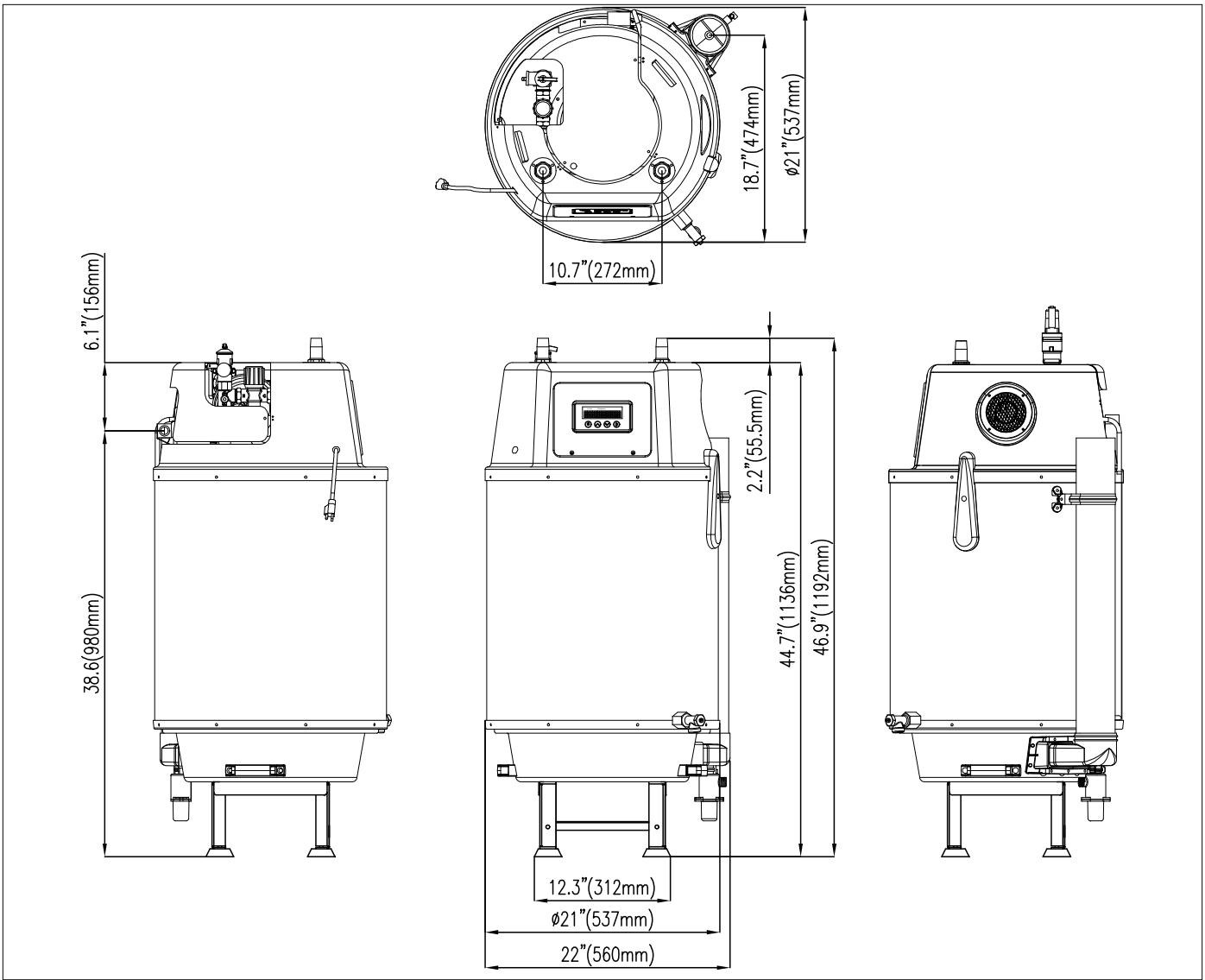

	Description	Diameter		Description	Diameter
A	Cold Water Inlet	3/4" Male NPT	**G**	Gas Connection	1/2" or 3/4" Female NPT
B	Hot Water Outlet		**H**	Drain Valve	N/A
C	Exhaust	3"	**I**	Condensate System	1/2" Male NPT
D	Electric Cord	N/A	**J**	Tank Sensor	N/A
E	T&P Valve	N/A	**K**	Display Control	N/A
F	Thermostatic Mixing Valve	N/A	**L**	Air Intake	3"

Figure 3 - 20 Gallon Model Dimensions and Specifications

J. Installing the Water Heater Stand, Exhaust Pipe Clamp, and Condensate Trap

⚠ DANGER

The factory supplied water heater stand and condensate trap must be installed with the water heater. Failure to do so will result in property damage, serious personal injury, or death.

⚠ WARNING

The water heater must be installed on a surface that can bear its weight (more than 120 lbs. when fully plumbed and full of water). Installing the water heater on a surface which cannot support its weight could result in property damage, personal injury, or death.

This water heater is too heavy for one person to lift. It is highly recommended to install the water heater with two people. Use caution as to not drop the water heater, which could damage the water heater and cause property damage and/or severe personal injury. Verify that the water heater is properly and securely mounted before leaving unsupervised. Failure to comply with the above and properly mount the water heater could result in substantial property damage, severe personal injury, or death.

This stand assembly is not seismic rated and should not be applied as such. Failure to comply with the above and properly mount the water heater could result in substantial property damage, severe personal injury, or death.

1. Assembling the Water Heater Stand

NOTE: Ensure the Water Heater Stand Assembly has shipped with all included components. See Figure 4.

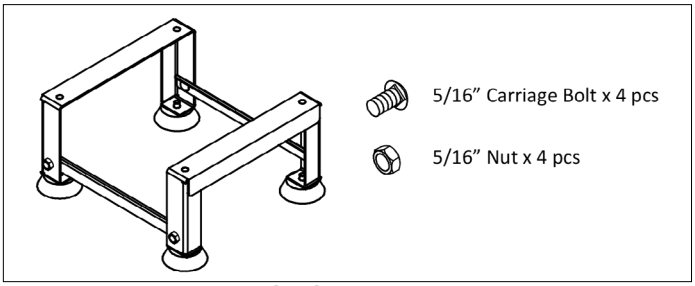

Figure 4 - Water Heater Stand and Components

1. Use a 5/16" socket and two (2) carriage bolts and nuts to connect a cross beam to two legs. See Figure 5, Step 1.
2. Use a 5/16" socket and two (2) carriage bolts and nuts to connect a cross beam to the other legs. See Figure 5, Step 2.
3. Lower the assembled stand onto the feet. See Figure 5, Step 3.
4. After the stand is assembled, it is highly recommended that two people lift and gently lower the water heater onto the water heater stand. See Figure 6.

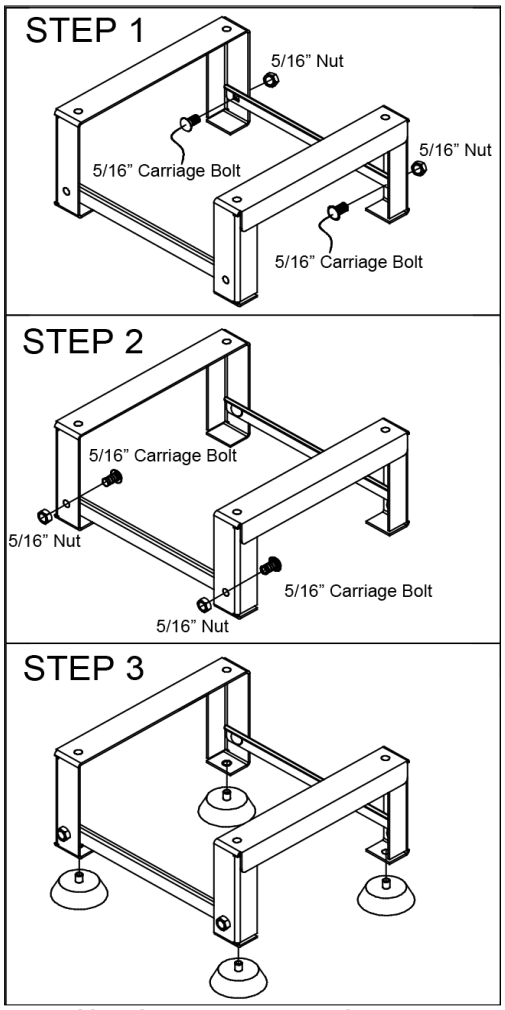

Figure 5 - Assembling the Water Heater Stand

2. Floor Mounting the Water Heater

For Installations in the State of California

For installation in California this water heater must be braced or anchored to avoid falling or moving during an earthquake. See instructions for correct installation procedures. Instructions may be obtained from California Office of the State Architect, 1102 Q Street, Suite 5100, Sacramento, CA 95811.

3. Installing the Exhaust Pipe Clamp and Condensate Trap

⚠ WARNING

The factory supplied water heater stand and condensate trap must be installed with the water heater. Failure to properly install condensate trap will allow dangerous gas to contaminate the structure and result in property damage, serious personal injury, or death. DO NOT operate the water heater for any amount of time for any reason until the condensate trap is installed.

1. Insert the Condensate Trap into the Exhaust Adaptor. Install the Condensate Trap Clamp to hold it in place.
2. Place the exhaust pipe inside the Exhaust Adaptor. While holding the exhaust pipe in place, attach the pipe clamp to the pipe support with a screw driver and two (2) M5 screws.

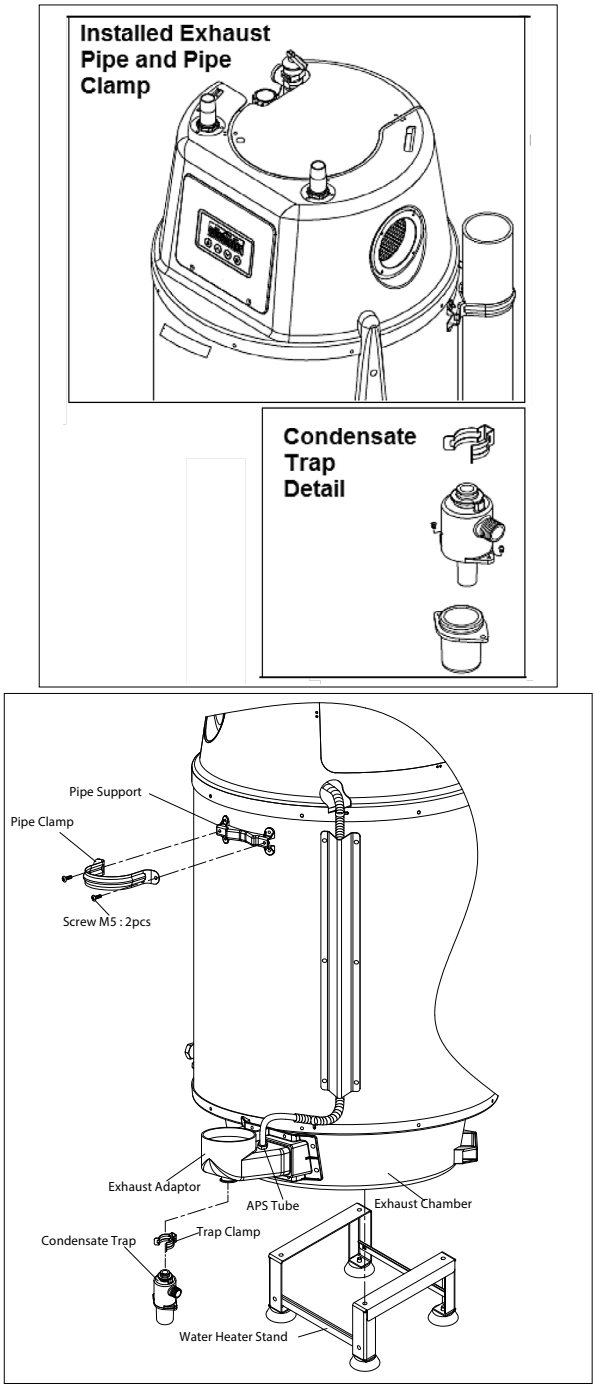

Figure 6 - Installing the Water Heater Exhaust Pipe Clamp, Condensate Trap, and Setting the Water Heater on the Stand

Part 4 - Water Piping

⚠ WARNING

Failure to follow the instructions in this section WILL VOID the warranty and may result in property damage, severe personal injury, or death.

CAUTION

DO NOT pipe this water heater with black iron, galvanized steel, steel, or lead pipe. Doing so will result in premature product failure and property damage, and WILL VOID the warranty.

Do not apply a torch within 12" of the water heater. If sweat connections are used, sweat tubing to the adapter before fitting adapter to the water connections on the heater. Damages due to improper installation practices ARE NOT covered by warranty.

Dielectric unions or galvanized steel fittings must not be used in a system with this water heater. Doing so WILL VOID the warranty. Use only copper, brass, or stainless steel fittings. Teflon thread sealant must be used on all connections.

A. General Plumbing Guidelines

CAUTION

Use two wrenches when tightening water piping at heater. Use one wrench to prevent the heater return or supply line from turning. Failure to prevent piping connections from turning could cause damage to heater components.

The heater control module uses a temperature sensor to provide high limit protection. Some codes / jurisdictions may require additional external controls.

The domestic water connections must be installed in accordance with all local and national plumbing codes, or any applicable standard which prevails. The inlet (cold) and outlet (hot) ports are 3/4" on all models.

- Pipe material must be suitable to meet local codes and industry standards.
- It is recommended to use brass, stainless steel, or copper unions / nipples in the water heater system.
- When installing more than one water heater to supply higher volumes of hot water in residential applications, the number of water heaters required and the header pipe sizing needs to be properly sized to meet the total hot water demand.
- The pipe must be cleaned and without blemish before any connections are made.
- Isolation (shutoff valves) should be used to ease future servicing.
- All water piping should be insulated.

It is recommended to install a sweat shut-off valve and a union in the cold inlet piping and hot outlet to ease future servicing. If there is a backflow preventer or any type of a no return valve in the system, install an additional tee here, suitable for a potable hot water expansion tank.

In the hot outlet, install a suitable adapter to match the tubing of the plumbing system. A recirculation line may be installed here to provide additional energy savings and prevent the thermal siphoning of domestic hot water.

CAUTION

Ensure the cold water inlet and hot water outlet pipes are not reversed. Doing so will cause the water heater to operate improperly and void warranty. Ensure the hot and cold lines are connected properly.

B. Backflow Preventer

Use a backflow preventer specifically designed for water heater installations. This valve should be installed on the cold water fill supply line per local codes.

C. Potable Expansion Tank

A potable hot water expansion tank is required to offset heated water expansion. In most city plumbing systems, the water meter has a no return or back flow device built into the system to prevent back flowing of water into city mains. Some local codes require back flow preventers on all incoming water supplies. The hot water expansion tank must be listed for potable water use. The expansion tank should be located on the cold inlet piping close to the water heater.

Expansion Tank

1. Ensure that the expansion tank is sized to correctly handle heater and system water volume and temperature.

CAUTION

Undersized expansion tanks cause system water to be lost from the relief valve, causing make-up water to be added. Eventual heater failure can result due to excessive make-up water addition. **SUCH FAILURE IS NOT COVERED BY WARRANTY.**

The expansion tank must be suitable for hot potable water systems.

2. The expansion tank must be located as shown in Applications, this manual, or following recognized design methods. See expansion tank manufacturer's instructions for details.

D. Piping the Water Heater

CAUTION

Use at least the MINIMUM pipe size for all water heater loop piping This is to avoid the possibility of inadequate flow through the water heater. Using less than the required minimum pipe size and piping could result in system problems, property damage, and premature water heater failure. Such problems ARE NOT covered by product warranty.

Use both thread tape and pipe dope to connect to the ¾" domestic water inlet and outlet. Tankless isolation valves between the city water supply and tank inlet are recommended for ease of service.

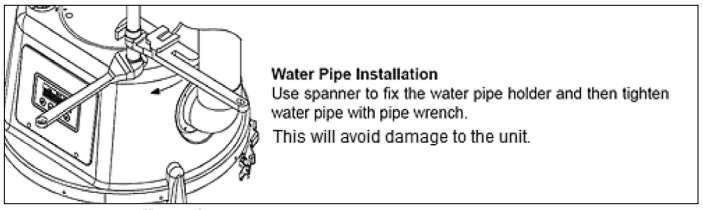

Figure 7 - Installing the Water Pipes

E. Applications

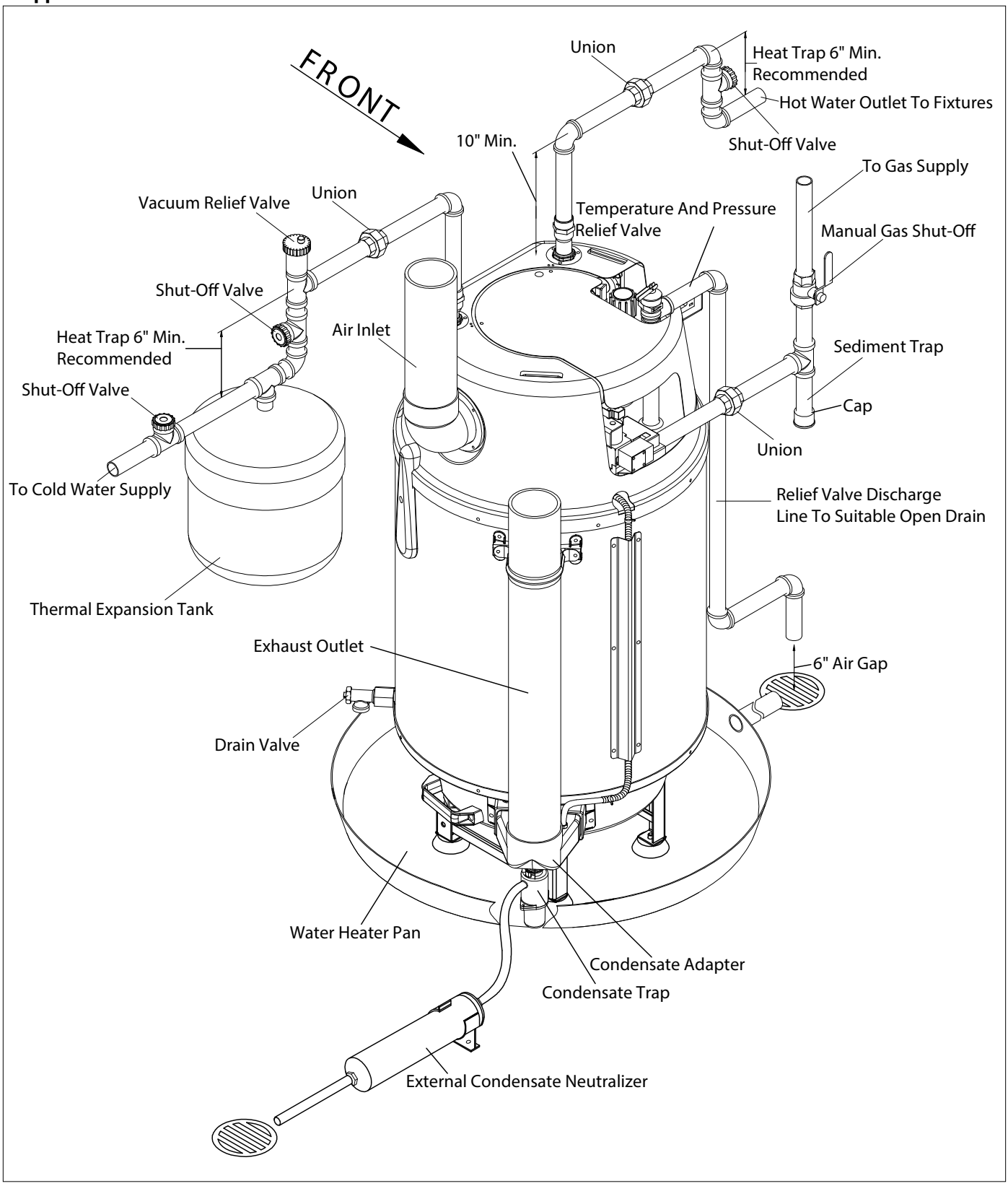

Figure 8 - Typical Installation

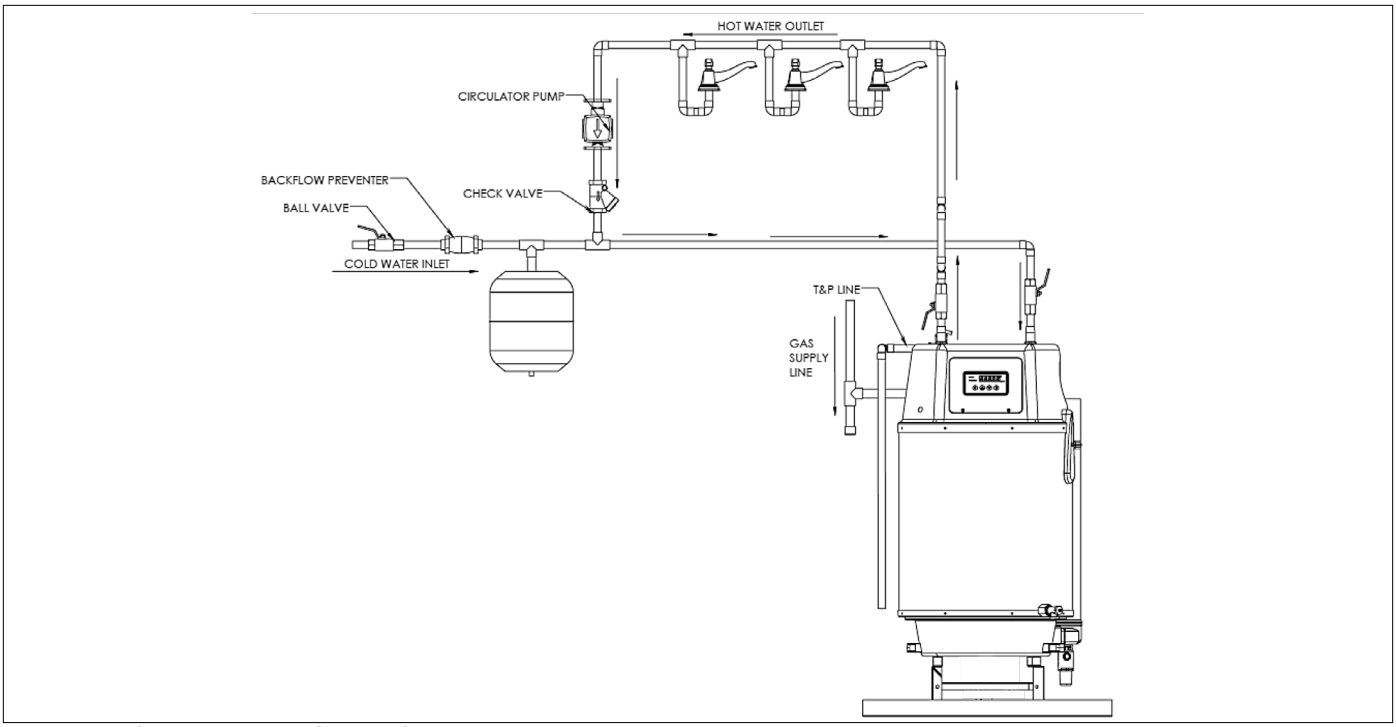

Figure 9 - Single Water Heater with Recirculation

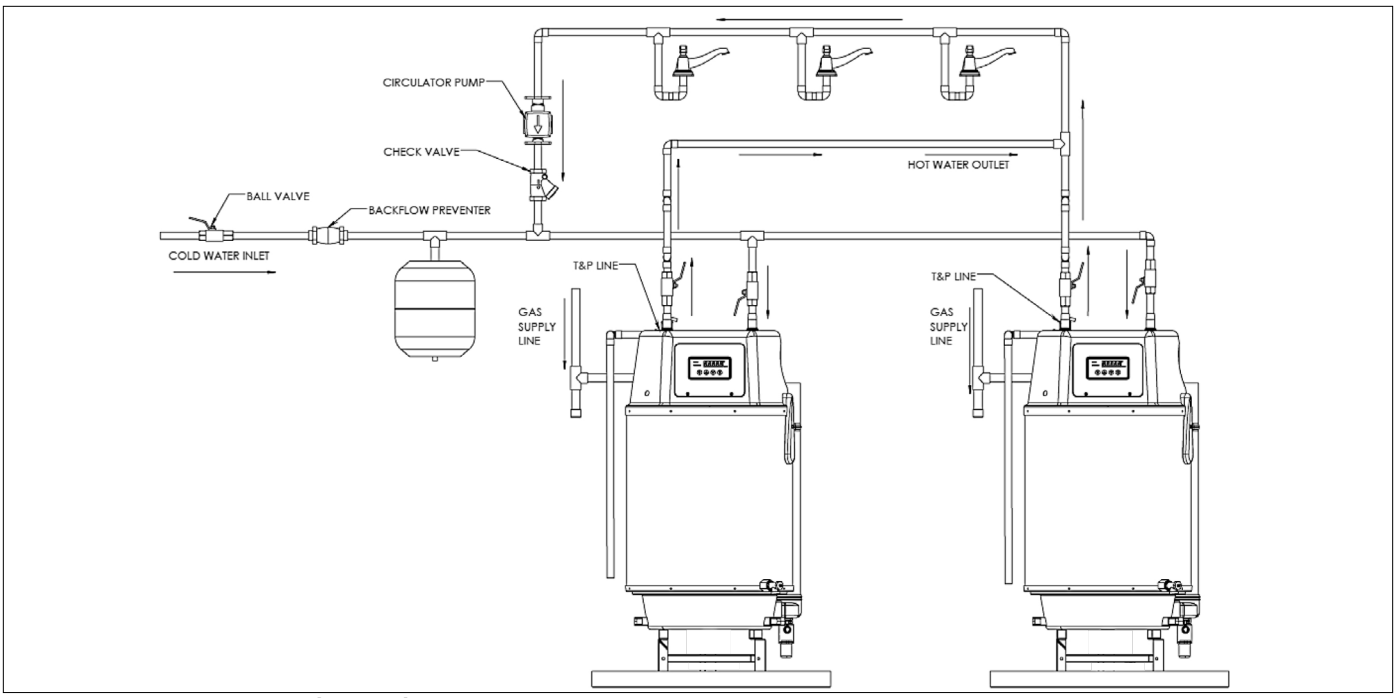

Figure 10 - Two Water Heaters with Recirculation

NOTES:

1. Minimum pipe size should match connection size. Upsize pipe accordingly if greater flow is required.
2. A thermal expansion tank suitable for potable water must be sized and installed within this piping system between the backflow preventer and the cold water inlet.
3. All circulators should have an integral flow check.
4. Drains and check valve between water heater and piping will assist in purging air from system.
5. These drawings are meant to demonstrate system piping only. The installer is responsible for all equipment and detailing required by local codes. In Massachusetts, you must install a vacuum breaker per 248 CMR.
6. Always shut off power to the water heater or isolate the heater from the system if ANY plumbing work is to be done. Running the water heater without water will result in dry-firing.
7. Thermostatic mixing valve should be set 5°F below the maximum stored tank temperature setpoint. For example: 125°F stored tank temperature setpoint = 120°F thermostatic mixing valve setpoint.

NOTE: These drawings are meant to show system piping concept only. Installer is responsible for all equipment and detailing required by local codes.

⚠ WARNING

Pump control such as aquastat or timer must be used in recirculation applications or long burner runtime will occur and cause premature failure. Daily usage should not exceed 6 hours of burner runtime. Failure to comply WILL VOID product warranty.

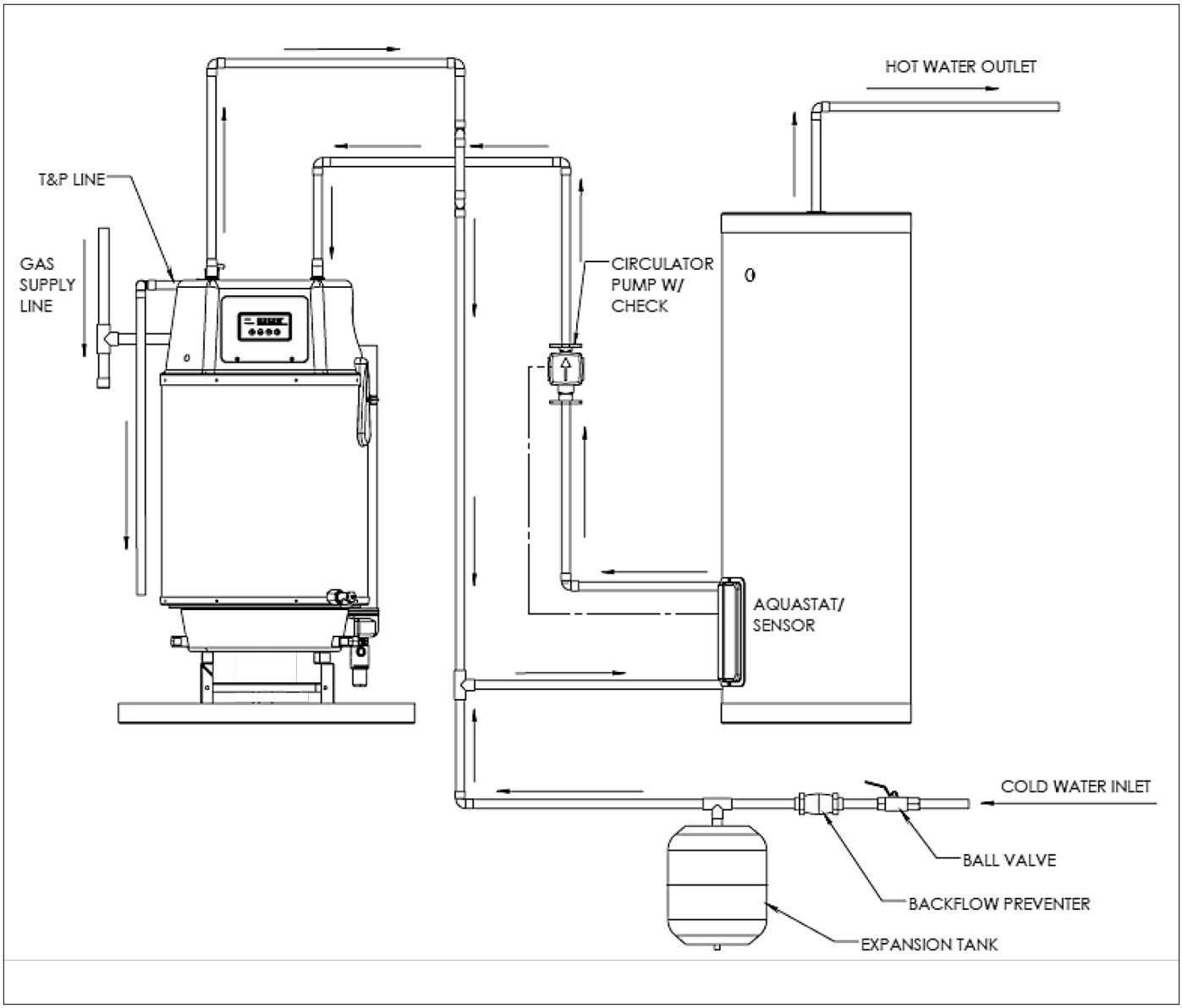

Figure 11 - Water Heater with Storage Tank

NOTES:

1. Minimum pipe size should match connection size. Upsize pipe accordingly if greater flow is required.
2. A thermal expansion tank suitable for potable water must be sized and installed within this piping system between the backflow preventer and the cold water inlet.
3. All circulators should have an integral flow check.
4. Drains and check valve between water heater and piping will assist in purging air from system.
5. These drawings are meant to demonstrate system piping only. The installer is responsible for all equipment and detailing required by local codes. In Massachusetts, you must install a vacuum breaker per 248 CMR.
6. Always shut off power to the water heater or isolate the heater from the system if ANY plumbing work is to be done. Running the water heater without water will result in dry-firing.
7. Thermostatic mixing valve should be set 5°F below the maximum stored tank temperature setpoint. For example: 125°F stored tank temperature setpoint = 120°F thermostatic mixing valve setpoint.

NOTE: These drawings are meant to show system piping concept only. Installer is responsible for all equipment and detailing required by local codes.

NOTES:

1. The Heating Application Kit (Part # 8100P-049, not included with the water heater) MUST BE installed when using an air handler. Failure to install the Heating Application Kit when using the water heater for heating applications WILL VOID product warranty.
2. Minimum pipe size should match connection size. Upsize pipe accordingly if greater flow is required.
3. A thermal expansion tank suitable for potable water must be sized and installed within this piping system between the backflow preventer and the cold water inlet.
4. All circulators should have an integral flow check.
5. Drains and check valve between water heater and piping will assist in purging air from system.
6. These drawings are meant to demonstrate system piping only. The installer is responsible for all equipment and detailing required by local codes. In Massachusetts, you must install a vacuum breaker per 248 CMR.
7. Always shut off power to the water heater or isolate the heater from the system if ANY plumbing work is to be done. Running the water heater without water will result in dry-firing.
8. Thermostatic mixing valve should be set 5°F below the maximum stored tank temperature setpoint. For example: 125°F stored tank temperature setpoint = 120°F thermostatic mixing valve setpoint.
9. When using a Recirculation Pump, ensure the pump is controlled by a timer or wall type aquastat to prevent scalding.

NOTES FOR AIR HANDLER APPLICATION:

1. MASSACHUSETTS STATE PLUMBING CODE REQUIRES A DISTANCE NO GREATER THAN 50 FEET FROM THE WATER HEATER TO THE FAN COIL IN THE AIR HANDLER.
2. MASSACHUSETTS STATE PLUMBING CODE REQUIRES AN ELECTRONICALLY TIMED CIRCULATOR PUMP TO ACTIVATE EVERY SIX HOURS FOR 60 SECONDS. THIS CIRCULATOR IS REQUIRED TO BE BRONZE OR STAINLESS.
3. ALL WATER PIPING MUST BE INSULATED.
4. YOU MUST INSTALL A VACUUM RELIEF VALVE PER 248 CMR.

NOTE: THESE DRAWINGS ARE MEANT TO DEMONSTRATE SYSTEM PIPING ONLY. THE INSTALLER IS RESPONSIBLE FOR ALL EQUIPMENT AND DETAILING REQUIRED BY LOCAL CODES.

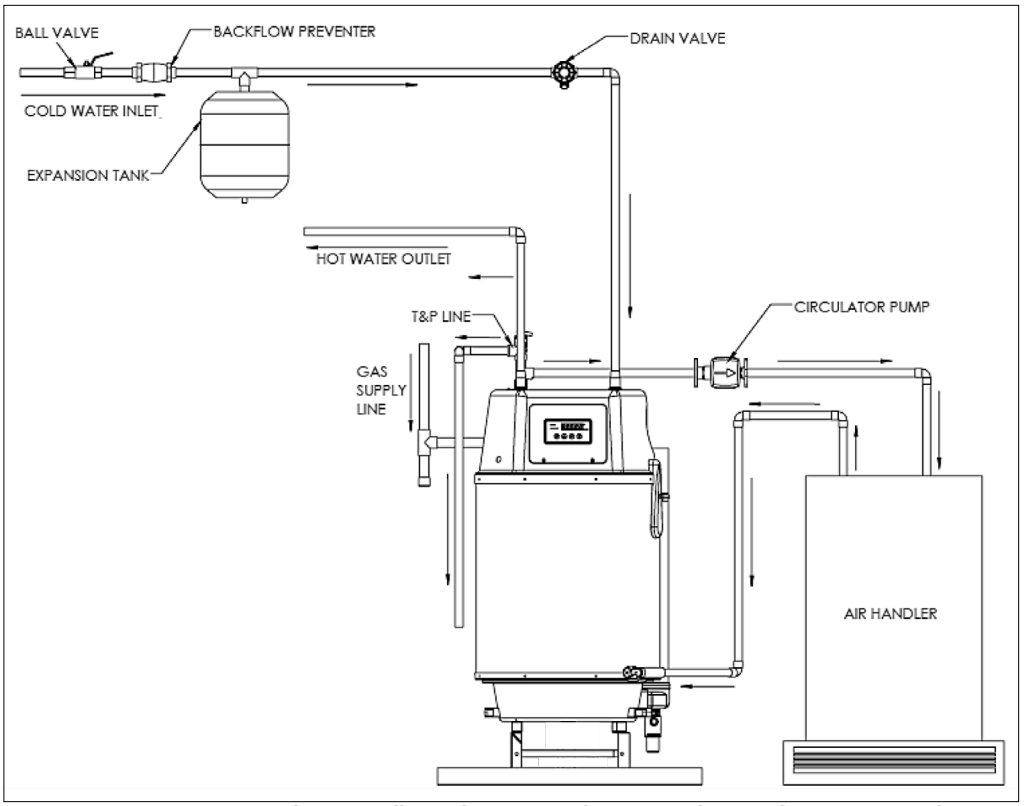

Figure 12 - Water Heater with Air Handler without Internal or External Recirculation – NOTE: There is a Built-In Flow Check in the Internal Recirculation Pump Loop

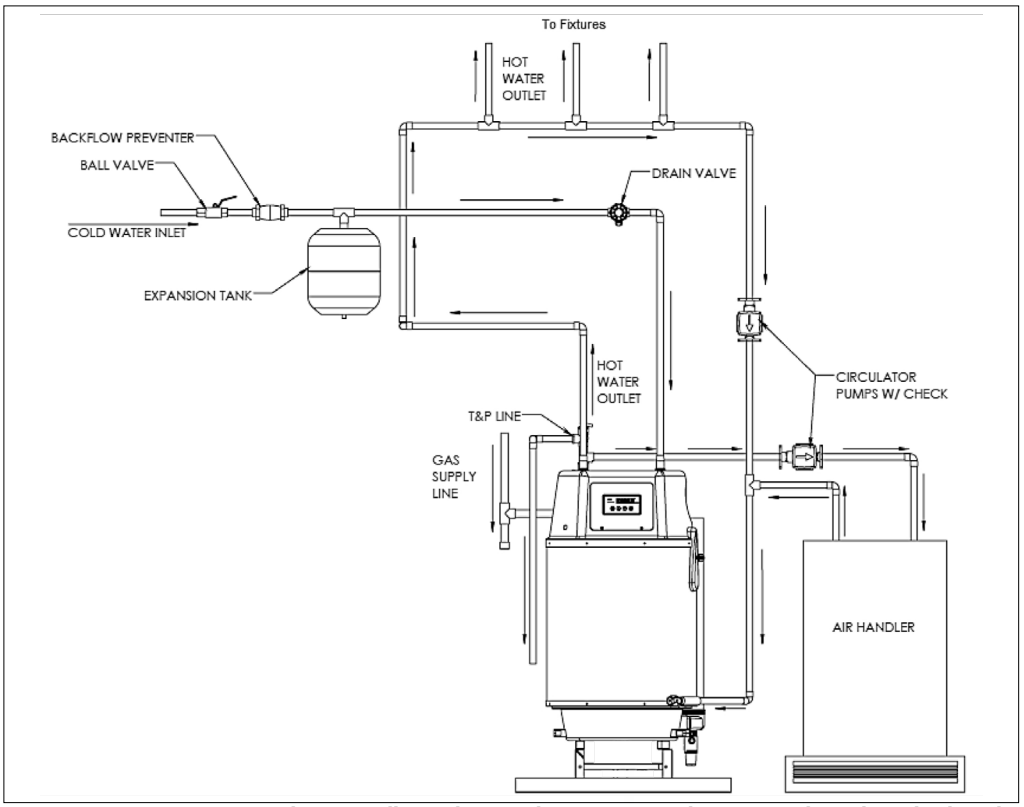

Figure 13 - Water Heater with Air Handler and Recirculation – NOTE: There is a Built-In Flow Check in the Internal Recirculation Pump Loop; NOTE: The recirculation pump needs to be controlled by a timer or wall type aquastat to prevent scalding.