Slant/Fin®

Indirect-Fired Storage Water Heater

Models WH-30 through WH-80

INSTALLATION AND OPERATING INSTRUCTIONS

Contents **Page**

Heater Package includes:
- Fully insulated stainless steel tank with temperature control well installed.
- Temperature control adjustable from 120°F to 160°F.
- Temperature and pressure relief valve.
- Plumbing hardware for installing T&P valve.

WARNING - HOT WATER CAN SCALD!

Read all of the following important warnings to avoid the possibility of personal injury, death, or property damage.

WARNING TO THE USER:
- Keep temperature control on heater at lowest setting which is satisfactory.
- Always adjust water temperature from taps by starting with a cool mix of water and gradually bring to warmer temperature.
- Never leave children, elderly or disadvantaged persons unattended where hot water taps are located.

WARNING TO THE INSTALLER AND SERVICEPERSONS:
- Keep temperature control on heater at lowest setting which is satisfactory.
- Installation of a temperature and pressure relief valve of the proper rating for the heater tank size is required.
- Install a tempering device, such as a mixing valve, on hot water piping which feeds areas where high temperature water is not demanded.
- When servicing this installation, make sure drain connections are tight and drain hose is directed away from all persons or areas where injury or damage can occur.

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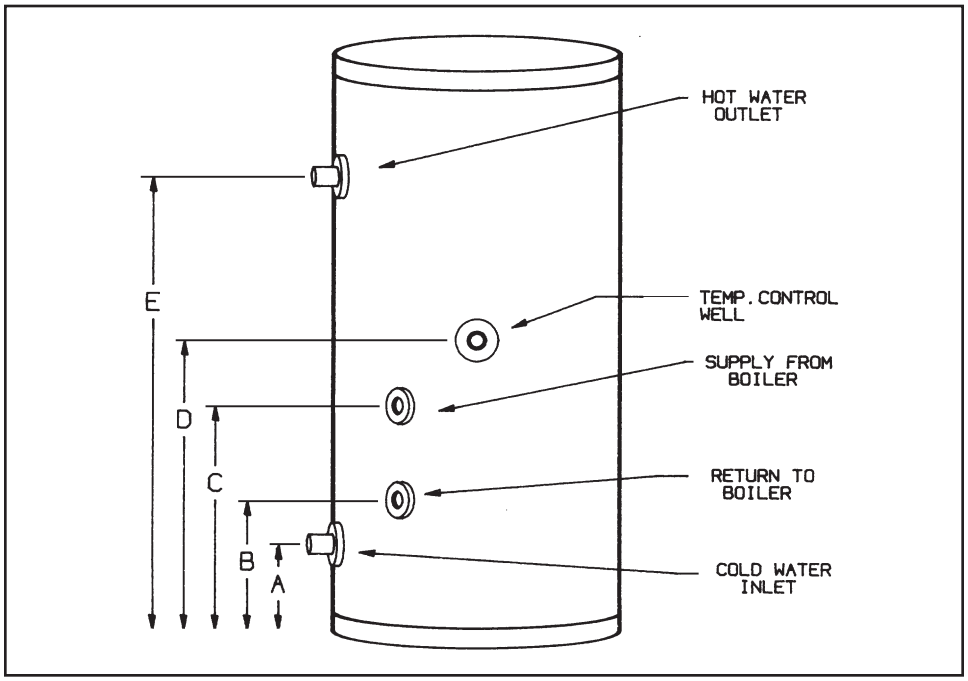
Indirect-Fired Storage Water Heater

Models WH-30 through WH-80

RATINGS & SPECIFICATIONS



Ratings

Model No.	Storage Capacity (gal)	First Hour Ratings (gph)		Heat Exchanger Coil		
		at 140° F (90°F Δ T)	at 115° F (65°F Δ T)	Heating Surface (Sq.Ft)	Recommended Flow Rate	Pressure Drop
WH-30	30	156	215	15	6 gpm	4.6 ft
WH-40	40	195	288	15	6 gpm	4.6 ft
WH-60	60	254	348	15	7 gpm	6.8 ft
WH-80	80	300	400	34	10 gpm	12.0 ft
Double wall coil models						
WH-40 D	40	110	152	20	6 gpm	8.0 ft
WH-60 D	60	126	174	20	6 gpm	8.0 ft
WH-80 D	80	160	221	20	6 gpm	8.0 ft

Dimensions

Model No.	Height	Diameter	Floor to Boiler In C	Floor to Boiler Out B	Floor to Domestic In A	Floor to Domestic Out E	Temp. Cont. Well D	Connections N.P.T. Domestic In/Out	Connections N.P.T. Boiler In/Out	Ship Weight (lb.)
WH-30	39 1/2"	19 1/4"	9"	4 1/2"	3"	34"	17 1/2"	3/4"	1"	67
WH-40	52 1/2"	19 1/4"	9"	4 1/2"	3"	46"	23 3/4"	3/4"	1"	78
WH-60	52 1/2"	23 1/4"	9"	4 1/2"	3"	46"	23 3/4"	1"	1"	98
WH-80	72"	24"	29"	6"	6"	66"	33"	1 1/2"	1"	139
Double wall coil models										
WH-40 D	52 1/2"	19 1/4"	9"	4 1/2"	3"	46"	23 3/4"	3/4"	1" male	88
WH-60 D	52 1/2"	23 1/4"	9"	4 1/2"	3"	46"	23 3/4"	1"	1" male	108
WH-80 D	72"	24"	29"	6"	6"	66"	33"	1 1/2"	1" male	149

Tank working pressure: 150 psi

INSTALLATION REQUIREMENTS

The installation of this indirect-fired storage water heater must conform to the following:

1. Local, state, provincial, and national codes, laws, regulations and ordinances.
2. National Electrical Code (NEC).
3. National Plumbing Code (NPC).
4. Building Officials and Code Administrators International (BOCA).

In any case where instructions in this manual conflict with the above, let those codes take precedence.

The location of this indirect-fired storage water heater should be made in consideration of the following:

1. Install indoors where not subjected to freezing temperatures or physical damage.
2. Install as close to boiler as practical, to minimize piping connections pressure drop and heat loss.
3. For system service convenience, do not install too close to the boiler or other objects.
4. Install near a floor drain if possible, to prevent possible property damage due to relief valve discharge or equipment leakage. A drain pan is most suitable for protecting the surrounding area.

The boiler used to supply hot water to the heater must meet these requirements:

1. In some jurisdictions the boiler's operating pressure must be limited to 30 psig by a safety relief valve.
2. The boiler's input rating must be within the heater's recommended sizing guide specifications. Too low an input rating may cause excessive condensation in the boiler. Too high an input rating may cause a boiler short cycling condition. Either of these conditions could be detrimental to the life and performance of the system.

PIPING REQUIREMENTS

TEMPERATURE AND PRESSURE RELIEF VALVE

1. Use only the Watts model or equivalent specified in the chart below. The rating of each valve meets the absorption capacity of only the model of heater for which it is specified.
2. Must be installed in the run of a tee located in domestic hot water outlet in heater, unless a dedicated installation port is provided. No shutoff valves are permitted to be piped between the relief valve and the heater tank, nor on the T & P discharge line. (See Fig. 4)
3. Must be positioned to discharge downward, with the discharge line within 6" of the floor line and directed towards a drain or drain pan, if possible. The discharge line must not be excessively long or reduced in size, be subject to freezing, or be directly connected to a drain.

BOILER PIPING CONNECTIONS

1. General piping recommendations (See Fig. 4)
   a) Install unions and shutoff valves for servicing convenience.
   b) Use 1" nominal minimum piping size and keep number of elbows and overall piping length to a minimum to insure the proper water flow rate to the heater coil.
   c) Pipe the supply from the boiler into the coil inlet connection, located at the top of the coil.
   d) Pipe the return to the boiler from the coil outlet connection, located at the bottom of the coil. Install a tee with a drain at the coil connection, with a shutoff valve, to aid in manual air purging.

2. Circulator zoning recommendations (See Fig. 2)
   a) The preferred location of the circulator pumps for each zone is on the boiler supply, with the expansion tank between the boiler and the circulators.
   b) A flow check valve must be installed on each zone, preferably at the outlet side of each circulator pump, to prevent water flow to other zones when they are not demanding flow.
3. Zone valve zoning recommendations (See Fig. 3)
   a) The preferred location of the circulator pump is on the boiler supply, with the expansion tank between the boiler and the circulator.
   b) Use zone valves with low pressure drop specifications, particularly on the water heater zone. A 1" zone valve is recommended.

Figure 2. Typical piping for circulator zoning

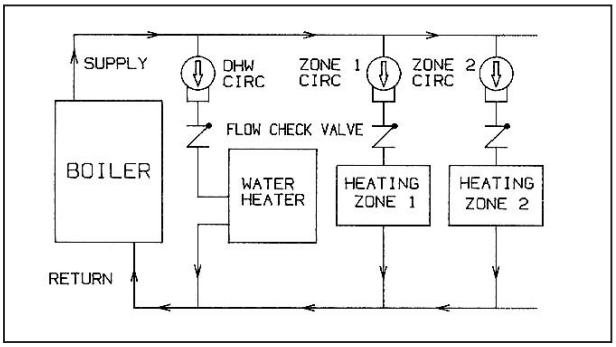
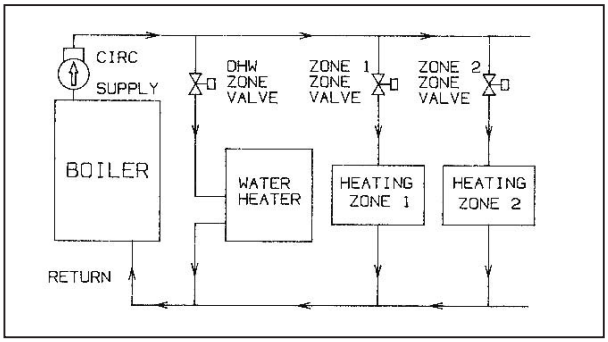


Figure 3. Typical piping for zone valve zoning



Temperature and pressure relief valve specifications

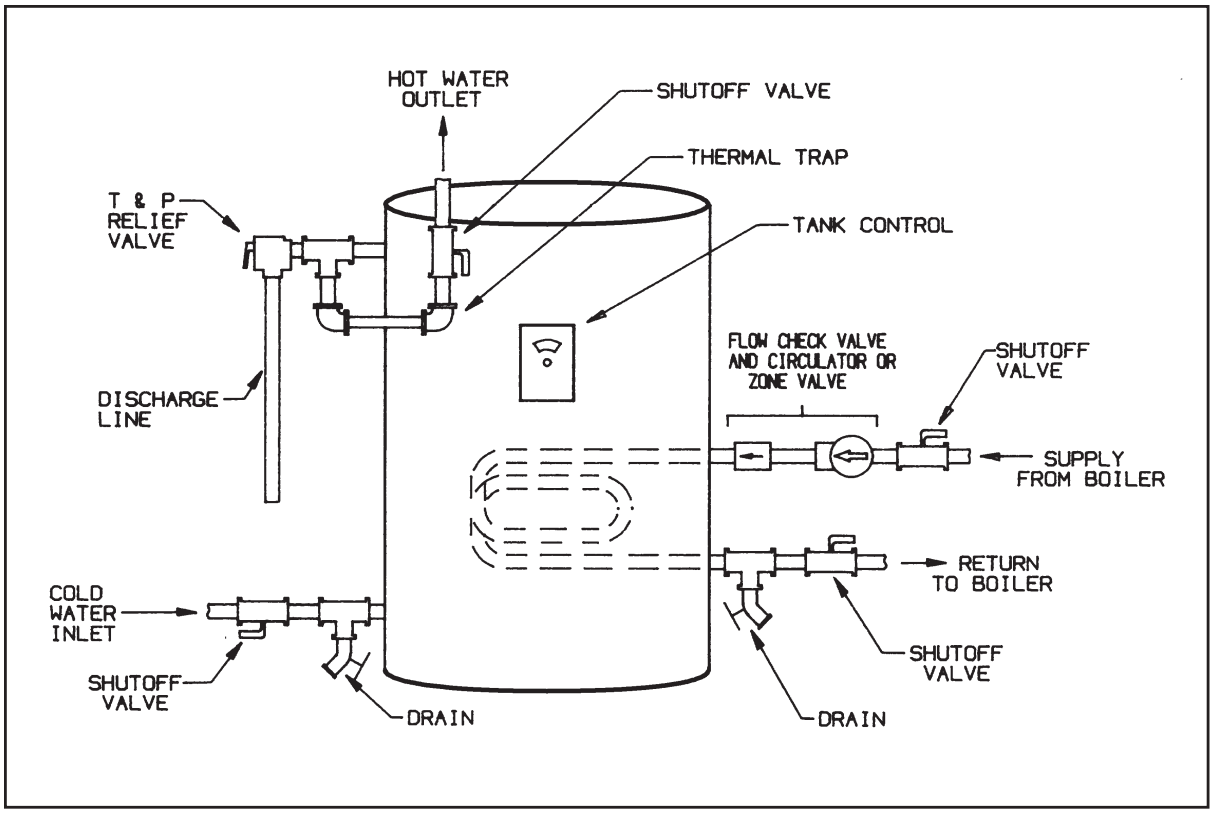
Heater Model	T & P valve location	T & P valve installs into:	Watts Model or Equivalent*
WH-30	hot water outlet	3/4" NPT Tee	100 XL-8 3/4" Male inlet
WH-40†	hot water outlet	3/4" NPT Tee	100 XL-8 3/4" Male inlet
WH-60†	hot water outlet	1" NPT Tee with bushing	100 XL-8 3/4" Male inlet
WH-80†	dedicated port	3/4" Male x Female nipple	40 XL-8 3/4" Male inlet

* T & P valve must have 8" long temperature probe.
† Also applies to double wall coil models WH-40 D, WH-60 D and WH-80 D.

PIPING REQUIREMENTS FOR DOMESTIC WATER CONNECTIONS (See Fig. 4)

1. General piping recommendations
   a) Install unions and shutoff valves for servicing convenience.
   b) If the heater is replacing a tankless coil in the boiler, do not plug tube outlets in the tankless coil after disconnecting from plumbing.
2. Domestic cold water inlet
   a) Install a tee with a drain on the tank cold water inlet nipple.
   b) Install the cold water supply piping into the tee on the tank cold water inlet.
   c) If a back flow preventer or check valve is used on the cold water supply, then a thermal expansion tank must be installed between the tank and this device.
   d) If excessive water supply pressure is evident, a pressure reducing valve on the supply line may be necessary to prevent relief valve discharge. Check local codes.
3. Domestic hot water outlet
   a) On heater sizes which do not have a dedicated port for the T & P valve, a tee must be installed onto the tank hot water outlet nipple for the installation of the T & P valve. See T & P valve installation requirements on page 3.
   b) Install the hot water supply piping into the branch of the tee (if used) on the tank hot water outlet.
   c) A thermal loop can be arranged on this piping to prevent thermal siphon action of the hot water when not in use.
   d) A mixing valve can be installed on hot water piping which feeds areas where high temperature water is not desired. This will allow for higher temperature water to be delivered to areas where it is demanded without endangering the user at the lower temperature fixtures.

Figure 4. Indirect-fired storage water heater piping



WIRING REQUIREMENTS

1. General wiring requirements

a) Wiring must conform to National Electrical Code in U.S.A., C.S.A. C22.1 Canadian Electrical Code Part 1 in Canada, and any other national, provincial, state, or local code requirements having jurisdiction.

b) All line voltage wiring must be a minimum 18 gage.

c) A separate service switch for the water heater electrical circuit is recommended. This switch must not turn off the boiler or other components in the heating system.

d) **IMPORTANT NOTE:**
All wire connections to "T-T" or "A-A" terminals on boiler control must be from an isolated circuit which does not carry voltage from an external source. Any component which does not have isolated end switches must not be used unless a relay is added with the dry contacts wired to these terminals.

Figure 5. Wiring to a gas boiler with circulator zoning

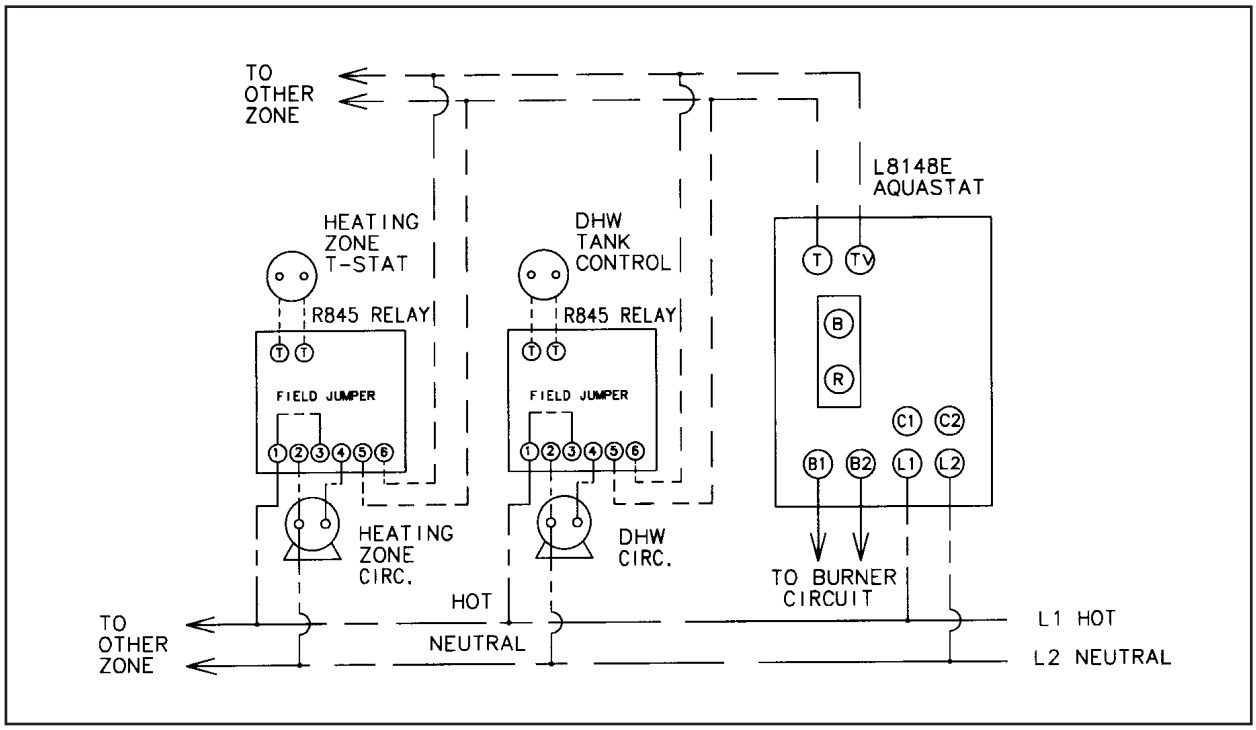
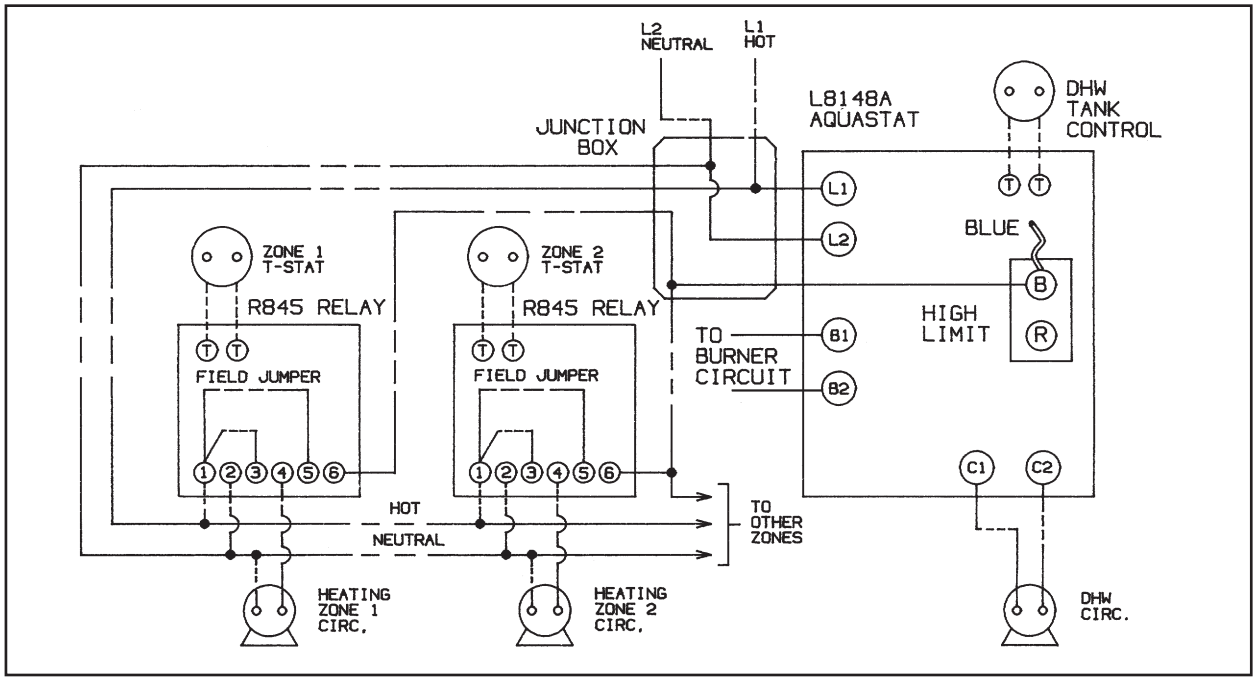


Figure 6. Wiring to an oil boiler with circulator zoning



2. **Circulator zoning wiring** (See Fig. 5, 6)
   a) Components must be wired to ensure that only the circulator for each zone is powered on a demand for supply water from that zone.
   b) Multi-zone switching relays are available as an alternative to individual zone relays to simplify the wiring and provide priority on domestic hot water demand.

3. **Zone valve zoning wiring** (See Fig. 7, 8)
   a) Components must be wired to ensure that only the zone valve for each zone is powered on a demand for supply water from zone, and that the circulator is powered on a demand from any zone.
   b) The transformer used to power the zone valves must be sized for the load of all the zone valves in system.

Figure 7. Wiring to a gas boiler with zone valves.

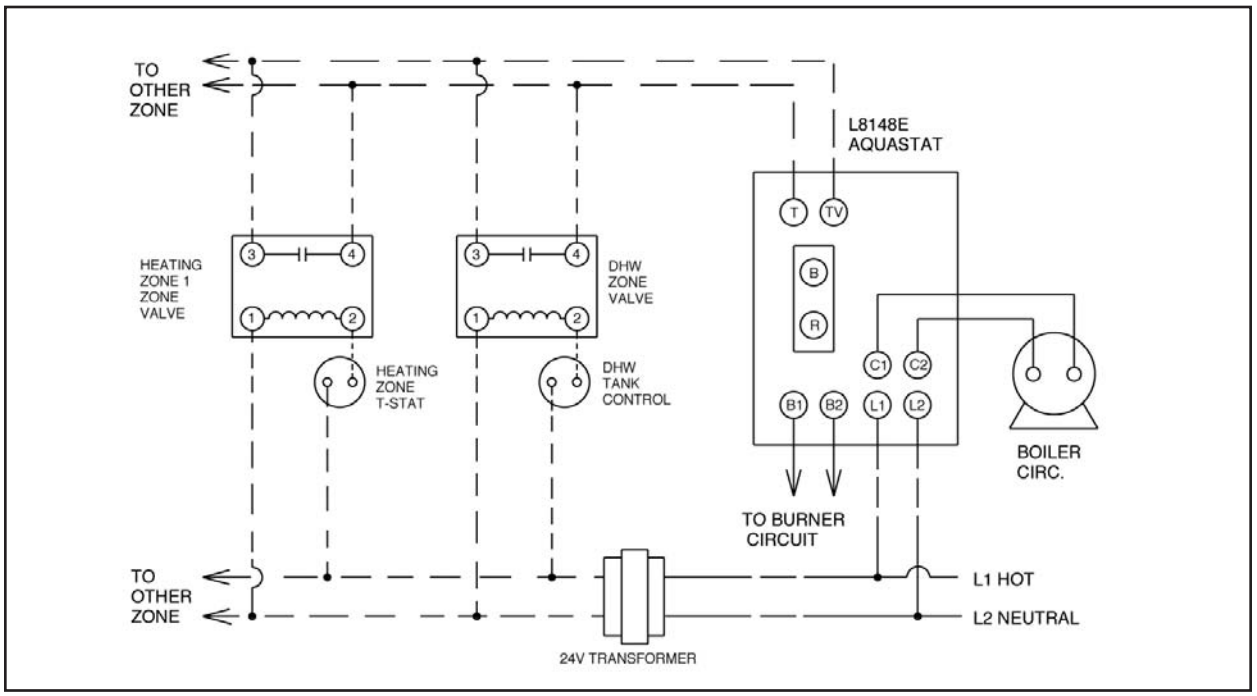
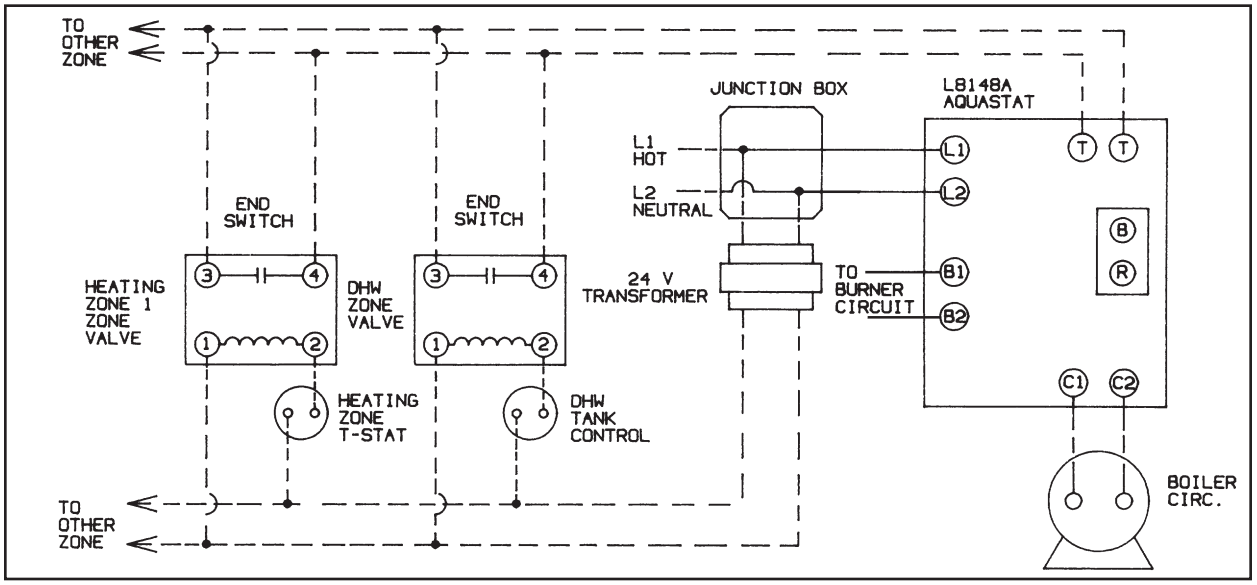


Figure 8. Wiring to an oil boiler with zone valves.



OPERATING PROCEDURES

1. Filling the heater tank
   a) Make sure all drain valves on the cold or hot water supply piping are closed.
   b) Open the nearest hot water faucet and any shutoff valves on the domestic hot water supply piping from the tank outlet.
   c) Open the shutoff valve on the cold water supply piping to the tank inlet.
   d) Allow the cold water supply to fill the tank by leaving the hot water faucet open until all air is purged from the tank and piping, and a steady flow of water is observed from the faucet.
   e) Close the hot water faucet, but leave all piping shutoff valves open.
   f) Any other hot water faucets fed by this heater may be opened to purge air from their supply piping, and then shut off after a steady flow of water is observed from the faucet.
2. Filling the heater coil
   a) Attach a hose to the drain valve on the coil outlet (return to boiler). Place the end of the hose into a drain or bucket in a manner that will prevent potentially hot water from spraying on any persons in the area.
   b) If a shutoff valve has been installed between the drain valve and the boiler return, keep this valve shut at this time.
   c) Open the shutoff valve (and on a zone valve system, manually open zone valve) on the supply piping from the boiler.
   d) Open the drain valve on the coil outlet to purge the air from the coil. When a steady flow of water is observed from the drain, then open the shutoff valve on the return piping to the boiler. Additional air from the return piping should purge itself at this time. Close the drain valve when the steady flow of water is again observed.
   e) Remove the hose from the drain valve. Leave the drain valve closed. Leave all shutoff valves open. Return zone valve to automatic operation.
   f) Purge air from remaining zones, if necessary. Check boiler gauge pressure reading afterward to be appropriate. 15 psi is normal for most installations.
3. Operating the heater
   a) After the system has been manually purged of its air, and all components (valves, vents, controllers) have been set properly, the boiler can be started. NEVER operate this heater until this has been done.
   b) The maximum setting for the boiler water supply to the heater coil is 220° F.
   c) The maximum setting for the heater tank temperature control is 160° F. Unless there is specific demand for very high temperature domestic hot water, the control setting should be set at the lower end of the temperature range of adjustment to reduce the risk of scalding injury. Some areas require that the tank control setting be below 130°.
   d) When the temperature of the water in the heater tank is below the setting on the tank control, the boiler and circulator should start. If a zone valve is used for this zone, it should open at this time. When the temperature of the water in the heater tank reaches the temperature setting on the tank control, the boiler and circulator should turn off (and zone valve, if used, should close). If other zones for heating are in demand, this would also run boiler and circulator(s). Cycling of the boiler on high limit is not abnormal, particularly if only one zone is in demand. On initial startup with a cold tank, a considerable amount of time may be required for the tank to reach desired temperature.

Maintenance recommendations:

1. Temperature and pressure relief valve operation check
   a) Once a year, the T & P valve must be manually operated to ensure safe and proper operation.
   b) Make sure that the discharge line from the T & P valve is directed towards a drain or some collection method, and will not spray onto any person.
   c) Use lever on T & P valve to open. A steady discharge of hot water should be noticed. After releasing this lever, the T & P valve should close and fully shut off this flow.
   d) If the T & P valve does not function properly, it must be replaced with the same model or its equivalent. DO NOT plug the outlet of this valve if a dripping condition occurs.
2. Flushing the heater tank
   a) Once a year, or if a persistent discolored water condition exists, the heater tank should be manually flushed to remove possible sediment accumulation.
   b) Turn off the boiler before draining the heater tank.
   c) Attach a hose to the drain valve on the cold water supply to the tank. Place the end of the hose into a drain or bucket in a manner that will prevent potentially hot water from spraying on any persons in the area.
   d) Close the shutoff valve on the cold water supply to the tank.
   e) Open the drain valve on the cold water supply and drain down tank completely. Open the T & P valve or a nearby faucet to break vacuum on drain.
   f) After the heater tank is drained, close the drain valve and reopen the cold water supply valve to refill the tank. The introduction of water into the tank should act to stir up sediment accumulations which can then be drained through the drain valve. Go back through the draining and filling process until clean water is observed passing out the drain.
   g) Once clear water conditions are accomplished, make sure the heater tank and all domestic hot water supply piping is purged of air and discolored water. Leave the drain closed, check for the T & P valve to be properly seated, and make sure all shutoff valves for the hot and cold water supply are left open. The boiler can then be returned to operation.

REPLACEMENT PARTS LIST

Description	Part Number	Used on heater model			
		WH-30	WH-40*	WH-60*	WH-80*
Temperature control -Honeywell 4080B-1295	664131000	X	X	X	X
Temperature and pressure relief valve - Watts 100 XL-8	664121000	X	X	X	
Temperature and pressure relief valve - Watts 40 XL-8	664122000				X
Trenton inverted nipple 3/4" MPT x 3/4" FPT x 2 1/2" long -brass	664129000				X
3/4" NPT brass tee	664126000	X	X		
1" NPT brass tee	664127000			X	
3/4" NPT x 1" NPT reducer bushing - brass	664128000			X	

* Also applies to double wall coil models WH-40 D, WH-60 D and WH-80 D.

Limited Warranties for Model WH Indirect-fired Water Heaters

LIFETIME LIMITED WARRANTY FOR HEATERS IN RESIDENTIAL USE

First year warranty includes
Repair or replacement for a period of one year after original installation of all parts of any Slant/Fin Model WH indirect-fired water heater found to be defectively manufactured.

Lifetime limited warranty of water heater
Warranty is effective for as long as the heater is owned by the original purchaser. It applies only if the heater is installed in a single family dwelling and only if it has remained at all times in the location at which it was originally installed. "Single family dwelling" shall also mean usage in a multiple family dwelling providing that the Slant/Fin indirect-fired water heater services only one family unit in a multiple family dwelling. The warranty includes repair or replacement of any Slant/Fin Model WH indirect-fired water heater stainless steel tank or heat exchanger coil having a defect or malfunction that results in a water leak from the outside jacket, inner tank, or heat exchanger coil as a result of normal use and service, at a cost to consumer equal to the percentage indicated below of the manufacturer's then list price for the replacement parts or nearest comparable model replacement heater: This warranty extends only to heaters in household use and excludes heaters which are at any time operated at a temperature above 150°F.

Year	Percentage paid by consumer (of list price at time of claim)
2 thru 15	0%
16 thru 20	50%
21 & after	75%

5-YEAR LIMITED WARRANTY FOR HEATERS IN COMMERCIAL USE

This commercial use warranty applies to all heaters not falling in the above definition of a residential setting. A Slant/Fin indirect-fired water heater shall be deemed to be used in a commercial setting if at any time it is operated at a temperature above 150°F.

First year warranty includes
Repair or replacement for a period of one year after original installation of all parts of any Slant/Fin Model WH indirect-fired water heater found to be defectively manufactured.

Second through fifth years of limited commercial use warranty
During the second through fifth years, the warranty includes repair or replacement of any Slant/Fin Model WH indirect-fired water heater stainless steel tank or heat exchanger coil having a defect or malfunction that results in a water leak from the outside jacket, inner tank, or heat exchanger coil as a result of normal use and service.

ADDITIONAL INFORMATION - RESIDENTIAL AND COMMERCIAL WARRANTIES

Warranties extend only to heaters which have been properly installed, operated and maintained in accordance with Slant/Fin installation instructions and all applicable codes. Slant/Fin makes no express warranties other than the warranties contained herein.

First-year warranty excludes
All labor charges incurred by any person in connection with the examination, removal, and repair of parts claimed to be defective and the installation of replacement parts. Slant/Fin may determine it to be necessary that a part claimed to be defective be returned to Slant/Fin. In this case, the cost of shipment to Slant/Fin is borne by the consumer.

Procedure for warranty service
For warranty service, provide the person who installed your Slant/Fin heater with the following information: heater model number and serial number (from the heater rating plate) and the date of installation. That person will notify the Slant/Fin wholesaler from whom the heater was purchased. Alleged defective part(s) must be returned through trade channels and replacement part(s) or replacement heater will, if warranty conditions are met, be provided by Slant/Fin through the wholesaler. If there are any questions about the coverage of this warranty, please contact Slant/Fin at the address shown below.

Limitations on implied warranties and damages
Slant/Fin's sole obligation in the event of a breach of any implied warranty (including, but not limited to, implied warranties of merchantability and fitness for a particular purpose) is limited to repair or replacement, and all such warranties are limited in duration to the period of time after the date of original installation as stated above. This warranty does not cover claims for incidental or consequential damages resulting from a breach of any express or implied warranty or any other reason.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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