In high humidity environments, the Geyser C-series acts as a great dehumidifier. The condensate can be routed to a floor drain, sink, the house waste line, or to the outside by way of the drain hose.

- ✓ Check with the codes in your area for the proper way to dispose of the condensate. A condensate pump may be required (not included).

- ✓ The Geyser C-Series HPWH will remove moisture from the air. It is an efficient dehumidifier and may provide all the necessary dehumidification for the space the unit is located.

- ✓ Moisture may occasionally cause frost to form on the evaporator. When frost builds up, the Geyser C-Series HPWH will go into a defrost cycle. This could occur as often as every two hours in a cold, humid environment.

SECTION 1: Geyser C-Series
Air Sourced Commercial Heat Pump Water Heater

HOW YOUR WATER HEATER WORKS:

The Geyser C-Series commercial heat pump water heater is air sourced meaning heat is extracted from the air surrounding the unit and, utilizing heat pump technology, that energy is used to heat the water in your storage tank. In many parts of the world, heat pumps are considered a source of renewable energy, like wind or solar. As a by-product of heating water, they cool and dehumidify the air. This air can be ducted to where it reduces the load on air conditioning, further increasing your savings.

Performance for commercial units is usually expressed in terms of Coefficient of Performance (COP). In typical installations our commercial units, achieve COPs ranging from 3-5. This means it creates 3-5 units of renewable heat from the air for every 1 unit of electricity required to run the unit. This 300% to 500% efficiency compares with efficiencies of traditional water heaters of approximately 70% for gas or oil to 90% for electric water heaters. Overall savings on the commercial side are typically 60% – 75%, including stand-by losses, etc. For all heat pumps, performance is impacted by a number of factors including the ambient air and water temperatures. The investment payback period is typically 1 – 3 years (based on US energy prices), depending on a number of factors, including how much water you use.

ABOUT YOUR WATER HEATER:

Our commercial units range in capacity from 25,000 BTUH to 250,000 BTUH, generating from 50 to 500 gallons of hot water per hour. These units can heat water efficiently up to 150F and are ideally suited for restaurants, hotels/motels, apartment buildings, laundry facilities, health care facilities, schools, sports arenas, gyms, institutions such as prisons, military barracks, specific manufacturing plants, and more.

Please refer to Table 1 on page 7 for specifications on each specific C-Series model.

Figure 1 – Geyser C-Series Heat Pump Water Heater

REGULAR CARE:

Never cover the unit or stack objects on it. Always leave space around the unit so cleaning and maintenance can be done easily.

Blower Fan
The blower fan should be oiled with a few drops of oil every six months. SAE 20 is recommended. Using other oils or over oiling can cause bearing failure.

Evaporator Fin
The evaporator fin can also be vacuumed cleaned. If there is anything heavier than dust such as oils, paint or grease, the fin can be cleaned with a detergent suitable for aluminum cleaning. Any detergent should be washed off with freshwater before use.

SECTION 2: Technical Specifications

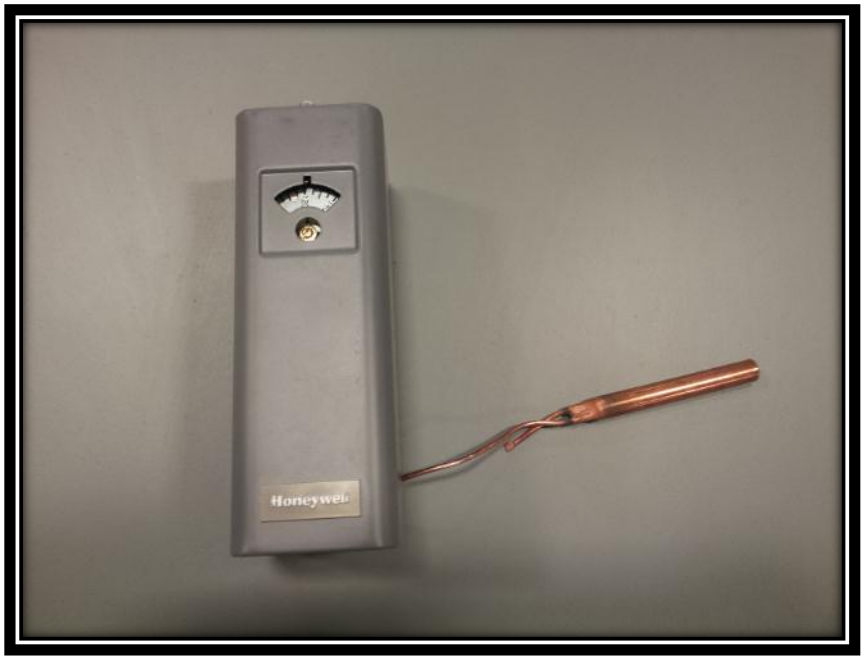
FEATURES:

The Geyser C-Series is a high efficiency air-to-water heat pump water heater. It can be connected to nearly any existing water tank. The Geyser draws energy from the ambient air to heat water, thereby saving 60% - 75% in costs over an electric water heater. As a byproduct of water heating, the Geyser produces dry, cool air. The air can be ducted to another area to decrease air conditioning/dehumidification costs and further increase savings.

The Geyser C-Series can heat water efficiently up to 150°F, and is ideally suited for use in restaurants, hotels/motels, apartment buildings, laundry facilities, health care facilities, schools, sports arenas, gyms, institutions such as prisons, military barracks, specific manufacturing plants, and more.

The Geyser C-Series comes standard with a Honeywell Aquastat Controller. This control is used to control the water temperature in the tank by supplying a call signal to the Heat Pump Water Heater. The control comes with a factory setting of 120 degrees with a 15 degree differential. The Aquastat Control should never be set higher than 150 degrees; failure to comply could void the warranty. (See Honeywell Manual for installation instructions)

Honeywell Aquastat Controller
Model # L4006A,B,E,H



This is the exiting air side of the unit. The mesh screen can be removed and duct work can be added. There is a 2” x 2” angle surrounding the blower housing so the duct work can be bolted or screwed in place. There is also a variable speed pulley on the drive, if duct work is added the pulley my need to be adjusted.

UNIT SPECIFICATIONS:

Model Number	C-25	C-40	C-60	C-125	C-250
Recovery Rate (gph)*	57	74	125	250	500
Heating Capacity (Btu/hr)**	28,600	40,000	62,900	125,800	251,600
Power Input (kW)	2.14	3.01	4.72	9.44	18.87
Air Flow (cfm)	1,600	2,650	3,200	6,400	12,800
Ext. Static Pressure Rating	3/4”	3/4″	3/4”	3/4”	3/4”
Cooling Capacity (Btu/Hr)	21,300	31,750	46,800	93,600	187,200
Compressor Type	Scroll	Scroll	Scroll	Scroll	Scroll
Refrigerant	R-134a	R-134a	R-134a	R-134a	R-134a
Max Water Temp (°F)	150	150	150	150	150
Water Connections	3/4” NPT Copper	3/4″ NPT Copper	1” NPT Copper	1.5” NPT Copper	2” NPT Copper
Water Flow Rate (gpm)	4.5	8	12	25	50
Condenser Pressure Drop	< 5 feet	< 5 feet	< 5 feet	< 5 feet	< 5 feet
Sound Level (dB)***	60-70	60-70	60-70	65-75	65-75
Dimensions (L x W x H) (in)	36 x 32 x 36	55 x 28 x 31	60 x 32 x 36	72 x 36 x 36	84 x 60 x 42
Weight (lbs)	250	335	475	900	1,800

**Note1: Water heated from 70°F (21°C) to 130°F (55°C).*
***Note2: Performance at 75°F ambient air, 100°F EWT, and 60% RH.*
****Note3: Sound Level Range is based on distances from 12’ to 3’ from the unit.*
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Table 1 – Model Specifications

SECTION 3: Installation

GENERAL SAFETY:

Please read this entire manual before installation. Be sure to follow all installation steps. Failure to conform to these instructions may decrease the heat pump performance and could cause severe injury or death. Only qualified, licensed persons should install the heat pump equipment and electrical supply. Installation must conform to **all** local, state, and federal applicable codes.

LOCATION SELECTION:

Waste Heat: The optimum location for the heat pump is where "waste heat" is available. The waste heat will be used as a source of energy to heat the water, and can further reduce operating costs. This will also provide the maximum efficiency out of the unit. The heat pump should not be located in a small or enclosed space unless air is ducted in to provide the necessary circulation.

Temperature Range: The operating temperature range for the Geyser C-Series is between 45°F (7.2°C) and 120°F (49°C). Exposure to temperatures lower than 32°F (0°C) could cause water to freeze in the pipes, causing damage. Operating at temperatures below 45°F (7.2°C) will cause the unit to constantly run in "Defrost" mode.

Condensate Drainage: The condensate should be properly routed to a drain or waste line. A condensate pump (not included) may be required if there is no drain nearby, or draining by gravity alone is not a possibility. The unit should be elevated at least 6" off the floor to allow for a condensate trap to be installed. This also allows room to clean the trap.

Back-up Heating Capacity: A backup system can be used for water heating if the Geyser is ever taken off line.

Clearances: Make sure the fan is not blocked or close to a wall or other obstruction that would inhibit air flow. If possible, leave at least 36" around the unit for service access. A minimum of 18" clearance must be provided for access to the control box. 36" of clearance is recommended for the evaporator.

Outdoor Installation: The Geyser C-Series can be installed outdoors in warm climates where the unit will not be exposed to temperatures below 32°F (0°C). Temperatures below 32°F can freeze water inside the pipes and cause damage to internal components. The heat pump should however be sheltered from rain if installed outdoors. A split system is another option for outdoor installation. The evaporator sits outdoors, but the water lines stay indoors, so there is no risk of freezing the lines. Call Nyle for more information on split systems.

Distance from Storage Tank: The pump has been sized to allow for 25 feet of piping to and from the storage tank (an additional pump can be added during install if needed).

Electrical Supply: Refer to the electrical data plate for the specific model voltage, phase and ampacity requirements.

TYPICAL PLUMBING:

(Plumbing must conform to **all** local and state codes)

1. For maximum efficiency, the heat pump should have the coldest water in the system running through it at all times. To do this, the lowest connection in the tank should be used for the supply (Water Inlet) to the heat pump. The return (Water Outlet) from the heat pump should be installed higher up on the tank but not necessarily the top. If you install the return at the top of the tank this will cause cool water to mix with the hot water. This is caused by the small change in temperature through the Heat Pump.
2. Lines to and from the heat pump must be properly sized for the correct flow rate in GPM (see Table 2). Too much or too little water flow will decrease efficiency. Water tank ports must also be large enough to ensure peak water demands can be handled

Model Number:	C-25	C-60	C-125	C-250
Line Size:	3/4”	1”	1 1/2”	2”

Table 2 – C-Series Line Sizing

3. The design must prevent water hotter than 150°F from running through the heat pump inlet. The set point on the controls will handle this.
4. If multiple heat pumps are used in parallel, the piping must be large enough to handle combined water flow. Flow rates through each heat pump must be balanced.

5. Some municipal codes require installation of temperature and pressure relief valves on plumbing sections. Others may require dielectric plumbing fittings. Use copper or bronze fittings. All hot water pipes must be insulated.
6. All plumbing must be sized for peak water flow demands.

INSTRUCTIONS:

This installation method is designed to bring the most efficiency for the system. Deviating from the following installation procedure will affect the efficiency of the unit. Deviation from the installation method could also damage the unit and void the warranty. PLEASE read and follow the installation instructions carefully.

1. If the heat pump is to be connected to an existing storage tank, the old tank must be drained and cleaned of sediment before the heat pump is installed. A filter is recommended to be installed on the cold water line entering the water tank. Do not put the filter in line with the C-Series heat pump water heater.
2. Make sure the area where the Geyser C-Series is to be installed is free of debris and dust that can clog the filter.
3. The heat pump can be connected to an electric water heater, but only the top heating elements should be active when the heat pump is operational.
4. The inlet of the heat pump may be connected to a tee installed on the cold inlet line to the tank. Tanks with dip tubes should be used with caution or avoided altogether, because the dip tube can restrict flow and cause heat pump malfunction.
5. The tank should allow the placement of the heat pump control thermostat where the tank water temperature will be sensed accurately (the tank should have an opening for a thermostat well). The thermostat must be sufficiently buffered from the cold water supply so that short-cycling does not occur. Cement or stone-lined tanks without thermostat wells should **not** be used.

Thermostat Placement

A thermostat well must be installed before installing a thermostat. The thermostat well must be large enough to fit the thermostat sensing bulb located on the Honeywell Aquestat. Be sure that the thermostat sensing bulb can fit inside the well.

Coat the thermostat sensing bulb with heat transfer compound.

Secure the bulb inside the well.

If installing into a used tank, check the condition of the anode rod and replace if depleted.

On vertical tanks without wells, mount the bulb approximately 18” from the bottom of the tank. Do not place the bulb close to the tank’s cold water inlet because small amounts of cold water

flowing into the tank could trigger the thermostat. A good rule of thumb is that the heat pump should engage when at least 20 gallons are drawn from a standard 120 gallon tank.

Cover the thermostat with insulation once it is secured. The bulb must be secured firmly against the wall of the tank to accurately sense the water temperature inside the tank. Improper insulation of the bulb can lead to overheating of the water. (This cannot be done on cement lined tanks which must have a thermostat well.)

On a horizontal tank, install a thermostat well in an opening that is approximately at 4:00 or 8:00 o'clock position on the tanks cross section. Again the bulb should not be placed near the cold water inlet because this could trigger the thermostat.

On tanks without openings, mount the thermostat bulb securely in a horizontal position underneath the insulation and against the tank wall. The bulb should again be placed in the 4:00 or 8:00 o'clock position on the cross section. Coat the bulb with heat transfer compound before securing it to the tank wall, and cover with insulation.

Electrical

All electrical work should be performed by a licensed professional, and should adhere to all local and state codes.

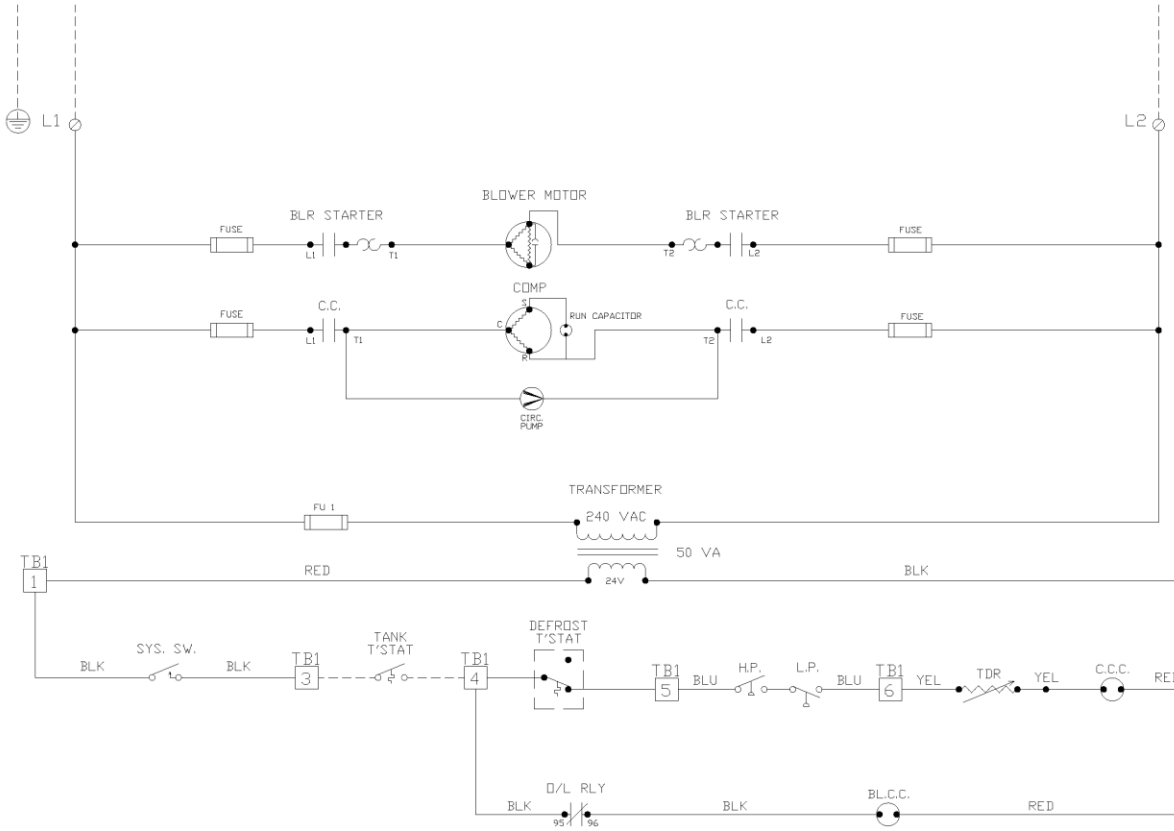
The heat pump controls are located with the compressor in front of the heat pump. Follow the name plate information for proper voltage, phase and ampacity for the heat pump water heater. Refer to the name plate for proper breaker and wire sizing. Locate a fuse disconnect as close as possible to the heat pump.

Airflow and Ducting

The Geyser heat pump will provide cool, dehumidified air from the blower fan. This air can be ducted to another room to lessen air conditioning loads, or to cool an equipment room. It is not recommended to duct to the outside, because air from the outside can come in and cool the room more than the air from the blower fan because of the difference between the inside and outside pressure. If the unit must be placed where ducting is necessary, then a damper can be installed to prevent air from coming back through the duct.

Duct Sizing

Ducts must be sized to achieve the proper air flow. Refer to the model specifications for the required duct static pressure required to achieve the proper CFM.



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TITLE: C- SERIES Wiring			
CUSTOMER			
DRAWN BY: JDC	DATE: 3/7/2013	DWG NO.: 1	REV: 1.1
CHECKED	DATE: 3/7/2013	SCALE: NTS	SHEET: 1 OF 1

WARRANTY INFORMATION

LIMITED WARRANTY:

The equipment supplied by Nyle is warranted to be free from defects in workmanship and materials for a period of one year from the date of the original installation or 15 months from the date of delivery, whichever comes first. A new or remanufactured part will be supplied by Nyle providing the defective part is first returned to Nyle for inspection. The replacement part assumes the unused portion of the warranty. The warranty does not include labor or other costs incurred for diagnosis, repairing or removing, installing or shipping the defective or replacement parts.

Nyle makes no warranty as to the fitness of the equipment for a particular use and shall not be liable for any direct, indirect or consequential damages in conjunction with this contract and/or the use of its equipment. Buyer agrees to indemnify and save harmless Nyle from any claims or demands against Nyle for injuries or damages to third parties resulting from buyer's use or ownership of the equipment.

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