

ABOUT YOUR ELECTRIC TANKLESS WATER HEATER

Congratulations on the purchase of your Drakken Electric Tankless Water Heater! You have purchased one of the most technologically advanced Tankless Electric Water Heater in today's market.

Your new Tankless water heater is packed with up to date technology using several sensors to monitor vital telemetry like Flow Rate, Inlet & Outlet water temperatures to then drive the correct amount of power through integrated circuits to maintain the temperature set by the user. These advanced means of modulation are rarely used in the industry due to the high cost of engineering. Drakken Industries has taken out the guess work and has put together an Engineering piece of machinery for the house hold users. Your water heater is equipped with USB capabilities where you the user can easily interact with the microprocessor in order to enter certain commands and or programs, from setting user preferences to running self diagnosis of the whole heater, this technology are exclusive to Drakken Industries.

At any time, if you feel you need to ask any questions please feel free to contact our tech support department by e-mail.

Drakken Industries LLC

790 West 20th Street Suite-103

Hialeah, FL. 33010 USA

Tel: 305-556-5266

Fax: 305-556-9171

e-mail: info@drakkenusa.com

This manual should be left with the unit after installation & should be retained for future reference.

THIS UNIT WAS TESTED WITH BOTH WATER & ELECTRICAL CONNECTIONS SIMULATING A STANDARD INSTALLATION PRIOR TO SHIPPING.

risk of electrical shock, for heater used the first time or not used for a long period, let water go through it, turn on the power, and then operate it according to the manual.



BEFORE YOU INSTALL THIS PRODUCT

PLEASE READ THESE INSTRUCTIONS THOROUGHLY & COMPLETELY PRIOR TO INSTALLATION & BEFORE USE. FAILURE TO DO SO COULD CAUSE PROPERTY DAMAGE OR SERIOUS PERSONAL INJURY OR DEATH, & CAN VOID YOUR WARRANTY.

By installing this product, you acknowledge the terms and conditions of the manufacturer & Authorized dealers warranty policy and return procedures. Units which have been previously installed may not be returned, you must contact Drakkens Warranty department for any returns or repairs.



IMPORTANT SAFETY INFORMATION

As when installing or using any high voltage electrical appliance, basic safety precautions should always be followed. Under no circumstances should you attempt to clean, install, inspect, repair, disassemble, or otherwise service this Tankless Heater without first shutting off all power to the unit directly at the breaker box. **SERIOUS BODILY INJURY OR DEATH COULD OCCUR IF YOU IGNORE THIS WARNING.**

THIS PRODUCT MUST BE INSTALLED BY A QUALIFIED ELECTRICIAN & PLUMBER, HEATING, MECHANICAL CONTRACTOR IN ACCORDANCE WITH ALL NATIONAL, STATE, PROVINCIAL, & LOCAL ELECTRICAL & PLUMBING CODES.

PLEASE READ THESE INSTRUCTIONS THOROUGHLY & COMPLETELY BEFORE INSTALLATION & BEFORE USE. FAILURE TO DO SO COULD CAUSE PROPERTY DAMAGE OR SERIOUS PERSONAL INJURY OR DEATH, & VOID YOUR WARRANTY.



IMPORTANT SAFETY INFORMATION

THIS PRODUCT HAS MORE THAN 1 POWER SUPPLY CONNECTION POINT. DISCONNECT ALL POWER SUPPLY BEFORE SERVICING. THIS EQUIPMENT MUST BE USED ONLY WITH APPROVED SEPARATE SUPPLEMENTARY OVER CURRENT PROTECTION ASSEMBLIES.

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1. Before you install your water heater

Due to the small size of your electric tankless water heater, its designed to be wall mounted and away from contact with water. Improper installation, adjustment, alteration, service and/or maintenance can cause serious injury and/or property damage. This product is designed to be installed indoors only. You may be able to install your water heater in an outdoor location as long as it is mounted in a suitable water proof enclosure that protects the water heater from rain, splashed water, direct sunlight, debris, & insects.



WARNING

This product should NOT be installed in a location where it may be subjected to FREEZING TEMPERATURES. If the water inside your tankless water heater unit freezes, it can cause severe & permanent damage that's not covered under your warranty. If you suspect your tankless water heater may be frozen, do not turn on the water or breaker on until the tankless water heater has been completely thawed out, and you have checked for leaks.

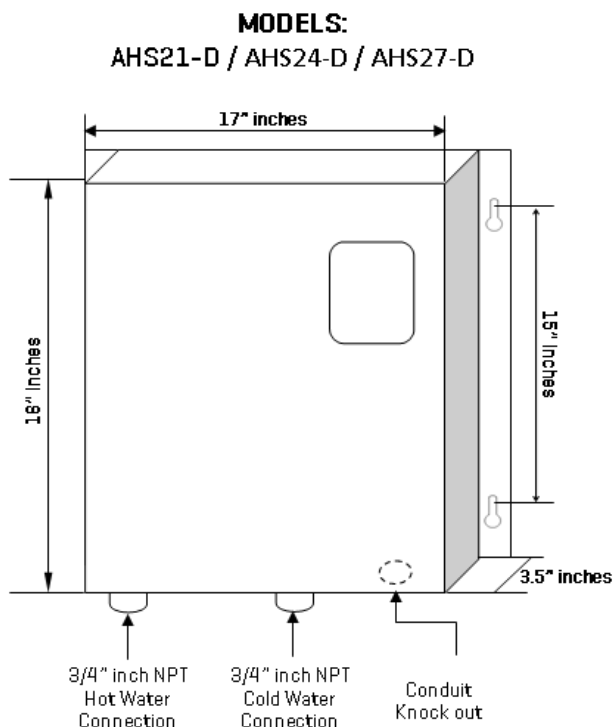
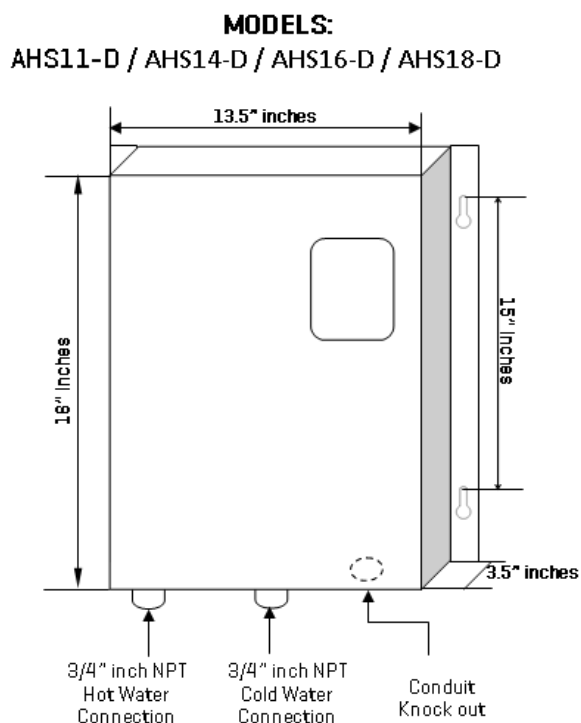
When selecting and installation location, give consideration to your existing plumbing configuration, location of your main electrical panel. You should also give consideration to future servicing. DO NOT locate the tankless water heater that is in a difficult position to service. In most cases, installing your new tankless water heater in the same location where your old appliance can make more sense.

1.1 (Cont.)

Regardless of your installation location, the installation must conform to the requirements of the authority having jurisdiction or in absence of such requirements to the latest revision of the Canadian Electric Code, CAN/CSA C22.2#64 Part 1, and/or any local regulations in Canada, or the National Electric Code, ANSI/NFPA to [latest edition] and/or any local regulations and codes in the USA. Reference should also be made to local Electric Utility Regulations and other codes in effect in the area in which the installation is to be made.

2. Mounting your Tankless Water Heater

Make sure that the mounting surface is solid and secure, and ensure that the unit is level prior to securing the screws. For the ease of installation and servicing, we recommend that this product be installed in an upright position with the inlet and the outlet water connections at the bottom of the unit.





WARNING

This tankless water heater should never be installed lower than the highest faucet or hot water application, as if so can cause an air pocket in the home to damage your tankless water heater heating element, and can void your product warranty.



MUST READ IMPORTANT INFORMATION

THIS SECTION MUST BE READ THOROUGHLY AND COMPLETELY BEFORE INSTALLATION & BEFORE USE. FAILURE TO DO SO COULD CAUSE PROPERTY DAMAGE, SERIOUS PERSONAL INJURY OR DEATH, AND VOID YOUR WARRANTY.

Please follow all plumbing instructions carefully. This product must be installed by a licensed and qualified plumber in accordance with all applicable national, state, provincial & local plumbing codes.

2.1 IMPORTANT NOTES:

1. DO NOT SOLDER ANY PIPES WITH THE UNIT CONNECTED TO PIPES-IF YOU DO, YOU MAY DAMAGE THE FLOW SENSOR AND VOID YOUR WARRANTY.
2. THE HEATER IS DESIGNED TO OPERATE ONLY WHEN FLOW IS DETECTED THROUGH THE FLOW SENSOR.
3. PRIOR TO POWERING UP THE HEATER OR TURNING ON THE BREAKER **YOU MUST PURGE ALL AIR FROM THE HEATER, FAILURE TO DO SO MAY CAUSE AN AIRLOCK IN YOUR UNIT AND BURST YOUR HEATING ELEMENT, "DRY-FIRE". IF THIS OCCURS YOU MUST REPLACE THE HEATER ELEMENT.**
4. Carefully check your plumbing connections to your heater and check for any leaks, prior to leaving the unit.



CAUTION: It is very important to follow all local building and commercial building codes

3. Plumbing & Mechanical Installation

FIGURE-1 Installation Schematic for Models: AHS11-14-16-18-D

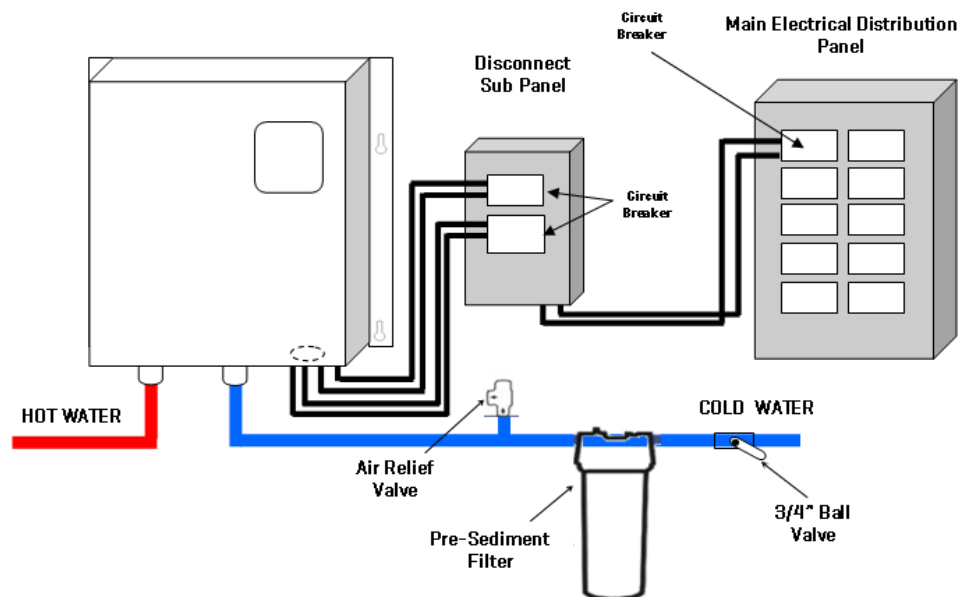
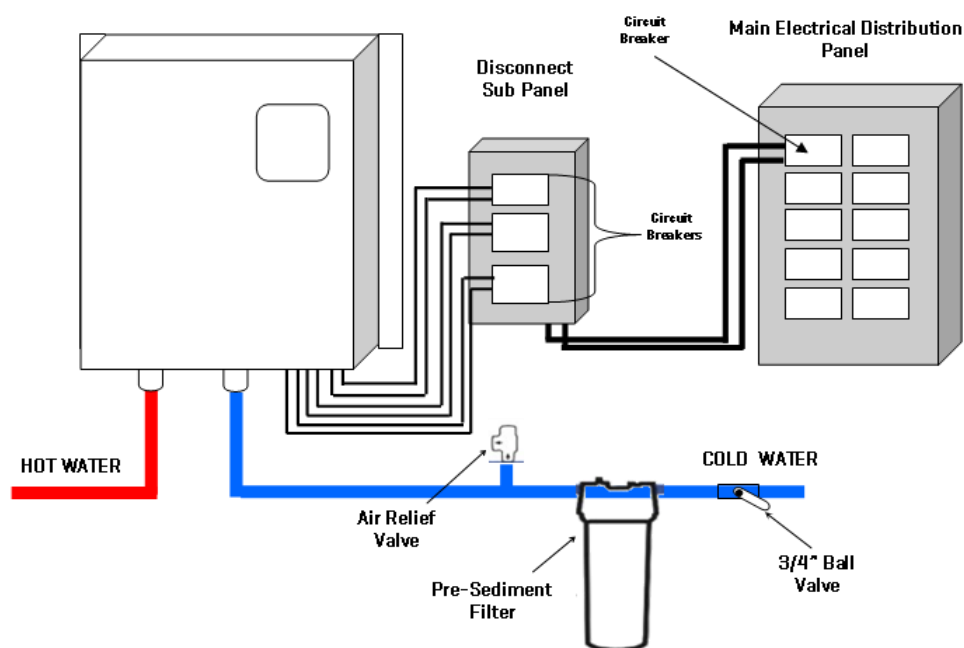


FIGURE-2 Installation Schematic for Models: AHS21-24-27-D



4. Electrical Installation



IMPORTANT PLEASE READ

PLEASE READ THESE INSTRUCTIONS THOROUGHLY & COMPLETELY PRIOR TO INSTALLATION & BEFORE USE. FAILURE TO DO SO COULD CAUSE PROPERTY DAMAGE OR SERIOUS PERSONAL INJURY OR DEATH, & CAN VOID YOUR WARRANTY.

This product must be installed by a licensed and qualified electrician in accordance with all applicable national, state, and provisional, and local electric codes.

As with all electrical appliances, under no circumstances should you attempt to install repair or disassemble this tankless water heater without first shutting off the power to the unit directly at the fuse or breaker box.

SERIOUS BODILY INJURY OR DEATH COULD OCCUR IF YOU IGNORE THIS WARNING.

All wiring [Wire Gauge or AWG] and circuit protection [Breakers] must comply with the U.S. National Electric Code [NEC] in the U.S.A., or the Canadian Electrical Code [CEC] in Canada. Failure to do so could result in property damage and/or personal injury, and void your warranty.

Note: The Canadian Electrical Code generally requires that all supply wires and corresponding circuit protection [breakers] used for tankless water heater applications. Tankless water heaters applications must be sized 125% of the maximum current rating of the heater [see model specifications below for details].

Before installing this product, ensure that the home has sufficient electrical power available to handle the maximum amperage load of the applicable model see the figures below.

FIGURE-4.1 Electrical Specifications by Model

Model	AHS11D	AHS14D	AHS16D	AHS18D	AHS21D	AHS24D	AHS27D
Elements	2	2	2	2	3	3	3
Voltage	240	240	240	240	240	240	240
Max kW	11	14	16	18	21	24	27
Watts	11,000	14,000	16,000	18,000	21,000	24,000	27,000
Each Supply	5500 W	7000 W	8000 W	9000 W	7000 W	8000 W	9000 W
Max Amps	46	58	67	75	87.5	100	113

Install the following breakers in the main electrical panel based on the model being installed, see below chart for reference.

Model	AHS11D	AHS14D	AHS16D	AHS18D	AHS21D	AHS24D	AHS27D
Circuit Breakers for Main Panel [No Sub Panel]	Quantity 2 Di-Pole 50 AMP Breakers	Quantity 2 Di-Pole 50 AMP Breakers	Quantity 2 Di-Pole 50 AMP Breakers	Quantity 2 Di-Pole 50 AMP Breakers	Quantity 3 Di-Pole 50 AMP Breakers	Quantity 3 Di-Pole 50 AMP Breakers	Quantity 3 Di-Pole 50 AMP Breakers

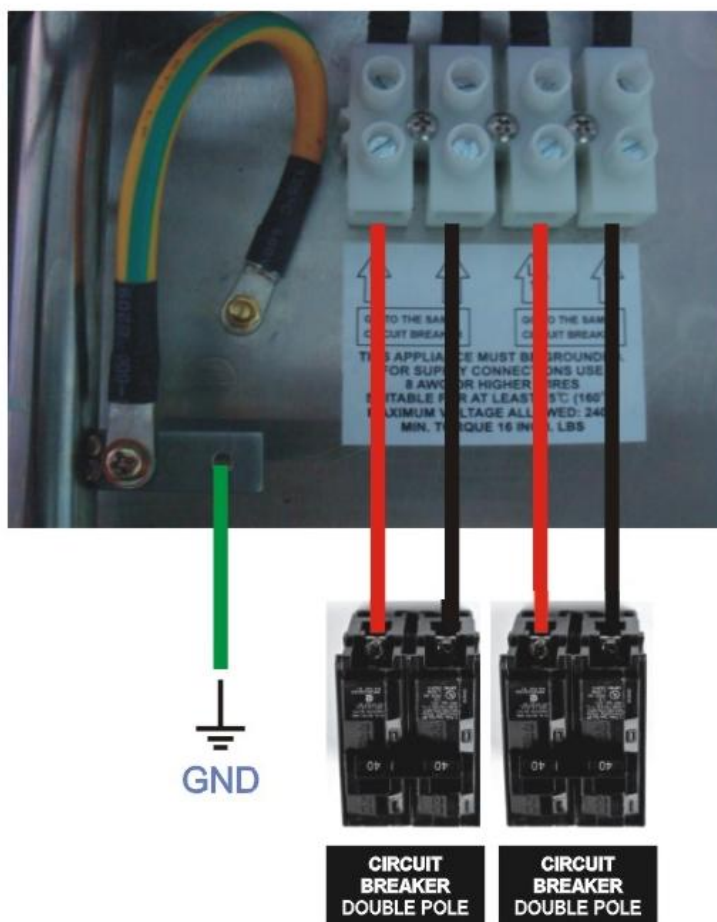
Disconnect all power sources before opening terminal box and working within. Read all name plates and markings CAREFULLY and wire per instructions and in accordance to ALL applicable National, State, Provincial & local electrical codes.



CAUTION: Models AHS27D, AHS24D, & AHS21D make sure you have made all correct electrical connections. You must follow the wire connection Figure shown in **Figure 4.2** to ensure proper operation of your tankless water heater. If you cross a set of wires, the tankless water heater will not operate properly and even though the LED Turns on and otherwise appear to be function properly.

FIGURE-4.2 Electrical Specifications by Model

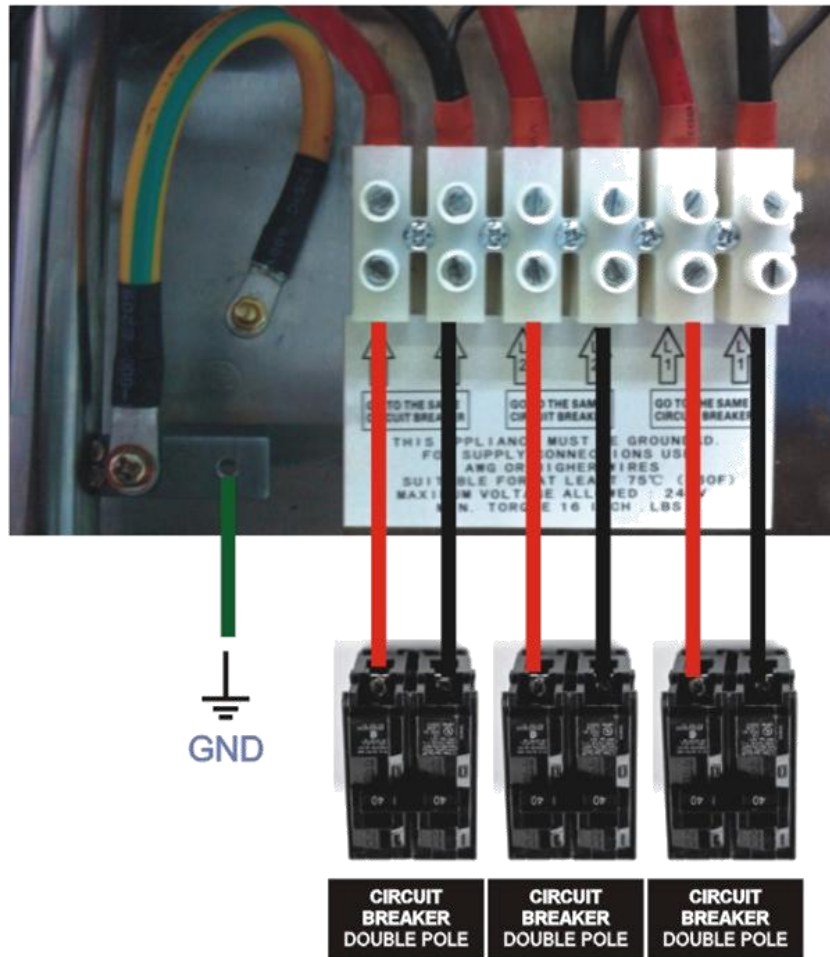
WIRE CONNECTIONS TO BREAKERS FOR MODELS AHS11-14-16-18D



CAUTION Models AHS11-14-16-18D, The figure above shows you a typical electrical installation. BY no means at all may you be able to reconfigure the wiring shown above, as this may cause SERIOUS INJURY and or DEATH. It is very important to FOLLOW your local and municipal building codes when installing this Electric Tankless Water Heater. The configuration above also shows that each individual heating element, or [Circuit needs to have its OWN CIRCUIT BREAKER NO EXCEPTIONS]

FIGURE-4.3 Electrical Specifications by Model

WIRE CONNECTIONS TO BREAKERS FOR MODELS AHS21-24-27D



CAUTION Models AHS21-24-27D, The figure above shows you a typical electrical installation. BY no means at all may you be able to reconfigure the wiring shown above, as this may cause SERIOUS INJURY and or DEATH. It is very important to FOLLOW your local and municipal building codes when installing this Electric Tankless Water Heater. The configuration above also shows that each individual heating element, or [Circuit needs to have its OWN CIRCUIT BREAKER NO EXCEPTIONS]

4. Electrical Installation (continued)

WIRING CONNECTIONS

STEP 1

Using a suitable wire gauge, that meets all applicable electrical codes for the size of circuit breakers used. For models AHS11/14/16/18D run two pairs of wires and a ground wire from the main breaker panel over to the water heater, each pair of wires are for each individual circuit. For models AHS21/24/27D run three pairs of wires and a ground wire from the main panel over to the water heater.

STEP 2

A separate ground conductor for each for each incoming circuit is required.

STEP 3

DOUBLE CHECK the electrical connections to make sure they are correct and that all wire connections are tight and secure. Also confirm that the correct breaker size and wire gauge has been used and confirm that the unit has been connected to a ground in accordance with applicable codes.

STEP 4

Confirm that the plumber has purged air from the SYSTEM prior to turning on the power to the tankless water heater. Refer to Section 2.1 in the plumbing Installation/Mechanical section as well.

5. Starting the Electric Tankless Water Heater

The new Tankless Electric Water Heater was introduced to [whether NEW or EXISTING] must be thoroughly cleaned, flushed, drained and PURGED. Any foreign material passing through the system could be detrimental to the Tankless Water Heater.





IMPORTANT NOTES

As with all electrical appliances, under no circumstances should you attempt to install, repair or disassemble this Tankless Water Heater without first shutting off all power to the unit directly at the fuse or breaker box. **SERIOUS BODILY INJURY OR DEATH COULD OCCUR IF YOU IGNORE THE WARNING.**

IMPORTANT NOTES (CONTINUED)

When any maintenance is performed on the tankless water heater or the home's plumbing that may introduce air into the plumbing pipes, it is important to turn the power off to the tankless water heater & purge the air out of the lines before allowing the unit to power up. FAILURE TO DO SO COULD CAUSE PERMANENT DAMAGE TO THE HEATING ELEMENTS.

6. Operating your Tankless Water Heater

1. Turn on the water at the nearest faucet to make sure you will the tankless water heater with water and ensuring that the air has been purged.
2. Turn on the circuit breaker to bring power to the tankless water heater. The temperature display will turn on for 5 second then turn off and stay in standby status.
3. While the heater is in standby mode turn on the water at the nearest faucet and allow for the water to go through the heater, press  button to decrease the temperature, keep this button pressed for 3 seconds, the heater will automatically turn off.
4. While the heater is in standby status, and the water flowing through the heater press  button to increase the water temperature.
5. Press  and  at the same time converts the temperature display from Fahrenheit to Celsius and vice versa.
6. The tankless water heaters temperature setting ranges from 80°F [26°C] to 140°F [60°C]
7. In standby mode if you touch the temperature control buttons the display will light up for 5 seconds, and then turn off.
8. The minimum water flow to activate the heater is .25 GPM [1 L/min], the heater will turn on automatically while there is water flowing through it.
9. The water heater is equipped with error detection software which will display error codes for either failed components or when certain parameters are not met while in operation. The user can learn the error code instructions and find the solution or maintenance needed to solve the problem by reading section 9 Trouble Shooting Guide.

ARE YOU HAVING PROBLEMS WITH YOUR TANKLESS WATER HEATER?

Do not return your heater to your authorized dealer, please call our customer support department at the number below.

U.S.A. [888] 818-4328
www.drakkeusa.com

Or call your Authorized Dealer for assistance, before it, please read the following trouble-shooting instructions firstly.

All units are thoroughly tested before they leave our factory. In rare instances, your unit could arrive with small amounts of water inside the pipes, as the heaters are tested as follows:

Pressure Integrity Test

Each unit is pressure tested at 180 PSI to insure against leaks. This test is 3-1/2 times the water pressure the heater will experience in a typical residential installation.

Electrical Integrity Test

Each unit is connected to a dielectric testing machine which sends a 1,000 volts through the heaters circuits for 1 millisecond to verify all circuits are properly connected and to reenact a lightning strike.

Specifications Level Test

Each unit is temporarily attached to a testing station that duplicates the conditions present in a typical residential installation. The heater is also turned on and the water temperature produced by the heater is measured at several flow rates to insure that the proper temperature rise specifications are met and that the heater regulates on its own with varying flow rates.


7. Trouble Shooting Guide




The following are some of the most common technical support questions we receive. Before calling us, please read thoroughly to see if your question or problem are addressed below.

PROBLEM	POSSIBLE CAUSE		SOLUTION
Tankless water heater is not heating at all (water is flowing but the unit is not heating at –the incoming water temperature is the same as my cold water supply)–the digital display <u>DOES NOT</u> light up.	No power or insufficient power to the heater/ incorrect wiring		Make sure the breakers at the main electrical panel have not tripped and that they are on. You may have a faulty breaker or the unit may be wired incorrectly.
	Flow rate too low/ water pressure is too low		Your tankless water heater has an activation flow rate of approximately .25 gallons per minute. If your space flow rate is less than this level, your heater will not activate increase flow rate
Tankless water heater is not heating at all (water is flowing but the unit is not heating at –the incoming water temperature is the same as my cold water supply)–the digital display <u>DOES</u> not light up.	Check all of your heating element consumptions for proper amp draw based on flow rate being used.		
	Internal part failure	Please call for technical assistance	
Tankless heater is heating, but the water temperature is not enough.	User temperature setting too low	Turn up the temperature setting on the unit (see general operating instructions section of this manual)	
	Flow Rate is too high	Depending on your incoming water temperature and the power output of your model, your water flow rate may exceed the physical heating capacity of your tankless heater. Reduce the flow rate and the faucet or close the shut-valve installed on the inlet side of your heater slightly to reduce the water flow rate. (see general Operating Instructions section of this manual)	
	Crossed wires	If this is a new installation, have your electrician double check the wiring. It is possible that the wiring is incorrect.	
	Voltage less than 240 Volts	The heating elements in your tankless water heater are designed for 240 volts. When used with a lower voltage, they produce less heating power. You may need to upgrade to a larger model. Call your authorized dealer	

Tankless heater is heating, but the water temperature is not enough.	Mixing too much cold water	You do not need to mix as much cold water with your tankless heater compared to when you use a conventional tank type heater. You may also have an anti-scald feature on your faucet that is mixing cold water. These types of faucets can usually be adjusted to reduce the amount of cold water mixed. [see general operating instructions]
The water temperature at my supply is less than that of my temperature setting on the tankless water heater.	Voltage is less than 240 Volts	The computer chips in your heater are programmed with the expectation that your incoming line voltage is 240 volts. If you have less than 240 volts, it may affect the reading on your tankless heaters digital display and cause it to read slightly higher than the actual output temperature. To compensate for this, increase the setting on your tankless heater if you need or want hotter water.
	Anti-Scald pressure/balancing valve or tempering valve.	Your faucet may have an anti-scald feature or a tempering valve that automatically mixes cold water even when you turn your control lever or handle to full hot. These devices are usually adjustable so you can turn off the cold mix completely. You can compensate for this by increasing the setting of your tankless water heater if you need or want hotter water.
	Thermal loss due to long pipe runs.	As the hot water from the heater runs through the hot water delivery system to your faucet, some heat will be lost especially if it has a long distance to travel or the pipes are too cold. This is normal you can compensate for this by increasing the setting on your tankless heater if you need to or want hotter water.
If you are experiencing any other problem, please call us for technical assistance.		

How to use a USB memory stick to trouble shoot the heater

1. Turn on the circuit breaker to bring electrical power to the unit, and then the heater will stay in standby status.
2. While the heater is in the standby status, let water go through it, press  button to activate the heater and decrease the temperature, keep touching this button for 3 seconds, the heater will turn off automatically.

3. While the heater is in the standby status, let water go through it, press  to activate the heater and increase the temperature, keep touching this button for 3 seconds, the heater will turn off automatically.
4. The min. water flow to activate the heater is 0.4GPM [1.5L/Min], the heater will turn on automatically while there is water flow goes through.
5. Press  and  at the same time could convert the temp. Display between degree Fahrenheit and degree Celsius.
6. Temp. Setting range is from 80°F [26°C] to 140°F [60°C]
7. The display screen will light off in 5 seconds while in the standby or power off Status, or without detecting water flow. It will display the real temperature while you touch the buttons.
8. Error detection while there is any failure of the parts during the working, the screen will display the Corresponding code, user could learn the maintenance procedure and solution by reading the user manual.
9. USB-Host automatic testing function with Trouble Shooting.
There is a USB port on the bottom of the [See Fig. 1 below] enclosure, while user inserts the USB dish into the heater, the heater will enter itself into testing procedure automatically. The above screen will display "USB" and "-" [1HZ blinking], screen in left side will display the current testing status, during the testing period, it will display "TEST", after finishing the test, will display "END", screen in right will display the testing procedures and error code.

During the testing period, if it detects water flow, it will start testing the heating Elements, the longest testing time could reach 120 seconds. The testing would be closed in advance once discovering any errors. After the testing, it will generate a IHEAT.TXT texts file automatically in the USB dish. The heater will go back to standby status while user pulls out the USB dish. Users could connect the USB dish to a computer to read the text file which could show the current working status and error codes of the heater. Note: The USB dish has to be the FAT file system.

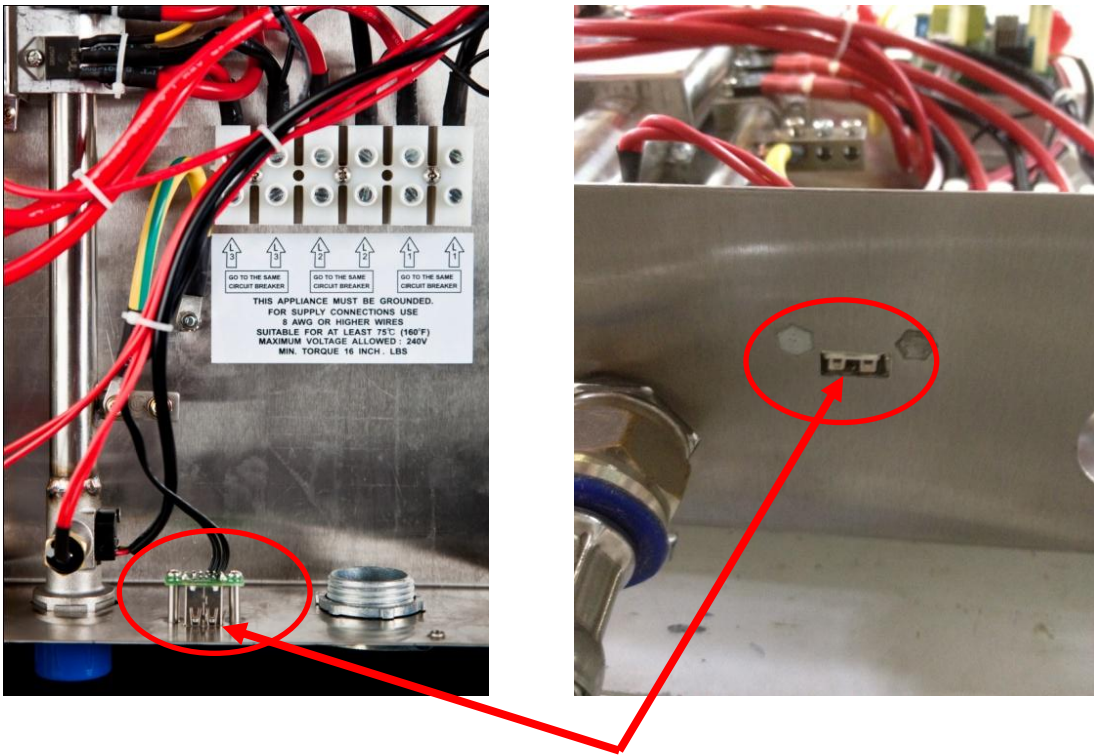
10. Error code instructions and trouble-shooting

Error Code	Problem/Possible cause	Solution
E1	Breakdown of inlet temperature sensor	Check the inlet temperature sensor
E11	Resistance of inlet temperature sensor is not consistent	Replace the inlet temperature sensor
E12	The inlet temperature sensor is disconnected	Connect the inlet temperature sensor and heater firmly.
E2	Breakdown of outlet temperature sensor	Check the outlet temperature sensor
E21	Resistance of outlet temperature sensor is not consistent	Replace the outlet temperature sensor
E22	The outlet temperature sensor is disconnected	Connect the outlet temperature sensor and heater firmly.
E3	Breakdown of water flow sensor or no water flow	Check the water flow sensor and water flow
E31	Signal is interrupted	1. Check the water flow whether is smooth, please note the Min. water flow to activate the unit is 1.5L/Min. 2. Replace the water flow sensor.
E32	No water flow signal	1. Check the water flow and make sure it reaches the Min. water flow activation rate 1.5L/Min. 2. Replace the water flow sensor.
E4	Failure of heating element	Check the heating elements
E41	The first heating element doesn't work	Replace the first heating element
E42	The second heating element doesn't work	Replace the second heating element
E43	The third heating element doesn't work	Replace the third heating element
E5	Failure of PCB control board	Check the PCB control board
E51	Power on but PCB board couldn't command work	Replace the PCB board
E52	Failure of PCB board / display board	Replace the PCB board / display board

E60	Overheat protection Possible cause: 1.To low water flow 2.Power setting error 3.Outlet temperature sensor fails	1.Enlarge the water flow 2.Setting the correct power level 3.Check and replace the outlet temperature sensor
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Note: If after applying the above solution to the heater, it still fails than you will need to replace the PCB Power board

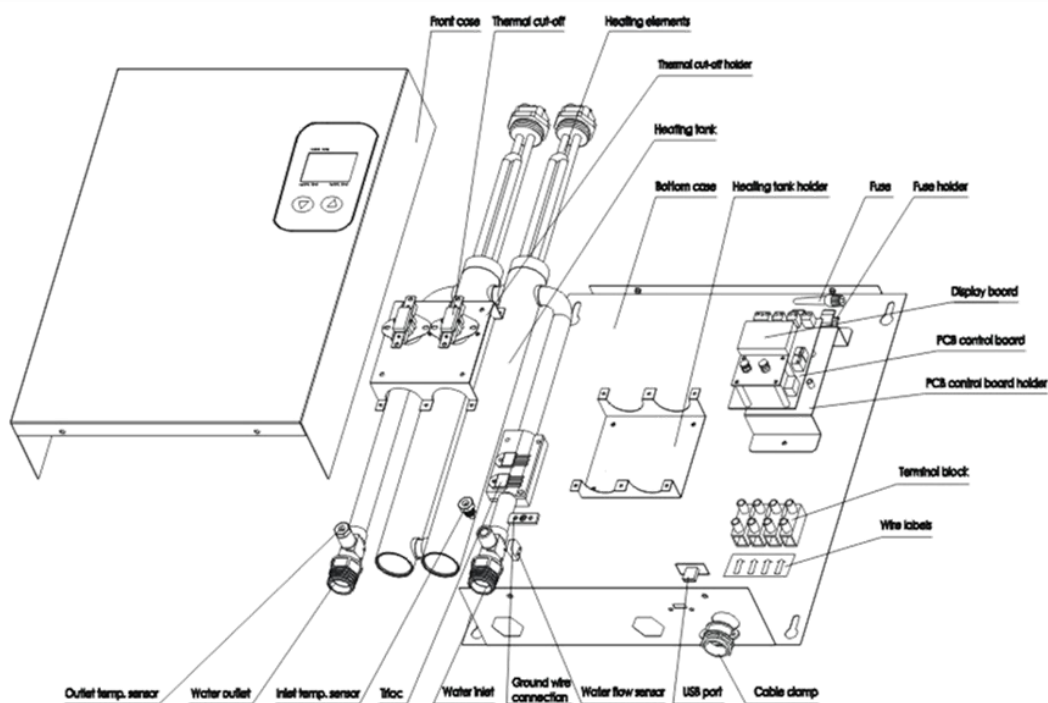
Figure 1



USB Port location

8. Product Explosive View

Explosive View of Models AHS11D, AHS14D, AHS16D, AHS18D



Explosive View of Models AHS21D, AHS24D, AHS27D

