



Air Conditioner Water Heater

Model ACWH18

Installation Guide

IMPORTANT! READ THIS FIRST!

Commissioning of this unit must be done by a licensed HVAC technician. Commissioning includes making the electrical and refrigerant line connections, evacuating and charging the unit, and starting up the unit for the first time.

Depending on local regulations in your area, it's possible for a qualified end user to perform other parts of the installation. A qualified user would be a user with expert handyman and plumbing skills, who has performed similar work previously, and who has the required tools and equipment.

It is up to the user to determine if a permit is needed and to determine what self-installation work is allowed under local regulations.

Installation of this system must be done in accordance with proper plumbing, electrical and HVAC standards such as those established under NEC, ASHREA, AHRI and IAPMO, and must comply with state and local codes.

The manufacturer accepts no responsibility for failure to follow the applicable standards and codes. Failure to have a licensed HVAC technician perform the commissioning may void your warranty.

**HotSpot Energy LLC
1228 Progressive Dr. Suite 201
Chesapeake VA 23320
info@hotspotenergy.com
1-757-410-8640**

The following is an outline of some of the main tasks involved in pre-installing the ACWH. We assume you have the tools and equipment, skills and experience, etc., to perform these tasks. If you do not or if you are not sure if you do, then refer these tasks to a professional.

Read this document entirely before proceeding.

1. Thoroughly read and understand the ACWH Owners Manual. When doing so, pay extra attention to allowable distances and elevations between the indoor unit and the outdoor unit, and the allowable distance between the outdoor unit and the hot water tank. Also note the instructions in the owners manual for the indoor unit and condensate drain tube.
2. Determine a proper location for the outdoor unit and set a pad in place. Pre-fabricated pads for air conditioners are available from Lowes or Home Depot or similar retailers. Alternatively you can select an exterior wall mount option, or pour your own concrete pad.
3. Unpack the indoor and outdoor units and carefully read and understand all of the enclosed documentation. Place the outdoor unit on the pad. Set the indoor unit inside away from weather.
4. Measure your distances so that you know how much and what type of electrical lines you will need, verify capacity on your circuit breaker panel, etc. See the owners manual for AWG and electrical requirements. Measure the water line path between the outdoor unit and tank so you know how much PEX and insulation to purchase and what adapters and fittings are needed.

5. Plan the job and obtain the needed materials. For electrical you may need Romex or you may be required to use wire in conduit or other option depending on your situation and local code. You may need conduit, PVC or other pipe for the outdoor connections.

For water lines we suggest $\frac{3}{4}$ " PEX. If your run is over 100 ft. one-way it is possible to exceed this maximum distance by using 1" PEX after performing a pump head calculation and consulting the pump curve.

If you are at this point and are not sure how to proceed, you are probably not a good candidate to perform these tasks.

6. Mount the indoor unit on the wall for placement purposes. Make sure it is level.

7. Unpack the line-set and place one end of it near the connection to the indoor unit and place the other end near the outdoor unit. Connect the line-set to the indoor unit. Do not touch the other end. If the line-set is not long enough and you did not order a 25 ft. extension, your HVAC technician can make one easily if he knows in advance that he will need to do so. Same applies to the control cable that connects the indoor unit to the outdoor unit. Make a watertight professional 3" exterior wall penetration. Fit the line-set and control cable through the hole and carefully bend it towards the outdoor unit. Do this work neatly and carefully, considering the requirements of the drain tube. Use tape to wrap the line-set and control cable. Use the included grommet to seal the hole. Secure the line-set to a wall or other structure so it cannot move in the wind, first making sure you have enough extra line at each end for your connections. Know what kind of structural and finish materials you are working with and obtain the correct hardware to properly attach the line-set to the structure. Measure twice! Make sure your line-set and cables are long enough.

8. Before starting installation of the water connections, inspect the water heater for leaks, corrosion or other problems. If the water heater needs to be changed out, now is the right time. If the existing water heater is acceptable, proceed with the following installation.

9. Shut off power to the water heater, if electric, at the fuse or circuit breaker panel. If it's a gas-fired water heater, close off the gas valve found ahead of the water heater burner and controls. If gas, be sure you know how to turn the gas on and off (including resetting the igniter safety switch) before doing this.

Shut off the cold water supply to the water heater.

10. Empty the water heater by attaching a hose to the drain valve and opening the pressure relief valve. If the draining water appears dirty or cloudy, you may have to refill the water heater and drain it again, until the draining water appears clear and free of sediment.

NOTE: *Some water heaters are already plumbed with stubs extending from the cold water line and the hot water delivery line. Use the cold water stub, do not use the hot water stub.*

Fig. 1 Tank Tap



Shown on the next page are options for connecting the water lines from the ACWH to the water tank. One option shown shows the use of the Tank Tap Adapter (shown in fig 1). This adapter is designed to use the boiler drain port as both the supply and return to the ACWH while retaining its drain functionality. Detailed Tank Tap instructions follow at the end of this document. If you did not order a Tank Tap with your unit, use the plumbing method.

Fig.2 Tank Tap w/ Existing Tank

Valve Schedule

⊗ Isolation Valve

⊗ Boiler Drain

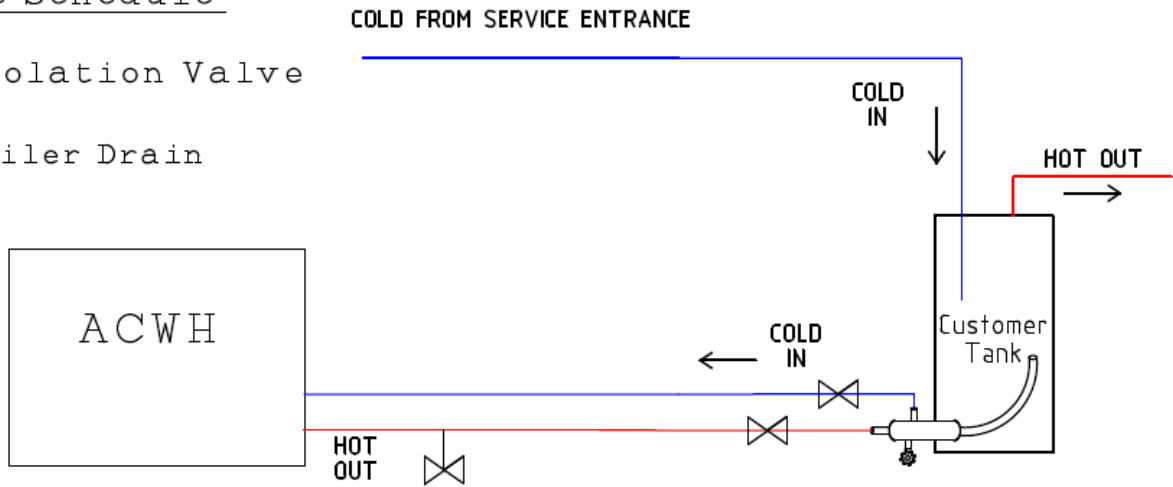
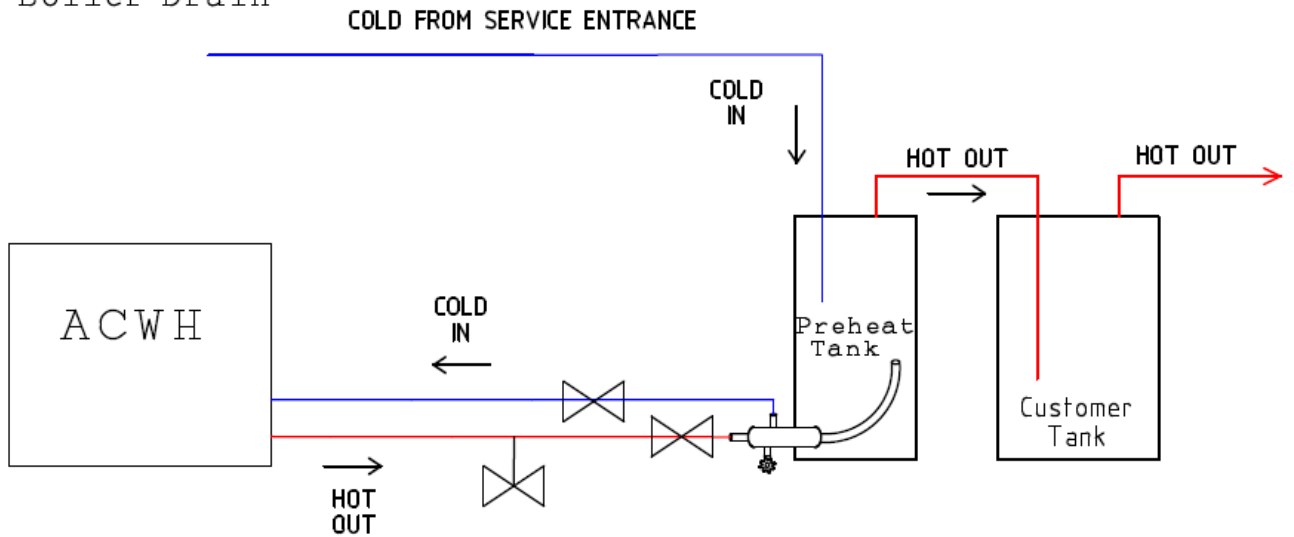


Fig.3 Tank Tap w/ Pre-heat Tank

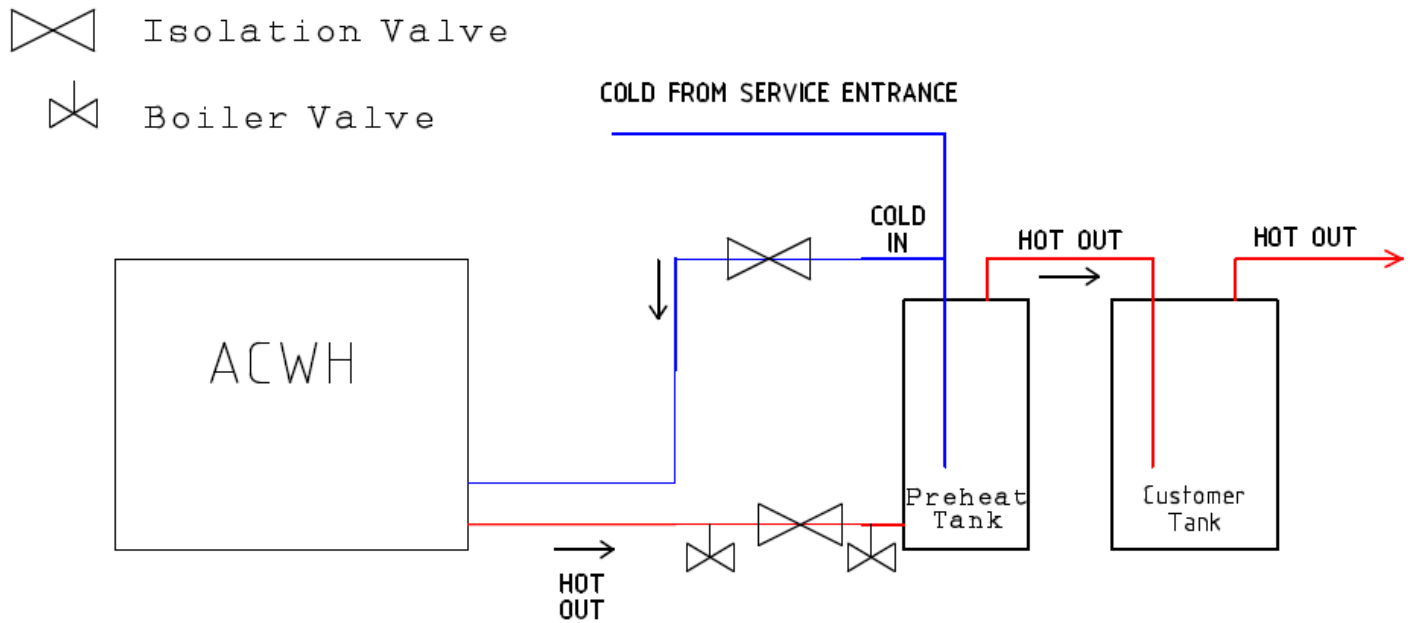
⊗ Isolation Valve

⊗ Boiler Drain



The Tank Tap options in Figs. 2 & 3 avoid interrupting the cold water supply line and adding a Tee. Using the Tank Tap Adapter avoids the need for a permit in most jurisdictions.

Fig. 4 Normal plumbing with Tee (shown with pre-heat tank)



NOTES Do not return the ACWH unit's hot water by placing a Tee in the hot water delivery pipe above the water heater. This approach will allow water to pass from the ACWH unit directly into the system which can create bursts of unevenly tempered water.

The option in Fig. 4 is usually for a situation where the Tank Tap Adapter cannot be used due to code, permitting, clearance or sediment issues.

Note:

The HotSpot ACWH unit does not ship with factory installed boiler drain valves. We recommend the installation of boiler drain valves and a isolation valve at the ACWH unit end of the water lines. Drainable valves, also known as “Stop and Waste” valves should be used, as they will allow draining of the heat exchanger if needed and will also perform as air-bleeds when filling the system.

IMPORTANT:

**Make sure that the water lines are connected to the “cold water in” And “hot water out” connections of the ACWH unit. Connecting the water lines to the wrong ACWH connection will lower the efficiency of the heat recovery circuit.*

**Make sure that the water line from the water heater’s cold water supply tee is connected to the “cold water in” stub on the ACWH unit. Performance is significantly impaired if the water line connections are reversed.*

**When using the Tank Tap, note that the side-inlet of the Tank Tap connects to the ACWH “cold in” stub and the Tank Tap end connection connects to the ACWH “hot out’ stub. See Tank Tap instructions if using a Tank Tap.*

•*IMPORTANT***** *If connecting the water lines to the ACWH with copper pipe, DO NOT BRAZE this connection, use soft solder only. Inside the unit, soft solder is used to connect to the pump – if you heat the water line by brazing, the solder will melt and run out, causing a leak.*

Insulate the entire length of both water lines between the water heater and the ACWH unit, using closed cell foam pipe insulation.

Purging:

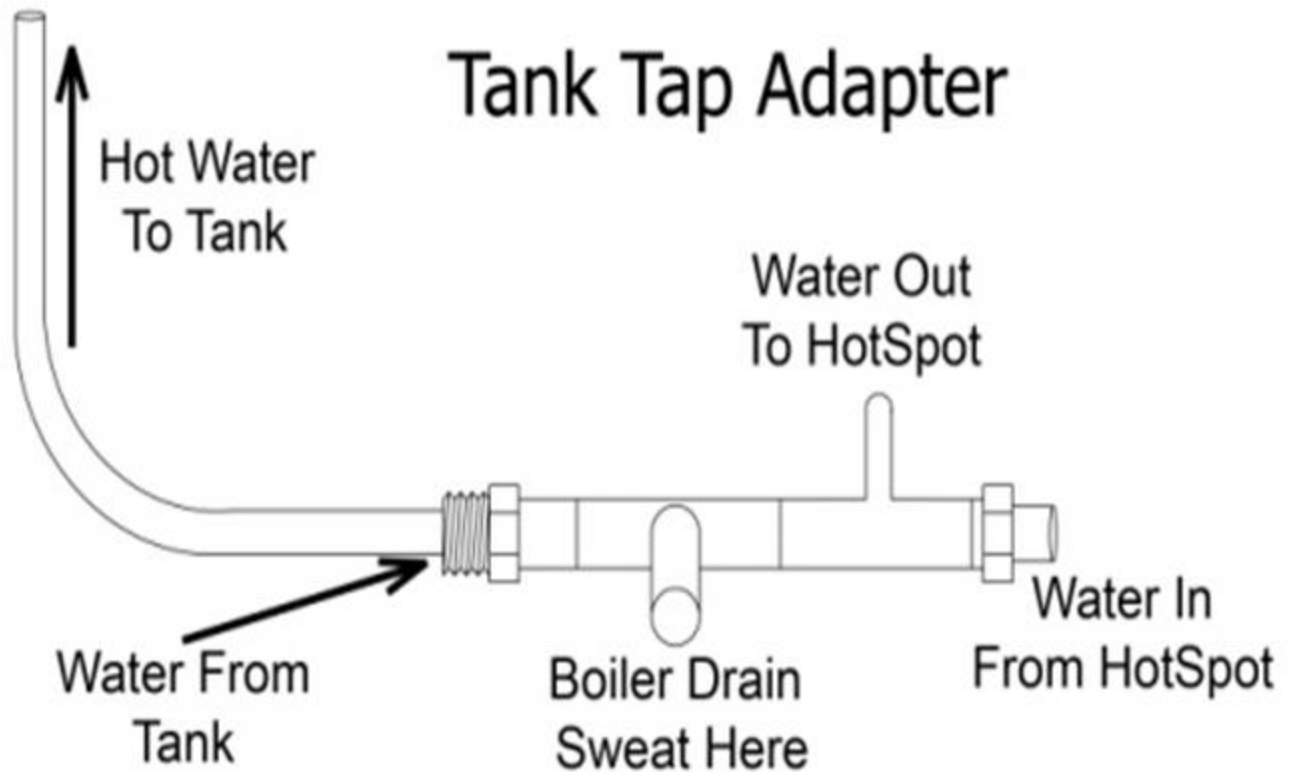
Turn on the cold water supply to the water heater and allow the water heater and the ACWH unit to fill with water. Bleed air from the system by opening the boiler drain on the hot out side. This primes the ACHW pump. Next open the pressure relief valve on the tank until all air is removed. Last, open a hot water faucet and run until you feel a steady stream of flow from the hot water faucet. Note the water will be cool because the tank has recently been drained.

6. Turn the power (or gas) back on the water heater and check for normal operation.

NOTE:

The ACWH unit is capable of generating very hot water. Precautions should be taken to avoid the possibility of scalding. We recommend installing a mixing or "scald" valve to prevent scalding. Make sure that the "hot water out" line is well insulated and protected from accidental handling or damage.

** Do not attempt to create a return of the ACWH unit hot water by modifying the water heater's pressure relief valve opening.*



- **Unique Design**
- **Utilizes existing Boiler or Water Heater Drain for Inlet and Outlet of HotSpot Unit**
- **No need to turn off water to property for installation**
- **No permit needed for installation in most areas**

Optional Tank Adaptor Instructions

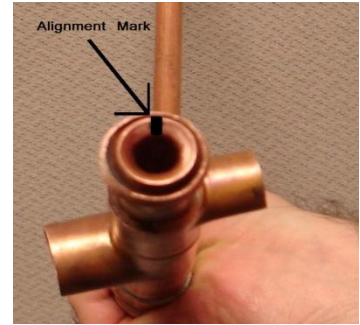
If your system was ordered to include a Tank Tap Adapter you will save time and may avoid the need for a permit. If not, use normal plumbing procedures.



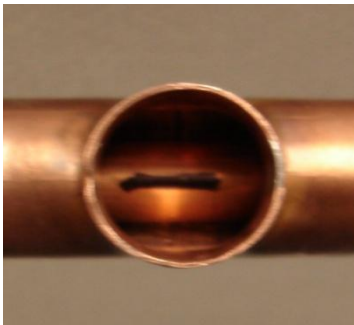
Begin by draining the tank and flushing out any sediment.



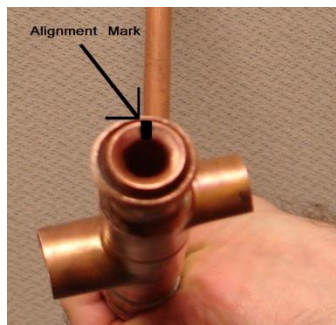
The old drain valve may be thrown away.



With a sharpie, make 2 alignment marks on the inner pipe.



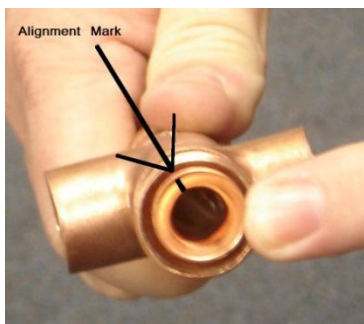
Make the second alignment mark here



Bend the pipe so it will point up with the first alignment marks.



Use a pipe bender to avoid crushing or kinking the pipe.



The tube bend should both alignment marks.



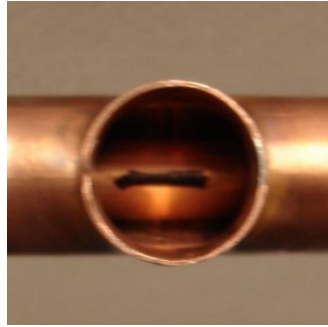
Note the second mark in open fitting.



Insert a 5/16" screwdriver into the union to hold the pipe curved up into the tank while checking both alignment marks.



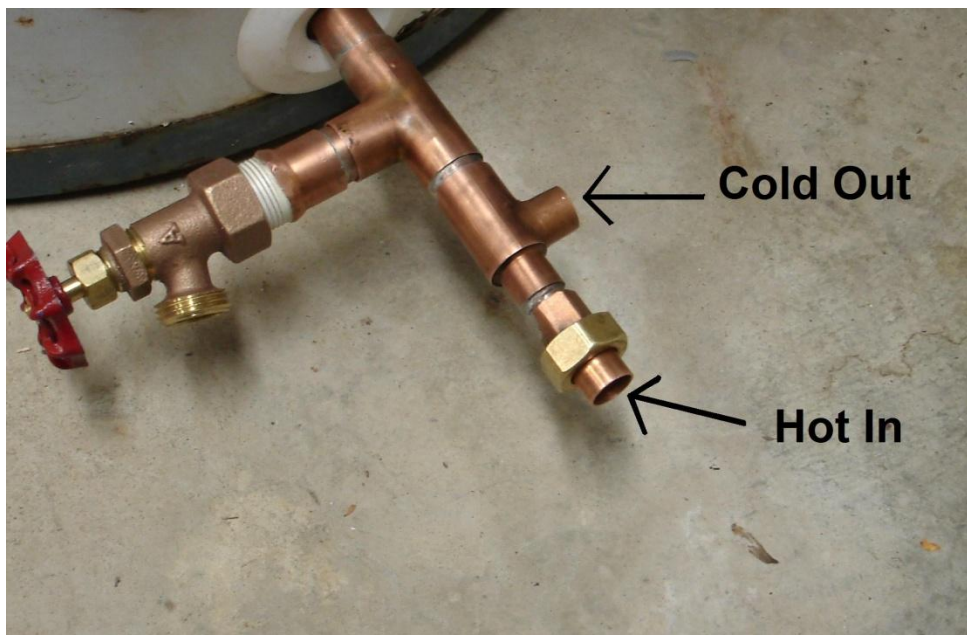
With the pipe pointing strait up in the tank, we tighten the union nut to secure the inner pipe's position. The inner pipe (inside the tank) should be pointing strait up.



Double check the second alignment mark through the drain fitting



Once the union nut is tight, tape the threads, and sweat the hose bib on.



Using PEX, continue the water line to the ACWH.

About PEX

HotSpot recommends using PEX for the water line connection.

PEX is a globally and USA code-approved water line solution that has many advantages over copper, PVC or other water line solutions. It is available from many manufacturers and suppliers all over the world. It is flexible, resists scale, does not corrode and is much lower in cost and faster to install than anything on the market. PEX has been used in the USA since 1980 and in Europe since 1970.

The PEX we refer to is PEX Tube standard CTS-OD and we recommend use of 3/4 diameter. It can be purchased online or through hardware stores like Lowes or Home Depot. You will need to have the correct adapters, fitting and tools for your system layout. If you are new to PEX, read and study it and get extra materials to practice with.

Tools that may be needed:



Adapters and fittings:



Example application:



Only use PEX rated for min. 180F. This may be but doesn't have to be red (hot water) PEX.

Just about anything you might need to know about purchasing or using PEX can be found at www.PEXsupply.com. HotSpot is not affiliated in any way with PEX Supply.