

# AERCO Stainless Steel Domestic Water Storage Tank

Technical Instruction Document



## TECHNICAL INSTRUCTION GUIDE

### Installation and Maintenance Guide

## AERCO Stainless Steel Domestic Water Storage Tank

#### Applies to:

Any applicable water heater/boiler piping system arrangement.

#### Description of Document:

This Technical Instruction Document provides the instructions necessary for the installation and maintenance of the AERCO stainless steel storage tanks in AERCO and non-AERCO systems.



AERCO Duplex Stainless Steel Domestic Water Storage Tank

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Technical Instruction Document

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## Table of Contents

1. Introduction .....	3
2. Stainless Steel Storage Tank .....	3
3. Storage Tank Installation.....	4
4. Storage Tank Maintenance .....	5
5. Storage Tank Field Piping .....	6

# AERCO Stainless Steel Domestic Water Storage Tank

## Technical Instruction Document

### 1. Introduction

The AERCO domestic water storage tanks offering includes glass-lined tanks as well as duplex stainless steel tanks. This document will capture the installation and maintenance requirements/guidance for the stainless steel tanks. For the glass-lined tanks, please refer to AERCO-DHW-Storage-Tank (TID-0011).

AERCO Duplex Stainless Steel storage tanks are ASME certified pressure vessels designed for use with water heaters. When contending with challenging applications, they assure consistent hot water service during peak demands. The AERCO stainless steel storage tanks are available with or without dispersion tube.

### 2. Stainless Steel Storage Tank

The AERCO stainless steel tank is made of duplex stainless steel for unsurpassable longevity and reliability. It offers following features:

- Lifting lugs to place tank in place
- Steel base for securing it to the ground
- Fiberglass insulation with coated steel jacket panels for negligible standby losses
- Removable top head for tanks 215 gallon and smaller tanks for ease of maintenance
- Manway tank access for 250 gallons and larger tanks for ease of maintenance
- Bottom drain valve for ease of tank flush and cleaning
- No Anode – no associated failure and no maintenance needed

The duplex tank can be configured with or without a dispersion tube.

### 3. PORT DESIGNATION

Refer to the application drawings in this document for recommended piping arrangement for a given water heater. The below table provides a summary of port assignments per unit and is for reference only:

Table 1: AERCO Duplex Stainless Steel Storage Tank Port Designations				
Duplex Tank Ports	Innovation	SmartPlate	B+II/SWDW	AM
Hot Water Outlet (Top)	Hot Water Out (Bldg)			
3/4" Temperature Gauge	Temperature Gauge			
1" NPT T&P Valve	T&P			
3/4" NPT Thermowell	Plugged			Aquastat or Sensor
3" NPT Circulating Connection (upper)	Plugged			Hot Water In (Heater)
Blanked 3" Circulating Connection (lower)	Tap for Aquastat			N/A
Cold Water Inlet	Inlet (Bldg Recirc/City Cold Water) and Outlet (Heater)			Inlet (Bldg Recirc/City Cold Water)

## 4. Storage Tank Installation

Consult your local building codes for water heater regulations and make sure that you acquire any necessary permits.

**NOTE FOR MASSACHUSETTS INSTALLATIONS:** Storage tank installations within the Commonwealth of Massachusetts must conform to 248 CMR 10.00.

Refer to the user manual for the water heater being used to ascertain any special requirements for your installation and proceed as follows:

### Installing the Storage Tank

1. Clear the area around the old hot water tank of all flammable items.
2. Switch off the water heater and allow the system to cool for four (4) hours.
3. Isolate the electrical supply to the existing water heater by switching off the electricity at the mains supply point.
4. Turn off the cold water supply to the existing heating system and any other heating appliance.
5. Turn off the main gas supply valve downstream from the water heater.
6. If you are replacing an existing storage tank, be sure to drain and disassemble it according to the manufacturer's instructions.
7. Place the new tank into position and line it up to be flush with existing/new plumbing connections. Connect the storage tank to the plumbing using appropriate techniques.
8. A pressure relief valve is either factory installed or shipped loose with the storage tank. If not factory installed, you **MUST** install a relief valve (refer to the port designation drawings above) per the manufacturer's instructions.
9. Install the aquastat or temperature sensor in accordance with the heater installation drawings.
10. Plug all unused ports.
11. Turn on mains electric power and mains gas upstream from the water heater.
12. Turn on the cold water supply to the tank, followed by the main water supply to the system. Allow the tank to fill with cold water. Open the relief valve on the top of the tank to vent air from the tank so it fills completely. Close the relief valve when tank is filled.
13. Set the thermostat at your required temperature, switch on the power supply and allow the water to heat.
14. After installation, fill the system and run at operating temperature for at least one day in a closed loop mode, check for any leaks, drain system, and re-fill.

**NOTE**

The tank should be installed in such a way that should the tank or any connections leak, the resulting flow of water will not cause damage.

## 5. Storage Tank Maintenance

1. A preventative maintenance program should be established to assure a long, trouble-free life of the water heater. The maintenance frequency will vary based on water chemistry, water temperature and usage. It is advisable to start with 3 months inspection cycle for hard water (>10 grains/gal) installations.
2. In hard water installations, a scale of lime will normally form and accumulate in the storage tank during operation. The lime is formed from the natural chemicals in the water that precipitate out during the heating cycles. Some water supplies contain more of these chemicals than others, and the scale buildup will occur more rapidly. Other factors affecting the scale buildup are the amount of hot water used and the temperature of the water. The more hot water is used, the more fresh water containing the scale-forming chemicals is brought into the tank. As the temperature of the water increases, the rate of scale deposited will be increased. To control sediment and scale buildup in the water heater, the tank should be flushed at periodic intervals (part of maintenance program setup) depending on water conditions in your location. To flush, open the drain valve and allow water to flow through the tank until it runs clear. Close the drain valve.
3. Although not necessary if the tank is periodically inspected and flushed, the tank has a manway access or removable top head for inspection and cleaning. Tanks larger than 36" vessel diameter are equipped with a 12" X 16" manway. 36" or small vessel diameter tanks are equipped with a removable top head for inspection.
4. The temperature and pressure relief valve should be checked at regular intervals to determine its condition for safe operation. The openings inside the valve may become inoperative. If the valve does not open and close properly when tested, it must be replaced. Replace relief valve with a like kind or one meeting the requirements stated on the rating decal located adjacent to the relief valve mounting location.

**CAUTION:**

The relief valve is a primary safety device.

5. Extended shutdown of the appliance and restarting are as follows:
  - a. Turn off all power on fuel supplies.
  - b. Drain and flush tank as previously discussed.
  - c. Tag all power switches to indicate that fuel is off and the tank is empty.
  - d. Refill tank with water and energize fuel and power switches to restart. Reset all controls and conduct startup of the appliance.

## 6. Storage Tank Field Piping

**NOTE FOR MASSACHUSETTS INSTALLATIONS:**

Storage tank installations within the Commonwealth of Massachusetts must conform to 248 CMR 10.00.

Select the appropriate piping diagrams for your application from the following drawings:

- Figure 1: Innovation Water Heater – Stratified Storage Tank Piping Schematic
- Figure 2: SmartPlate Water Heater – Stratified Storage Tank Piping Schematic
- Figure 3: AM Series Water Heater – Stratified Storage Tank Piping Schematic
- Figure 4: B+ Water Wizard and DW+ – Stratified Storage Tank Piping Schematic

**NOTE**

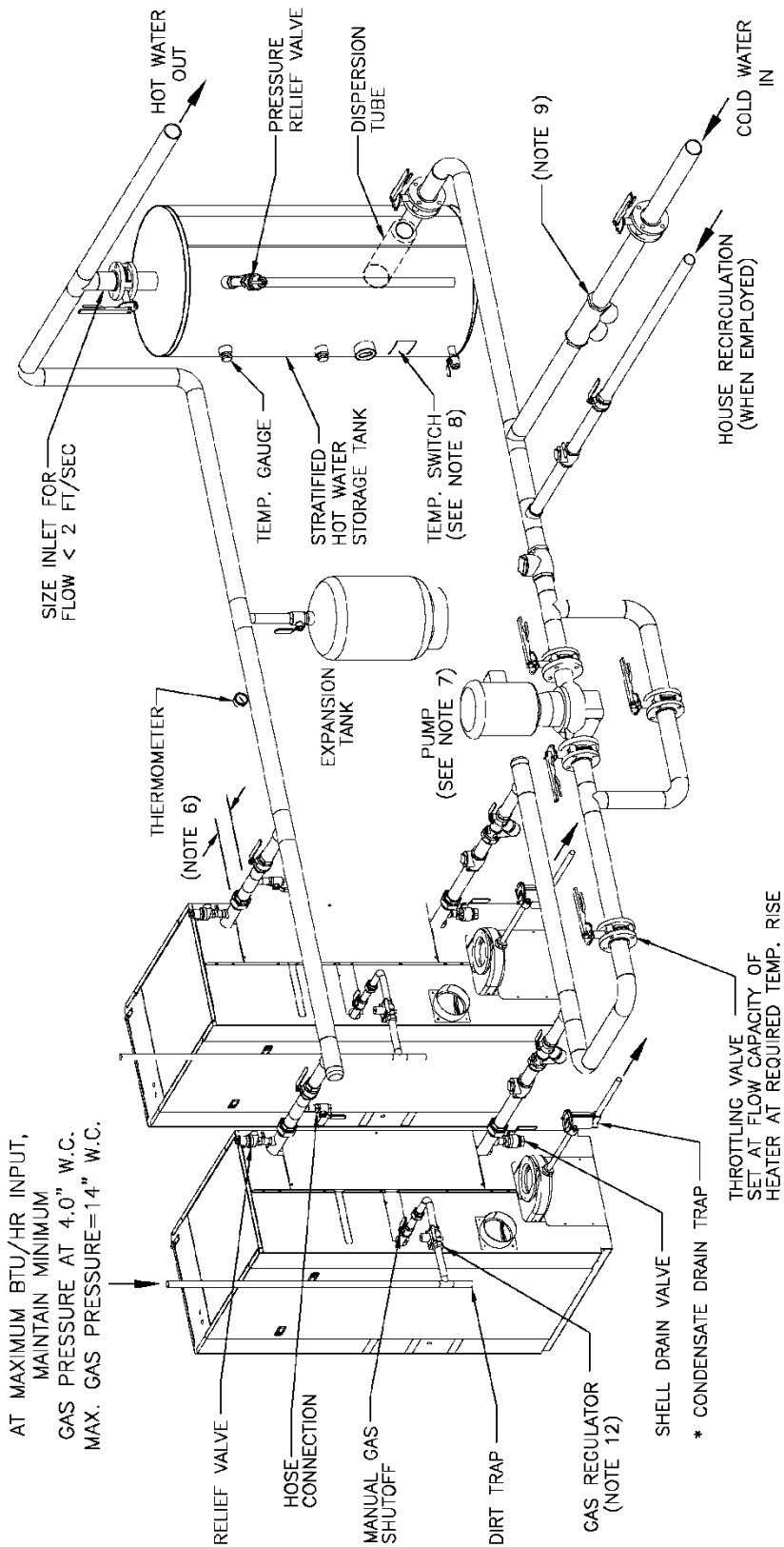
The Innovation water heater can only be piped with a stratified storage tank to ensure that the maximum continuous flow rate through the heater does not exceed 50 gpm.

**IMPORTANT!**

The piping schematics shown in these installation procedures illustrate only the piping between the water heater and the AERCO tank. SEE THE APPROPRIATE WATER HEATER OPERATIONS AND MAINTENANCE MANUAL FOR COMPLETE WATER HEATER INSTALLATION INSTRUCTIONS.

# AERCO Stainless Steel Domestic Water Storage Tank

## Technical Instruction Document

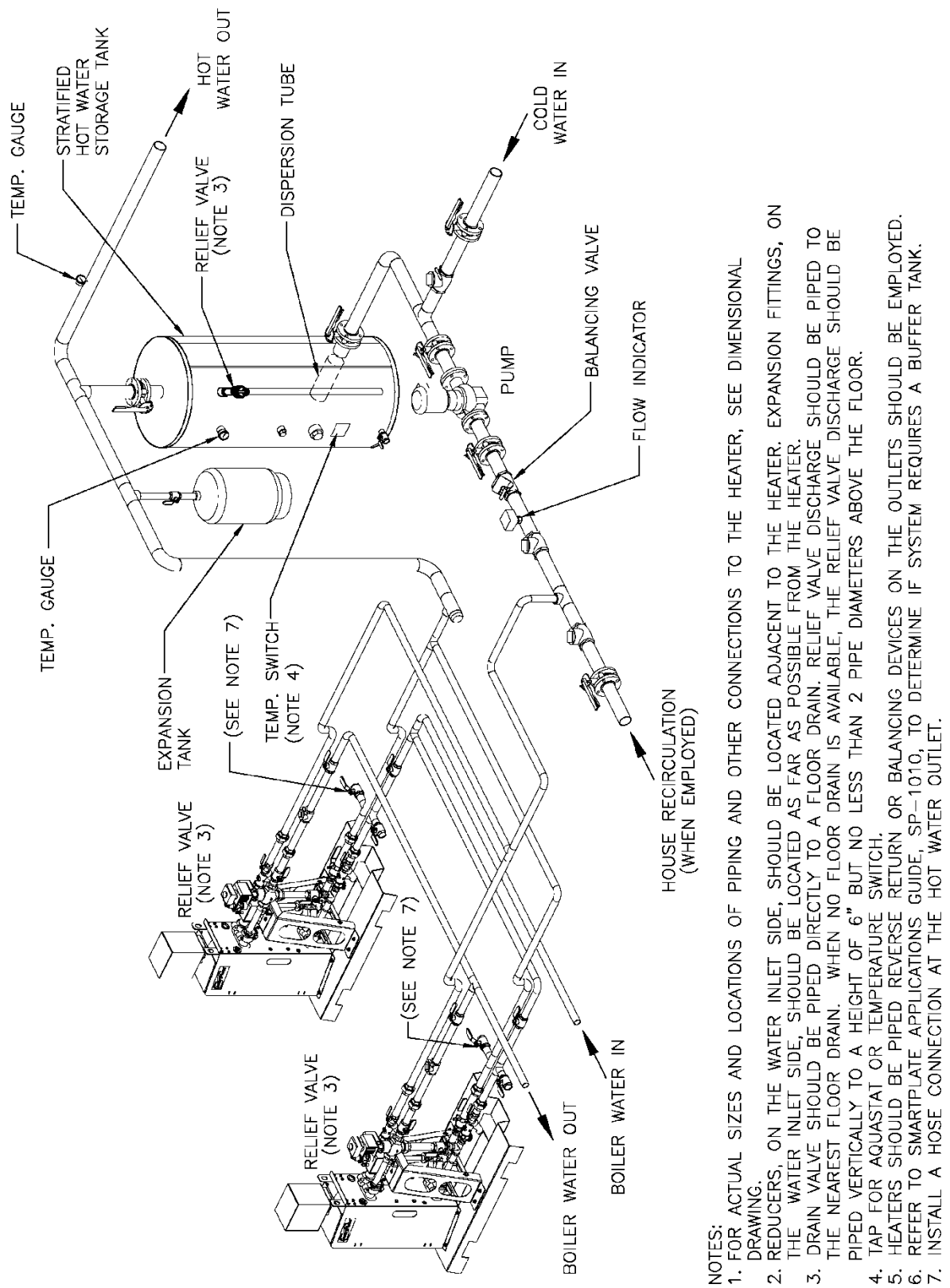


- NOTES:
1. FOR ACTUAL SIZES AND LOCATIONS OF PIPING AND OTHER CONNECTIONS TO THE HEATER, SEE DIMENSIONAL DRAWING.
  2. SHELL DRAIN VALVE AND CONDENSATE HOSE SHOULD BE ARRANGED TO PERMIT THE FLUIDS TO DRAIN FREELY, BY GRAVITY, TO A FLOOR DRAIN. RELIEF VALVE DISCHARGE SHOULD BE PIPED TO THE NEAREST FLOOR DRAIN. WHEN NO FLOOR DRAIN IS AVAILABLE, THE RELIEF VALVE DISCHARGE SHOULD BE PIPED VERTICALLY TO A HEIGHT OF AT LEAST 6" ABOVE THE FLOOR BUT NOT LESS THAN 2 PIPE DIAMETERS.
  3. ALL (\*) ITEMS ARE INCLUDED SEPARATELY IN SHIPMENT.
  4. THIS IS A TYPICAL INSTALLATION DRAWING. LOCAL CODES AND AUTHORITIES SHOULD BE CONSULTED.
  5. HOSE CONNECTION AT HEATER OUTLET IS FOR INITIAL HEATER CALIBRATION DURING START-UP.
  6. LOCATE WATER INLET AND OUTLET FITTINGS (i.e. UNIONS, ELBOWS, ETC.) A MINIMUM OF 6" FROM WATER HEATER FITTINGS, TO PREVENT INTERFERENCE WITH REMOVAL OF HEATER PANELS.
  7. PUMP SHOULD BE CAPABLE OF HEATER'S RATED FLOW AT DESIGN TEMPERATURE RISE.
  8. TAP FOR AQUASTAT OR TEMPERATURE SWITCH.
  9. IF PERMITTED BY LOCAL CODES, A CHECK VALVE MAY BE USED IN PLACE OF A BACKFLOW PREVENTER.
  10. CONSULT LOCAL CODES FOR PROPER TYPE OF CONNECTIONS TO STORAGE TANK.
  11. WHEN REQUIRED BY LOCAL CODES, A VACUUM BREAKER MUST BE INSTALLED WITH THE STORAGE TANK.
  12. AT 14" W.C. OR BELOW, A GAS REGULATOR IS OPTIONAL UNLESS REQUIRED BY LOCAL CODE.
  13. STORAGE TANK MUST INCLUDE EITHER AN INLET DISPERSION TUBE OR INLET BAFFLE TO ENSURE STRATIFICATION.

**Figure 1: Innovation Water Heater – Stratified Storage Tank Piping Schematic**

# AERCO Stainless Steel Domestic Water Storage Tank

## Technical Instruction Document



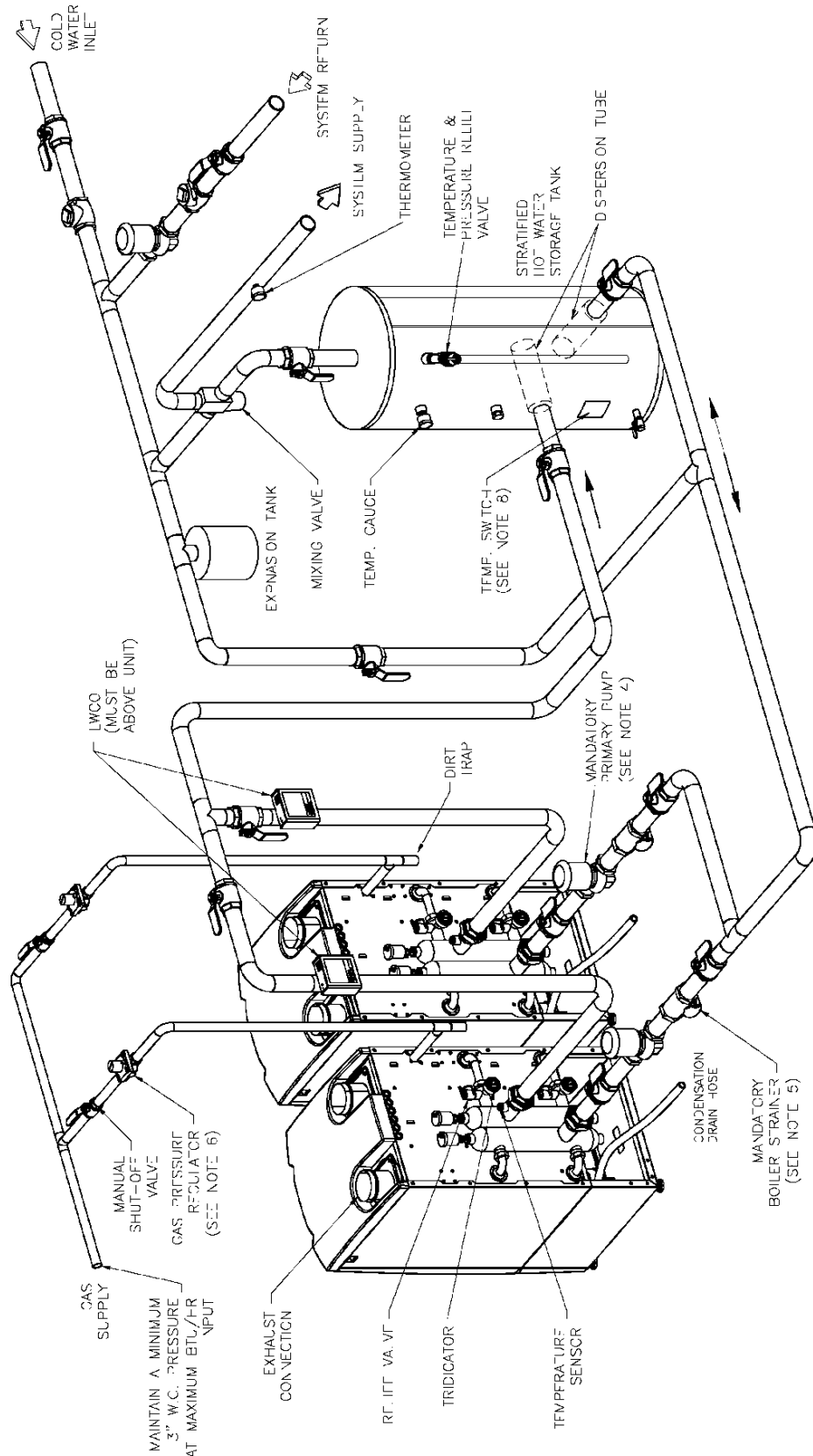
- NOTES:**
1. FOR ACTUAL SIZES AND LOCATIONS OF PIPING AND OTHER CONNECTIONS TO THE HEATER, SEE DIMENSIONAL DRAWING.
  2. REDUCERS, ON THE WATER INLET SIDE, SHOULD BE LOCATED ADJACENT TO THE HEATER. EXPANSION FITTINGS, ON THE WATER INLET SIDE, SHOULD BE LOCATED AS FAR AS POSSIBLE FROM THE HEATER.
  3. DRAIN VALVE SHOULD BE PIPED DIRECTLY TO A FLOOR DRAIN. RELIEF VALVE DISCHARGE SHOULD BE PIPED TO THE NEAREST FLOOR DRAIN. WHEN NO FLOOR DRAIN IS AVAILABLE, THE RELIEF VALVE DISCHARGE SHOULD BE PIPED VERTICALLY TO A HEIGHT OF 6" BUT NO LESS THAN 2 PIPE DIAMETERS ABOVE THE FLOOR.
  4. TAP FOR AQUASTAT OR TEMPERATURE SWITCH.
  5. HEATERS SHOULD BE PIPED REVERSE RETURN OR BALANCING DEVICES ON THE OUTLETS SHOULD BE EMPLOYED.
  6. REFER TO SMARTPLATE APPLICATIONS GUIDE, SP-1010, TO DETERMINE IF SYSTEM REQUIRES A BUFFER TANK.
  7. INSTALL A HOSE CONNECTION AT THE HOT WATER OUTLET.

**Figure 2: SmartPlate Water Heater – Stratified Storage Tank Piping Schematic**



# AERCO Stainless Steel Domestic Water Storage Tank

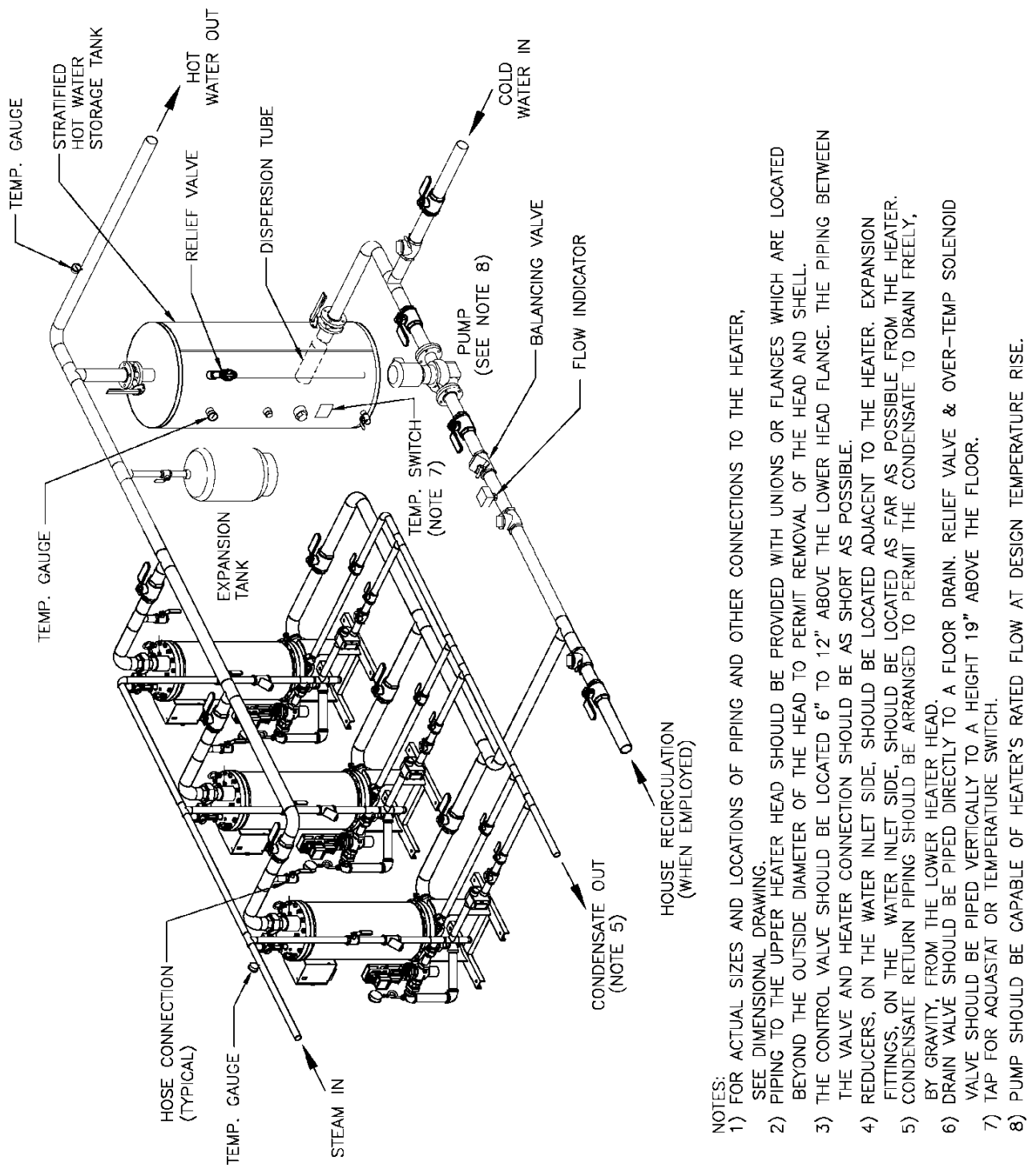
## Technical Instruction Document



**Figure 3: AM Series Water Heater – Stratified Storage Tank Piping Schematic**

# AERCO Stainless Steel Domestic Water Storage Tank

## Technical Instruction Document



- NOTES:
- 1) FOR ACTUAL SIZES AND LOCATIONS OF PIPING AND OTHER CONNECTIONS TO THE HEATER, SEE DIMENSIONAL DRAWING.
  - 2) PIPING TO THE UPPER HEATER HEAD SHOULD BE PROVIDED WITH UNIONS OR FLANGES WHICH ARE LOCATED BEYOND THE OUTSIDE DIAMETER OF THE HEAD TO PERMIT REMOVAL OF THE HEAD AND SHELL.
  - 3) THE CONTROL VALVE SHOULD BE LOCATED 6" TO 12" ABOVE THE LOWER HEAD FLANGE. THE PIPING BETWEEN THE VALVE AND HEATER CONNECTION SHOULD BE AS SHORT AS POSSIBLE.
  - 4) REDUCERS, ON THE WATER INLET SIDE, SHOULD BE LOCATED ADJACENT TO THE HEATER. EXPANSION FITTINGS, ON THE WATER INLET SIDE, SHOULD BE LOCATED AS FAR AS POSSIBLE FROM THE HEATER.
  - 5) CONDENSATE RETURN PIPING SHOULD BE ARRANGED TO PERMIT THE CONDENSATE TO DRAIN FREELY, BY GRAVITY, FROM THE LOWER HEATER HEAD.
  - 6) DRAIN VALVE SHOULD BE PIPED DIRECTLY TO A FLOOR DRAIN. RELIEF VALVE & OVER-TEMP SOLENOID VALVE SHOULD BE PIPED VERTICALLY TO A HEIGHT 19" ABOVE THE FLOOR.
  - 7) TAP FOR AQUASTAT OR TEMPERATURE SWITCH.
  - 8) PUMP SHOULD BE CAPABLE OF HEATER'S RATED FLOW AT DESIGN TEMPERATURE RISE.

**Figure 2: B+ Water Wizard and DW+ – Stratified Storage Tank Piping Schematic**

## **STAINLESS STEEL STORAGE TANK WARRANTY**

### **WHAT DOES THIS LIMITED WARRANTY COVER?**

This limited warranty covers the AERCO stainless steel tank for leakage, production of rusty or discolored water or other malfunction caused by defects in materials, workmanship, and/or chloride stress corrosion cracking. It extends to the first buyer and to any subsequent owner(s) as long as the storage tank remains installed at its original place of installation.

### **WHAT DOES THIS LIMITED WARRANTY NOT COVER?**

1. This limited warranty does not cover leakage or other malfunction caused by:
  - a) Defective installation, and specifically, any installation which is made:
    - i) in violation of applicable state or local plumbing, housing or building codes, or
    - ii) without a certified American Gas Association, ASME, or comparable pressure only or combination temperature and pressure relief valve, or
  - b) Adverse local conditions, and specifically, sediment or lime precipitate in the tank or corrosive elements in the atmosphere.
  - c) Misuse, alteration or addition of non-approved components or apparatus, operation with fuels or at settings other than those set forth on the rating plate, or accidental or other exterior damage.
  - d) Tanks used for non-domestic (process) applications or for non-potable or high-purity water.
2. This warranty also does not cover:
  - a) Production of noise, taste or odors.
  - b) Incidental property damage, loss of use, inconvenience or other incidental or consequential costs.
  - c) Costs associated with the replacement and/or repair of the unit, including:
    - i) any freight, shipping or delivery charges
    - ii) any removal, installation or re-installation charges
    - iii) any material, and/or permits required for installation, re-installation or repair
    - iv) charges to return the defective storage tank to the manufacturer.

### **WHAT IS THE PERIOD OF COVERAGE?**

This limited warranty runs from date of installation (or without proof of installation, from three (3) months after the date of manufacture) for a period of 15 years. All replacement storage tanks carry the balance of the original warranty, i.e. if an original fifteen (15) year warranted storage tank develops a leak due to defects in materials/ workmanship after only twelve (12) years, the replacement unit is warranted for only the balance remaining from the original warranty, or three (3) years in this example.

### **WHAT IS THE DURATION OF THE IMPLIED WARRANTY?**

**ANY IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY IMPOSED ON THE SALE OF THE WATER STORAGE TANK UNDER THE LAWS OF THE STATE OF SALE ARE LIMITED IN DURATION TO ONE YEAR FROM DATE OF ORIGINAL INSTALLATION.**

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# AERCO Stainless Steel Domestic Water Storage Tank

## Technical Instruction Document

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### HOW DOES STATE LAW RELATE TO THE WARRANTY?

Some states do not allow:

1. Limitations on how long an implied warranty lasts.
2. Limitations on incidental or consequential damages.

So the above limitations or exclusions 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.

### WHAT WILL WE DO TO CORRECT PROBLEMS?

1. If a defect occurs within the warranty period, we will:  
Provide a replacement storage tank of our manufacture, (or at our option) repair any unit, which develops a leak in the steel tank within the tank warranty period. To obtain a replacement, you must forward the rating plate from the defective unit to AERCO International, Inc. If government regulations require the replacement storage tank to have features not found in the defective storage tank, you will be required to pay the difference in price represented by those government required features.

We do reserve the right to verify any claims of defect by inspection.

### WHAT WILL WE NOT DO?

We will not:

1. Repair or replace any storage tank, or part, subject to conditions outlined in "What Does This Limited Warranty Not Cover?"
2. Reimburse any costs associated with repair and/or replacement.
3. Replace and/or repair any storage tank without complete model/serial number.
4. Replace any storage tank without prior receipt of actual rating plate from appliance.

### HOW DO YOU GET WARRANTY ASSISTANCE?

Upon discovering a defect or problem, you should:

1. Contact either the installer or your local AERCO sales representative, or
2. Contact us--  
AERCO International, Inc.  
100 Oritani Drive,  
Blauvelt, NY 10913  
1-800-526-0288

### WHAT SHOULD YOU DO TO KEEP THE WARRANTY IN EFFECT?

To facilitate warranty assistance, you should:

1. Retain all bills of sale or receipts for proof of installation, etc.
2. Contact your installer, local AERCO sales representative, or our Warranty Department as soon as any problem or defect is noticed.
3. When necessary, allow us, or our chosen representative, to inspect the unit.
4. For your reference, fill in the Model and Serial Number found on the units Rating Plate:

Model Number \_\_\_\_\_

Serial Number \_\_\_\_\_

Date of Installation \_\_\_\_\_

# AERCO Stainless Steel Stainless Steel Domestic Water Storage Tank

Technical Instruction Document

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## NOTES:

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Technical Instruction Document

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## CHANGE LOG:

DATE	DESCRIPTION	CHANGED BY
4/17/2017	Rev A: Initial release	



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