Eemax™
evolving hot water

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR TANKLESS ELECTRIC WATER HEATERS

PROSERIES XTP™

⚠ IMPORTANT SAFETY INFORMATION

READ ALL INSTRUCTIONS BEFORE USING

⚠ DANGER

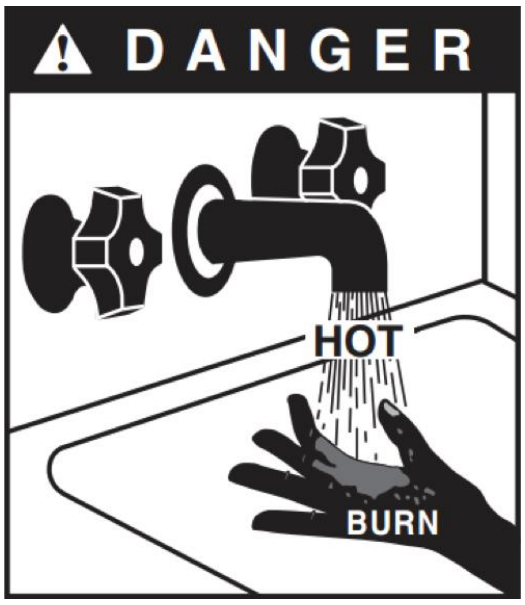
Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



Hot water can be dangerous. There is a high scald potential if the thermostat is set too high.

Water temperatures over 125 °F (51 °C) can cause severe burns or scalding resulting in death.

Hot water can cause first degree burns with exposure for as little as:
3 seconds at 140 °F (60 °C)
20 seconds at 130 °F (54 °C)
8 minutes at 120 °F (48 °C)

⚠ IMPORTANT SAFETY INFORMATION

READ ALL INSTRUCTIONS BEFORE USING

1. You must read and follow all instructions. Serious bodily injury or death could occur if you ignore this warning.

2. All circuit breakers and/or disconnect switches servicing the heater must be turned off when installing, uninstalling, or repairing this water heater.

3. The unit must be installed by a licensed electrician and plumber.

4. The unit must be wired in accordance with the current version of the National Electrical Code (US) or Canadian Electric Code (Canada).

5. This installation must comply with all national, state, and local plumbing and electrical codes.

6. When the heater is not within sight of the electrical circuit breakers, an additional local means of disconnection of all ungrounded conductors must be provided that is within sight of the appliance or a circuit breaker lockout must be used. (Ref. NEC 422.31)

7. Per UL 499, this water heater is not required to be installed with a Temperature and Pressure relief valve (T&P). However, local codes may vary. In case a T&P relief valve is required, it must be installed on the outlet hot water line between the heater and the isolation valve.

8. If the Eemax Tankless Water Heater is installed in a location where water damage could occur in the event of a leak, it is recommended that a drip pan be installed and connected to a suitable drain. Alternatively, an active water leak detector and shut off valve can be installed to turn off your water supply in the event a leak is detected.

9. If water supply has a high mineral content, a water softening system is recommended. Damage to the water heater resulting from scale or hard minerals will not be covered under warranty.

⚠ IMPORTANT SAFETY INFORMATION

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10. When the heater is installed in a well water system or if the plumbing system is prone to introducing air into the heater, it is highly recommended that an air separator be installed in the cold water feed to the heater to avoid possible failure of the heating element and/or heating chamber.

11. In accordance with NEC guideline, this water heater is designed for a maximum continuous duty cycle of 3 hours at 100% power output. . After three hours heater should be powered down for long enough to return heater and electrical infrastructure to ambient temperature. Exceeding this rating, without proper pause, could damage the heater and void the warranty.

12. Provide an uninterrupted supply of potable water to the heater at a constant minimum pressure of 35PSI (based on model) and maximum pressure of 150 PSI.

13. Use of Water Hammer Arrestors in applications with excess pipe lengths or fast acting valves is strongly recommended. Neglecting to do so will damage the heater and void the warranty.

14. This heater must be installed in a location where it is not subject to freezing temperatures unless supplied with factory installed freeze protection.

15. Properly purge air out of system before power is applied. Purge water through the system for a minimum 2 minutes at the maximum flow available. During this process, close and open the drain valve 3 times to dislodge any air before power is applied. Utilizing the recommended boiler drain on the outside of the heater is an acceptable means to purge the system.

16. Applications located above the point of use, i.e. in a drop ceiling must take additional precautions for continuous air elimination to prevent interruptions to the hot water service. Use of an air separator/scrubber is required for this type of installation. Recommended installation schematics can be found in the APPLICATION SCHEMATICS section of this manual.

⚠ IMPORTANT SAFETY INFORMATION

READ ALL INSTRUCTIONS BEFORE USING

17. Applications with the use of a circulating pump recirculation circulator must be installed according schematics.
18. Should applications call for the use of antifreeze. A mixture of Propylene Glycol is the only recommended antifreeze**.** The use of Ethylene glycol antifreeze is strictly prohibited.

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ABOUT YOUR PROSERIES XTP

Congratulations on the purchase of ProSeries XTP! Read all set-up procedures and operating instructions carefully to ensure maximum performance and energy savings from the water heater. It is important that the heater be installed in accordance with stated instructions and the electrical and plumbing codes applicable to your area. Read this manual thoroughly for important operating instructions and tips.

Tankless water heaters do not store hot water like conventional tank-type water heaters. ProSeries XTP tankless electric models contain high powered sheathed technology heating elements that heat water instantly on-demand. When there is a hot water demand, the flow meter within the heater recognizes the demand and initiates the heating process. The flow meter measures the water flow rate while two thermistor sensors measure the incoming and outgoing water temperature. The microprocessor controller receives this information and determines the amount of power to send to the heating elements to heat the water to the desired temperature. Eemax tankless electric water heaters only use as much power as needed by modulating the heating elements from 0 to 100%.

All electric tankless water heaters have a maximum flow rate. If this flow rate is exceeded, the heater will not be capable of fully heating water. The amount of water that can be heated depends on the model and the incoming water temperature. See diagram below to determine the maximum flow rates.

Dimensions:

All Models: Height=18.4” Width=20.5” Depth=5.5”

Temperature Rise at Specified Flow Rate (°F)

MODEL	TURN-ON GPM	0.5 GPM	1.0 GPM	2.0 GPM	3.0 GPM	4.0 GPM	6.0 GPM	8.0 GPM	10.0 GPM
XTP016480	0.5	-	109	55	36	27	22	18	14
XTP020480	0.5	-	137	68	46	34	27	23	17
XTP024480	0.5	-	-	82	55	41	33	27	20
XTP027480	0.5	-	-	92	61	46	37	31	23
XTP036480	0.5	-	-	123	82	61	49	41	31
XTP048480	0.5	-	-	-	109	82	66	55	41
XTP054480	0.5	-	-	-	123	92	74	61	46
XTP018208	0.5	-	123	61	41	31	25	20	15
XTP024208	0.5	-	-	82	55	41	33	27	20
XTP032208	0.5	-	-	107	71	53	43	36	27

If you have questions at any time, please contact us directly at:

Manufacturer’s National Service Department
400 Captain Neville Dr. Waterbury, CT 06705
Phone: 1-(800)- 543-6163

BEFORE INSTALLATION

READ THESE INSTRUCTIONS THOROUGHLY AND COMPLETELY PRIOR TO INSTALLATION & USE. FAILURE TO FOLLOW INSTRUCTIONS COULD CAUSE PROPERTY DAMAGE, SERIOUS PERSONAL INJURY, OR DEATH.

By installing this product, you acknowledge the terms of the manufacturer's warranty. Once the heater is installed, do not return product to the place of purchase. If you have any questions regarding the warranty or product return policies, please contact Manufacturer's national service department at 1-(800) 543-6163.

Before installation, inspect all components. The package includes:

- ProSeries XTP unit
- Mounting bracket with locking screw
- Warranty card
- Registration card

Recommended equipment for installation:

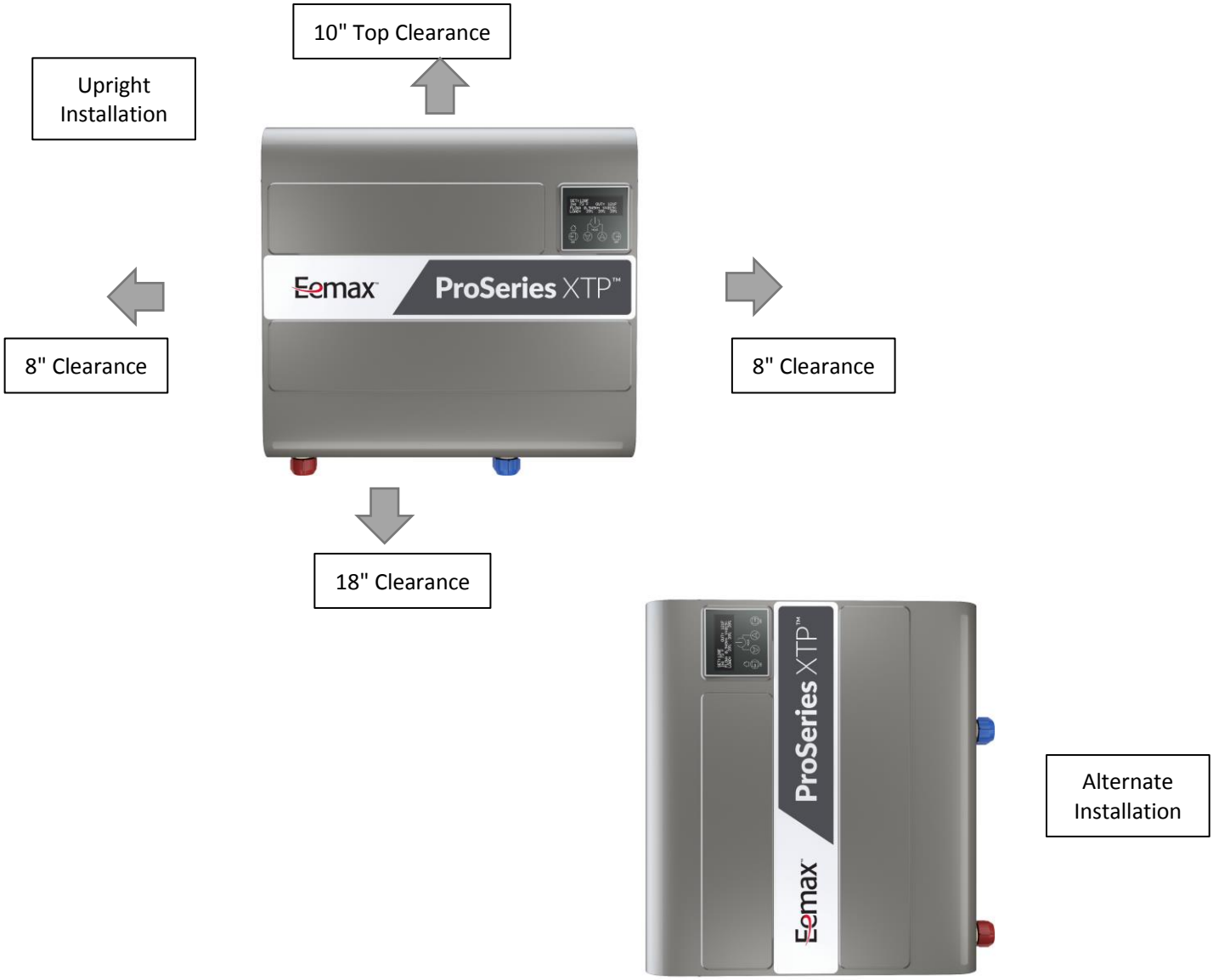
- Electric drill for pre-drilling holes
- Phillips Head screwdriver
- Flat Head screwdriver
- Tape measure/ruler
- ¾" Dielectric Unions
- ¾" shut off valves
- ¾" check valve
- Air Eliminator/ Magnet Dirt Remover
- Pressure Reducing Regulator
- Boiler drains (may be beneficial)
- Adjustable wrench
- Pipe cutter (may be beneficial)
- Pencil (used to mark measurements)
- Level

MOUNTING THE HEATER TO THE WALL

Follow the mounting instructions below as appropriate to your installation. Eemax recommends the heater be installed close to the point-of-use.

> **⚠ CAUTION**
>
> This heater must be installed in a location where it is not subject to freezing temperatures, unless supplied with factory installed freeze protection.

Install the product upright with the water connections facing downward for best performance. Mounting the heater in an alternate (horizontal) orientation is acceptable. When mounting the unit in a horizontal orientation do not use the included bracket and ensure the fittings are facing to the right as shown below. Note that the display readout and buttons will not rotate to accommodate for this alternate orientation. The orientation of the display and buttons are not rotatable. Refer to the specified orientations below for proper installation.

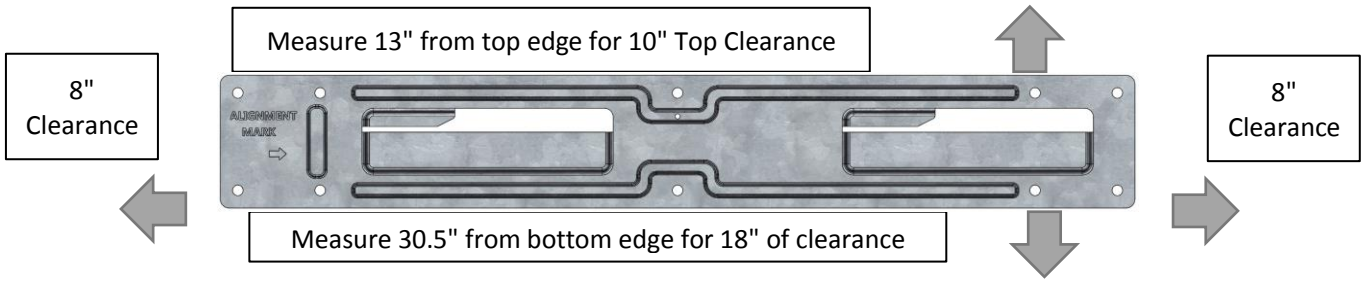


ProSeries XTP models are approved for zero clearance to combustible surfaces such as plywood.

Above clearances are recommended for service and installation.

1. Locate the best position to mount the unit. Check clearances around the unit according to the diagram below. Measure from the top, bottom, left & right sides of the bracket to ensure proper clearances.

   Hang the slide lock wall mounting bracket utilizing the appropriate anchors for the wall in at least 4 hole locations.



2. Remove the locking screw from the center of the slide lock bracket (to be used in step 8)

3. Hang the unit on the bracket by aligning the left edge of the enclosure with the alignment mark on the wall bracket and the top edge of the wall bracket with the top edge of the alignment label on the front cover.

4. Slide the unit down onto the bracket until it stops, indicating that the wall bracket is holding the weight of the unit.

5. Slide the unit to the left to until it stops. The stop is aligned such that the unit will hide the wall mount bracket.

6. Test the bracket by lifting the unit upwards – it should not come free

7. Remove the cover

8. (Optional) Insert the locking screw through the center of the back plate and lightly hand tighten. This will prevent unwanted sliding of the unit, i.e. tampering or accidental.

ELECTRICAL HOOKUP

Eemax recommends that the heater is installed and serviced by a licensed plumber and electrician.

> ⚠ **WARNING**
>
> Before beginning any work on this installation, **be sure that the electrical breaker is "off" and that all mounting and plumbing work has been completed per these instructions**.

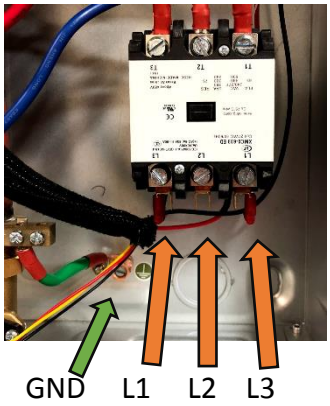
This heater must have its own independent circuit using insulated, UL listed, wire conductors (3 conductors plus ground) of the appropriate size suitable for up to 90° C and protected by the correctly rated circuit breaker. For recommended conductor, ground and breaker ratings refer to the chart below:

See chart on next page.

Before starting any electrical work: VERIFY there is no power at the heater

The field wiring power conductors are to be secured to the L1, L2 and L3 connectors on the contactor(**Fig. 1**) .The ground is to be secured to the GND connector to the left of the contactor.

Fig. 1



⚠ WARNING

Failure to ground the system may result in death, serious injury, and/or property damage.

Electrical specifications

MODEL	VOLTS THREE PHASE DELTA	KW	TOTAL AMPS	RECOMMENDED WIRE SIZE (CU) 90° C	RECOMMENDED MINIMUM BREAKER SIZE (PER NEC – INTERMITTENT DUTY)
XTP016480	480	16	20	14	20
XTP020480	480	20	25	12	25
XTP024480	480	24	29	10	35
XTP027480	480	27	33	10	35
XTP036480	480	36	44	8	50
XTP048480	480	48	58	6	60
XTP054480	480	54	65.0	4	70
XTP018208	208	18	50.0	8	50
XTP024208	208	24	67	4	80
XTP032208	208	31.2	87	3	100

A ground terminal (or a wire connector marked "G", "GR", "Ground", or "GROUNDING") is provided within the enclosure. To reduce the risk of electric shock, connect this terminal or connector to the grounding terminal of the electric service or supply panel with a continuous copper wire in accordance with your local electrical code.

PLUMBING HOOKUP

⚠ **Must flush line a minimum 2 minutes, at a maximum flow on initial start-up.**

Reference the recommended installation diagram below. Additional installation diagrams for recirculation loops, multiple ProSeries XTP units plumbed in series or parallel configurations, can be found in the APPLICATION SCHEMATICS section of this manual.

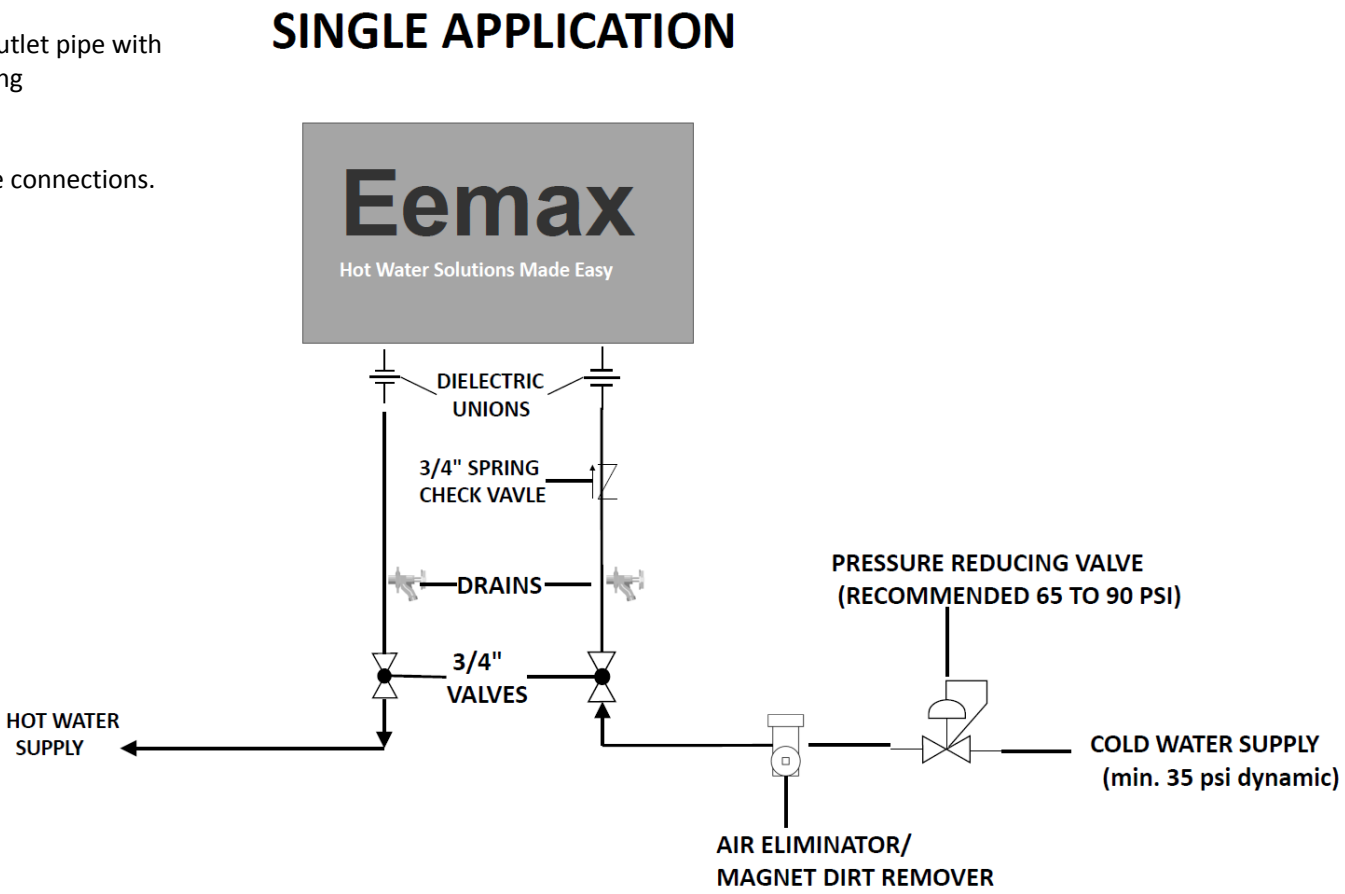
The heater is equipped with brass ¾" NPT fittings.

Make sure ONLY NPT fittings are used for connection to this heater.

Connect the cold water line with the inlet connection (RIGHT fitting)

Connect the outlet pipe with the outlet fitting (LEFT fitting)

Do not reverse connections.



⚠ CAUTION

Never use pipe dope when making plumbing connections to this heater. Follow standard industry practice with careful application of Teflon tape. Do not allow Teflon tape to get into the heater.

⚠ CAUTION

Never solder any pipe connections attached to this heater – damage to the heater will result. Doing this will void the warranty.

WARNING

⚠ **Must flush out water heater for minimum 2 minutes at maximum flow on initial start-up or after any service work has been performed. Close and open drain valve 3 times to remove any lodged air bubbles. Failure to do so may damage the heater.**

⚠ Minimum inlet water pressure 35 psi dynamic.

⚠ Maximum water pressure not to exceed 150 psi. Recommended operating pressure is 35 psi.

⚠ Use of a pressure regulator recommended.

⚠ Water supply inlet piping must be a minimum ¾" pipe diameter and it must be a dedicated supply line. 1 ¼" minimum pipe diameter on trunk main when part of a branch system.

⚠ The use of di-electric unions must be used on the inlet and outlet ports of the water heater.

⚠ Recommended 40 mesh (1/64" or smaller) Y-strainer be installed in cold water inlet to prevent debris from entering the water chambers. Blockage caused by debris may cause element failure. Isolation valves recommended for servicing.

⚠ In applications where a long duty cycle is needed (more than 3 hours continuous run time), or a short duty cycle (less than 30 sec. on time with less than minute off time) please contact applications department. 1-800-543-6163

⚠ Hammer Arrestor: Systems with a large water volume, or long lengths of piping can be susceptible to *water hammer*. The use of slow acting valves along with the installation of a water hammer arrestor is highly recommended on all units. Failure to install a water hammer arrestor can cause damage to water heater and void warranty- refer to manufacturer's installation manual for proper size and installation location.

Proper water conditions must be maintained to prevent damage to the water heater.

CONSTITUENT (MG/L)	MAXIMUM ALLOWABLE CONCENTRATION	BETTER	BEST
Alkalinity	50	25	10
Calcium	25	5	0.5
Carbon Dioxide	0	0	0
Chlorine	100	15	1
Free Chlorine	1	1	0.05
Iron	0.2	0.1	0.01
Magnesium as Mg	0.5	0.1	0.1
Magnesium as Mn	0.1	0.1	0.1
Nitrate	25	25	10
Oxygen	2	1	0.1
Silica	15	10	1
Sodium	50	10	1
Sulfate	25	25	1
Total Dissolved Solids (TDS)*	200	100	5**
Total Hardness	25	10	1
pH	6.5 – 8.5	6.5 – 8.5	6.5 – 8.5
Turbidity (NTU)	5	5	1

* NOTE: Total dissolved solids

** NOTE: Do not reduce the TDS beyond this amount or the water will be too aggressive

COMMISSIONING THE WATER HEATER

⚠ CAUTION

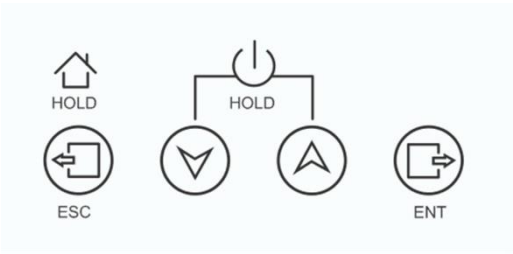
Before switching the electrical breaker "on", make sure the inlet and outlet ball valves are fully open and water is flowing through all points of use for a **minimum of 2 minutes at maximum flow. Open and close drain valve 3 times while purging to remove any lodged air bubbles**. Do not switch the breaker "on" if there is any possibility the water in the heater is frozen.

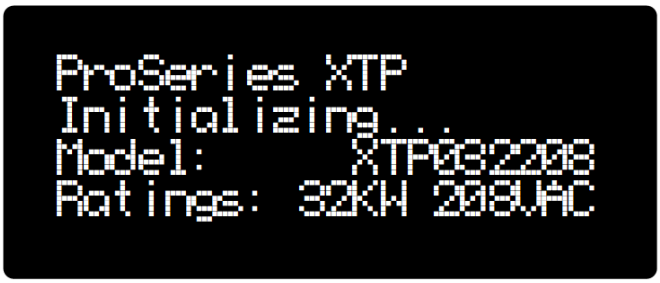
After verifying the heater has been purged of air (see above) and the cover has been secured to the unit, turn the circuit breaker/disconnect "ON" and observe the start-up sequence on the display. The unit will first display a splash screen. The Safe Start will commence. The unit needs to purge a volume of 1.5 gallons of water at a rate of 0.5 GPM or greater, before it will begin to heat. The heater cannot measure less than 0.5 GPM of flow rate and will not deduct volume from the "gallons left" counter unless the flow rate is over 0.5 GPM. The instantaneous flow rate is displayed on the Safe Start screen for your reference. This procedure will run each time the electrical power supply is turned off/on to the unit.

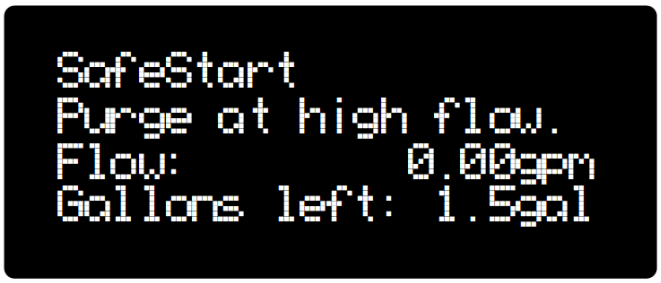
After Safe Start has completed, the LCD screen will briefly display "Heater commissioned" and then the "Run" screen which includes: SETPOINT TEMPERATURE in degrees F in the upper left corner. Inlet temperature and outlet temperature in degrees F are on the next line. Flow in GPM and the Software version are on the third line. The load percentage on each element is on the last line.

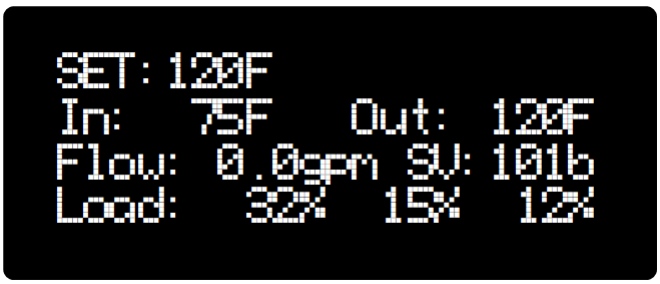
Below the display are 4 push buttons that are used to control the function of the heater. Press the UP or DOWN buttons to establish your desired set point temperature.

NOTE: DO NOT remove or replace the cover while the power is on. Button malfunction may occur. If button malfunction occurs reset the power to the unit after the cover is properly secured in place.





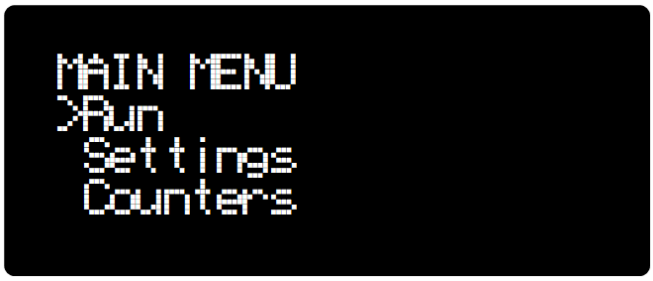


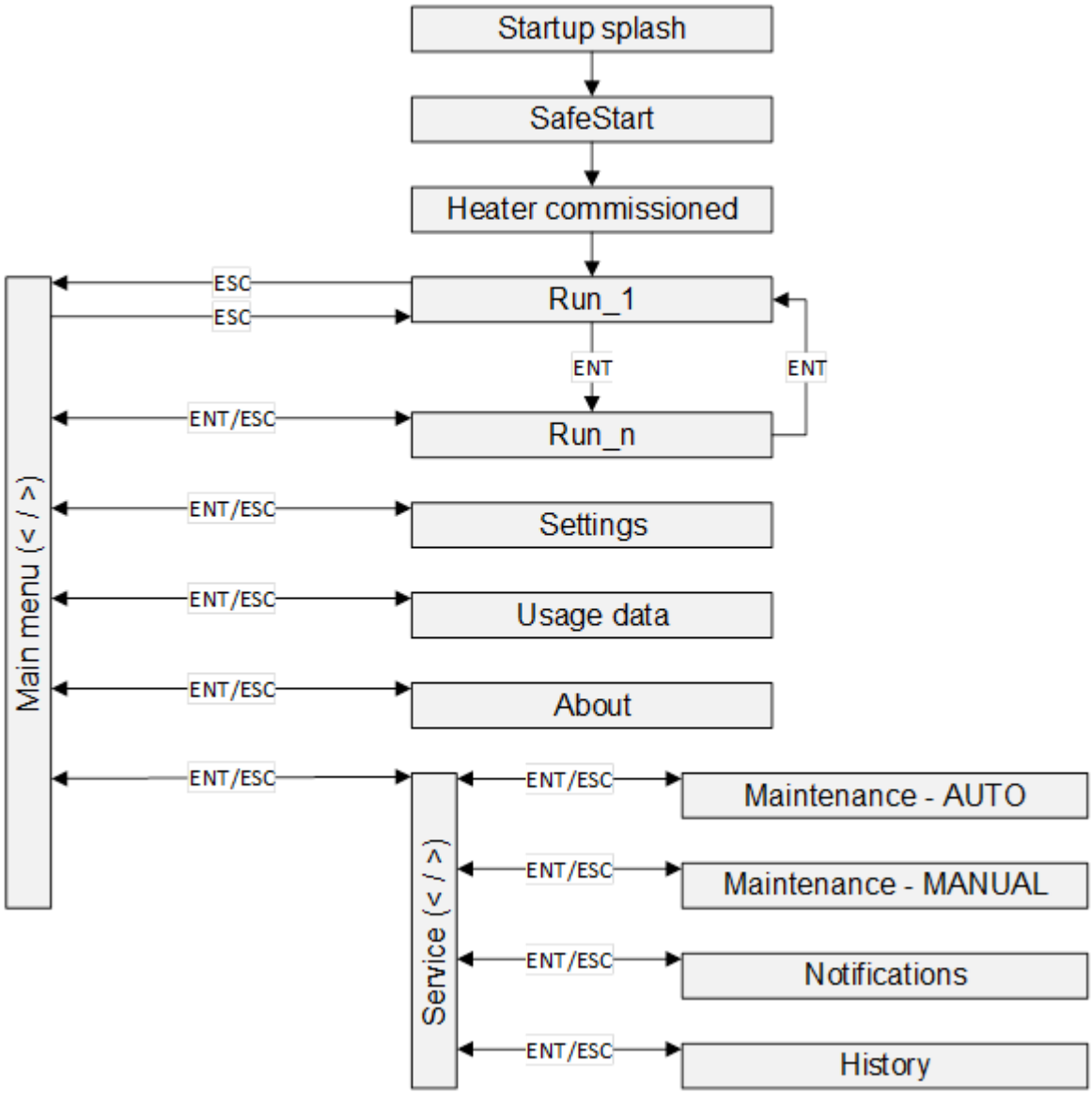


Navigating the menus:

Tap the left ESC button to move to the main menu screen. Diagram 1 contains a flow chart of all of the sub-menus that are accessible and which keys to press in order to navigate to each menu.

To return to the “Run” screen: hold the ESC key at any time for 3 seconds or tap the ESC key until the run screen is displayed.





SOFTWARE FEATURES

Notifications:

Code	Name	Unit behavior	Action
B005	Inlet thermistor disconnected	Heating enabled based on default parameters and history data.	Check thermistor connections. Check parameter P000 and adjust if needed.
C010	Outlet thermistor disconnected	Heating enabled without calibration.	Check outlet thermistor connection.
B015	Inlet AND outlet thermistors disconnected	Heating enabled based on default parameters and history data.	Check thermistor connections. Check parameter P000 and adjust if needed.
B050	Current transformer disconnected	Heating enabled based on default parameters. Limited self-diagnostic capabilities.	Check current transformer connections.
C070	Channel 1 element outside tolerance, LOW kW rating	Unit runs as intended, attempting to compensate.	Replace heating element.
C073	Channel 2 element outside tolerance, LOW kW rating		
C076	Channel 3 element outside tolerance, LOW kW rating		
B071	Channel 1 element outside tolerance, LOW kW rating	Heating disabled on the associated channel.	
B074	Channel 2 element outside tolerance, LOW kW rating		
B077	Channel 3 element outside tolerance, LOW kW rating		
B080	Channel 1 not heating	Heating disabled on the associated channel.	Check element(s). Check SSR connections. Check contactor.
B083	Channel 2 not heating		
B086	Channel 3 not heating		
A090	All channels off	Heating disabled.	Check for tripped ECOs. Check elements. Check SSR connections. Check contactor.
B105	Inlet temperature 180-200F	Heating disabled while condition is present.	Check water supply temperature.
B106	Inlet temperature above 200F	Heating disabled. Heating resumes after condition disappears, with a delay.	
B107	Inlet temperature higher than setpoint	Unit runs as intended.	
B110	Outlet temperature too high (>20F above setpoint)	Heating disabled while condition is present.	Check elements. Check incoming voltage. Check SSRs functionality.
C115	Inlet or outlet temperature too low	Unit runs as intended. Heating not disabled. Unit freezing and damage possible.	Check water supply temperature. Verify installation location temperature to be above freezing point.
D130	Flow too high	Unit runs as intended. Heating not disabled.	Consider upgrading the unit or reducing flow.

Parameters:

Code	Name	Details	Default/values
P000	Inlet override	Overrides inlet temperature in case of an inlet thermistor missing.	180F OR highest measured inlet temperature.
P005	Setpoint tuning	Allows user to fine tune outlet temperature to match the setpoint.	0F (adjustable between -10 and 10 F)
P030	Activation flow	Minimum flow required to enable heating.	0.5gpm (adjustable between 0.5 and 10 gpm)
P045	Activation delay	Time between flow above activation threshold and heating enabled.	1s (adjustable between 0 and 60 seconds)
P050	Delay contactor off	Time between flow below activation threshold and contactor disengaging.	5s (adjustable between 3 seconds and always on)
P051	Delay display off	Time between last user interaction and display dimming.	5 minutes (adjustable between 10 seconds and always on)
P060	Units selection	Select between metric (C, lpm) and imperial units (F, gpm).	F (imperial)

Usage data:

Name	Message displayed	Details	Reset
Gallon counter	Count: nnnnnn.n gal	Volume of water that passed through the unit from the last reset.	Yes – hold ENT
Gallons total	Total: nnnnnnnn gal	Total volume of water that passed through the unit.	No
Hours total	ON: nnnnnn.n hrs	Total number of hours the unit has been powered on.	No
Heat hours counter	Count: nnnnnn.n hrs	Number of ours the unit has been actively heating from the last reset.	Yes – hold ENT
Heat hours total	Total: nnnnnn.n hrs	Total number of hours the unit has been actively heating.	No

Note: all parameters are measured only when the unit is powered on and the control system is functional. Where flow measurement is implied, flow must be above turn on threshold.

START-UP PROCESS

Plumbing installation checklist must be filled out and left with water heater. **Must flush water heater for 2 minutes at a minimum.**

Eemax installation checklist and start-up procedure for ProSeries XTP water heaters

Important - Read and fully understand all steps outlined below before proceeding. Failure to do so may damage the water heater and void any warranty. Technical support is available at 1 (800) 543-6163				
Plumbing installation checklist				
Step	**Category**	**Action**	**Confirmed by**	**Notes**
1	**Water**	Heater is supplied with clean potable water		
2	**Water**	Plumbing orientation is correct – water connections on the bottom - inlet on the right, outlet on the left		
3	**Water**	Ensure piping connections are not causing stress or torque on the inlet and outlet fittings		
4	**Water**	No leaks at water connection or in plumbing network		
5	**Water**	Water pressure is between 40-90 PSI (min 35psi)		
6	**Water**	Long pipe runs, high flow rates and valves closing can cause pressure spikes (water hammer) above 1000 PSI. Consult piping schematic to ensure arrestors and regulators are properly sized and located.		
7	**Water**	*(with power off)* Open supply valves to water heater - run water through fixtures to purge all air and debris in system. With water flowing, visually inspect the clear element tubes between the inlet and outlet manifold to ensure no air bubbles are present. (this may take several minutes)		
8	**Water**	Using a flashlight, visually inspect heating chamber for any signs of leakage		
9	**Water**	Ensure Water Heater will not freeze		
10	**Water**	Ensure all local plumbing codes are met		
11	**Water**	Plumbing installation correct and complete		

Important - Read and fully understand all steps outlined below before proceeding. Failure to do so may damage the water heater and void any warranty. Technical support is available at 1 (800) 543-6163				
Electrical installation checklist				
Step	**Category**	**Action**	**Confirmed by**	**Notes**
12	**Power**	*(with power off)* - Breaker and disconnect are of proper size and correctly installed		
13	**Power**	*(with power off)* - Wiring and conduit are of proper size and correctly installed.		
14	**Power**	*(with power off)* - Wiring connections at terminals are correct orientation, tight, with no stray wire strands or pinched sheathing		
15	**Power**	*(with power off)* - Proper ground,(not neutral) is clean, and tight		
16	**Power**	(no water flowing, do not turn it on, close outlet water shut off valve if uncontrolled environment-left hand side) Apply power - ensure voltage and phasing is according to model rating		
17	**Power**	Disengage power after voltage and phasing is confirmed (open outlet shutoff valve if closed during step 14)		
18	**Power**	Ensure all local electrical codes are met		
19	**Power**	Electrical Installation correct and complete		

Important - Read and fully understand all steps outlined below before proceeding. Failure to do so may damage the water heater and void any warranty. Technical support is available at 1 (800) 543-6163				
Start-up procedure and checklist				
Step	**Category**	**Action**	**Confirmed by**	**Notes**
20	**Start-up**	Water requirements (Steps 1-11) are confirmed		
21	**Start-up**	Electrical requirements (Steps 12-19) are confirmed		
22	**Start-up**	Plumbing Codes and Electrical Codes are met and confirmed		
23	**Start-up**	*(with power off)* Open supply valves to water heater - run water through fixtures to purge all air and debris in system. With water flowing, visually inspect the clear element tubes between the inlet and outlet manifold to ensure no air bubbles are present. (this may take several minutes) Chugging or burping of water is also an indication of air		
24	**Start-up**	Turn off water flow at all fixtures, keeping water heater supply valves open		
25	**Start-up**	Install and secure the cover of the unit. Apply power to water heater		
26	**Start-up**	Turn water flow on at fixtures		
27	**Start-up**	LCD display board is illuminated		
28	**Start-up**	Contactors engaged (audible click)		
29	**Start-up**	No error codes		
30	**Start-up**	Scroll through display (If display is locked, consult manual for unlock procedure)		
31	**Start-up**	Adjust settings if needed. Note - Keep temperature setting as low as possible for scald potential and minimizing abuse on the heater.		
32	**Start-up**	Confirm TURN-ON setting meets fixture flow rate		
33	**Start-up**	Confirm SETPOINT setting on display		
34	**Start-up**	Confirm ACTUAL TEMP output on display		
35	**Start-up**	If SETPOINT does not match ACTUAL TEMP then use the TEMPERATURE RISE CHART in manual along with LOAD%, INLET TEMP and FLOW RATE on display to determine the maximum theoretical output.		
36	**Start-up**	Shut water flow off at fixture		
37	**Start-up**	Power disengaged (audible)		
38	**Start-up**	Repeat start-up steps 25-28 to ensure proper activation and performance		
39	**Start-up**	Water heater installed correctly and operating as designed		

After all steps are completed, the heater is fully installed and ready for use.

Shutdown Process (Normal, Emergency, and Long Term)

Shut down procedure

Important - Read and fully understand all steps outlined below before proceeding. Failure to do so may damage the water heater and void any warranty. Technical support is available at 1 (800) 543-6163				
Step	**Category**	**Action**	**Confirmed By**	**Notes**
		Normal Shut Down Procedure		
1	**Normal**	Shut power off to unit in order of sequence - In-door (on-door) disconnect (if applicable) local disconnect, main breaker - perform lock out procedure per facilities requirements		
2	**Normal**	Close applicable water valves - Inlet and outlet (water heater will not be drained)		
		Emergency Shut Down Procedure		
1	**Emergency**	Shut power off to unit In-door (on door) disconnect (if applicable) or local disconnect		
2	**Emergency**	Shut water valves off - inlet and outlet (water heater will not be drained)		
3	**Emergency**	Complete lock out procedures per facilities requirements		
4	**Emergency**	Notify all parties involved that water heaters are shut down		
		Long Term Shut Down Procedure		
1	**Long Term**	Shut power off to unit in order of sequence - Indoor disconnect (if applicable) local disconnect, main breaker - perform lock out procedure per facilities requirements		
2	**Long Term**	Close applicable water valves - Inlet and outlet (water heater will not be drained)		
3	**Long Term**	Drain water heater through plumbing network, run compressed air through the water heater to ensure the heater is completely drained		
4	**Long Term**	Lock out all applicable water valves per facilities procedures		

MONITORING & PREVENTIVE MAINTENANCE

Recommended routine instrument readings and operation checking: Please note the instrument readings are performed during water heater operation. No readings are required when the unit is not being used. Check the following readings on the display and ensure proper performance:

- Inlet temperature
- Temperature set point
- Outlet temperature
- Flow rate (GPM)
- Notifications

Early warning signs of developing operational or equipment problems:

- Based on the measured readings above, the water heater appears to be performing properly however there are notifications.
- Displayed flow rate (GPM) appears to be lower than expected

Procedures for handling non-routine problems such as alarms, power failure, and component failure:

- No alarms are built into the unit
- Power failure will result in a non-operable system – restore power and start-up unit per Start up process
- Component failure will result in repeat notifications. Refer to SOFTWARE FEATURES section for notification codes and corrective action

Preventative maintenance requirements (PMR): Preventive maintenance requirements may impact other items of the installation such as electrical supply and wiring, water piping and associated valves and controls.

Eemax water heaters are very low maintenance.

Ensure that the water heater is supplied with a clean potable, consistent water supply as outlined in the manual.

Check filter screen or associated y-strainer or other pre-filters to ensure clear water supply within listed water pressure. Ensure proper electrical supply as outlined within the manual.

Perform PMR per site requirements not to exceed 90 days.

Maintenance inspection program (MIP): Eemax water heaters are very low maintenance. Ensure PMR is completed every 90 days.

Disable power to the unit via external disconnect or local disconnects. Per site lockout procedures open cabinet door and visually inspect components for sings of damage associated with possible water leaks, excessive heat or external factors that could impact the water heater and associated components.

Perform MIP per site requirements not to exceed 90 days.

TECHNICAL SUPPORT FORM

PERFORM STEPS BELOW BEFORE CALLING TECHNICAL SUPPORT

WATER HEATER

MODEL # _____ SERIAL # _____

Inlet Water Pressure _____ Inlet Water Temperature _____

Notifications _____

_____

Incoming Voltage (FIG 1)

L1 _____

L2 _____

L3 _____

FIG 1

Testing Elements

Amp draw on each heating element, Record current values from display during operation.

EB1 _____ EB2 _____ EB3 _____

Testing Elements (fig 2)

Ohm out heating elements:

E1 ____Ω E2 ____ Ω E3 ____ Ω

E4 ____ Ω E5 ____ Ω E6 ____ Ω

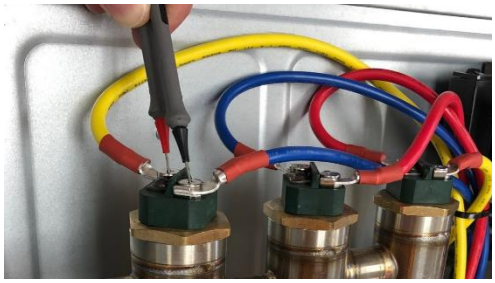
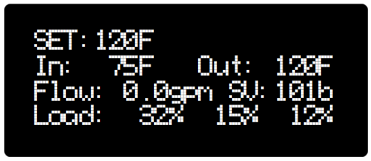


FIG 2

GPM FLOW RATE _____



LOAD PERCENTAGE (1): _____

LOAD PERCENTAGE (2): _____

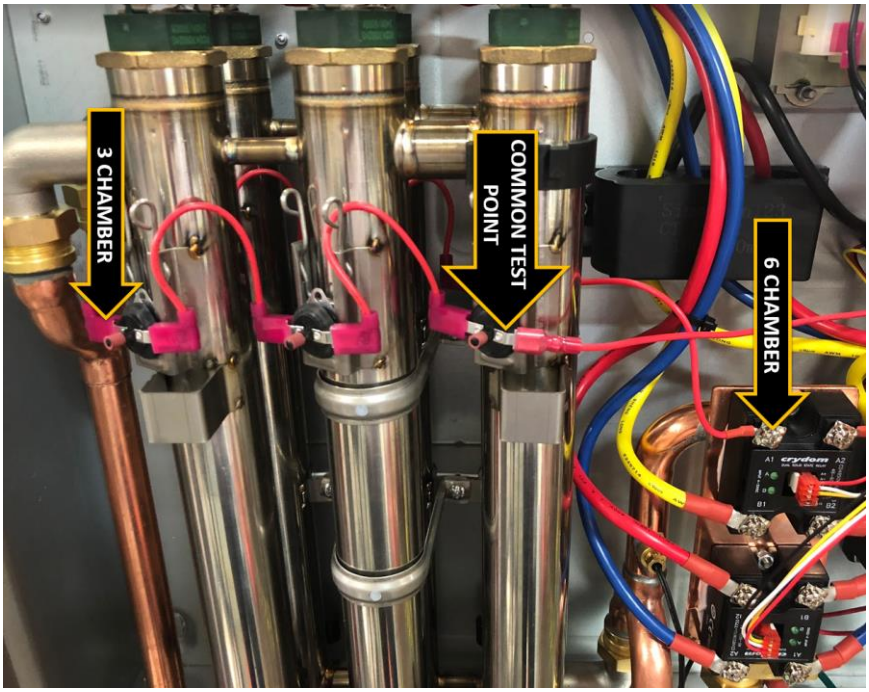
LOAD PERCENTAGE (3): _____

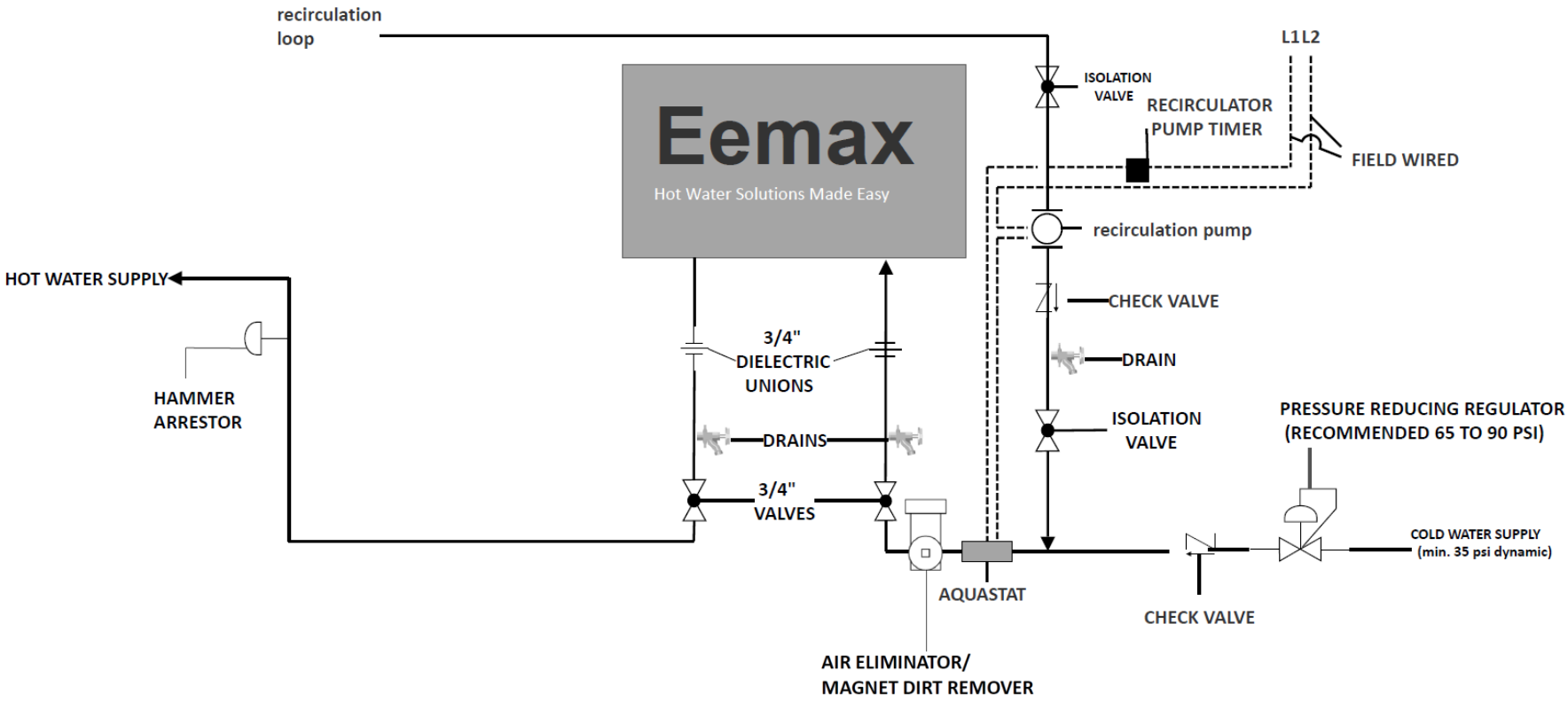
ECO Testing Points

Test ECO's (electric cut offs):

To check all ECO'S simultaneously measure from COMMON TEST POINT to 3 CHAMBER (or 6 CHAMBER) for continuity. If no continuity, then check across each ECO individually.

ECO's may be manually reset after they have cooled. Run cold water and press the stem to reset. Water may need to run for a few minutes. Check continuity to confirm a reset ECO.





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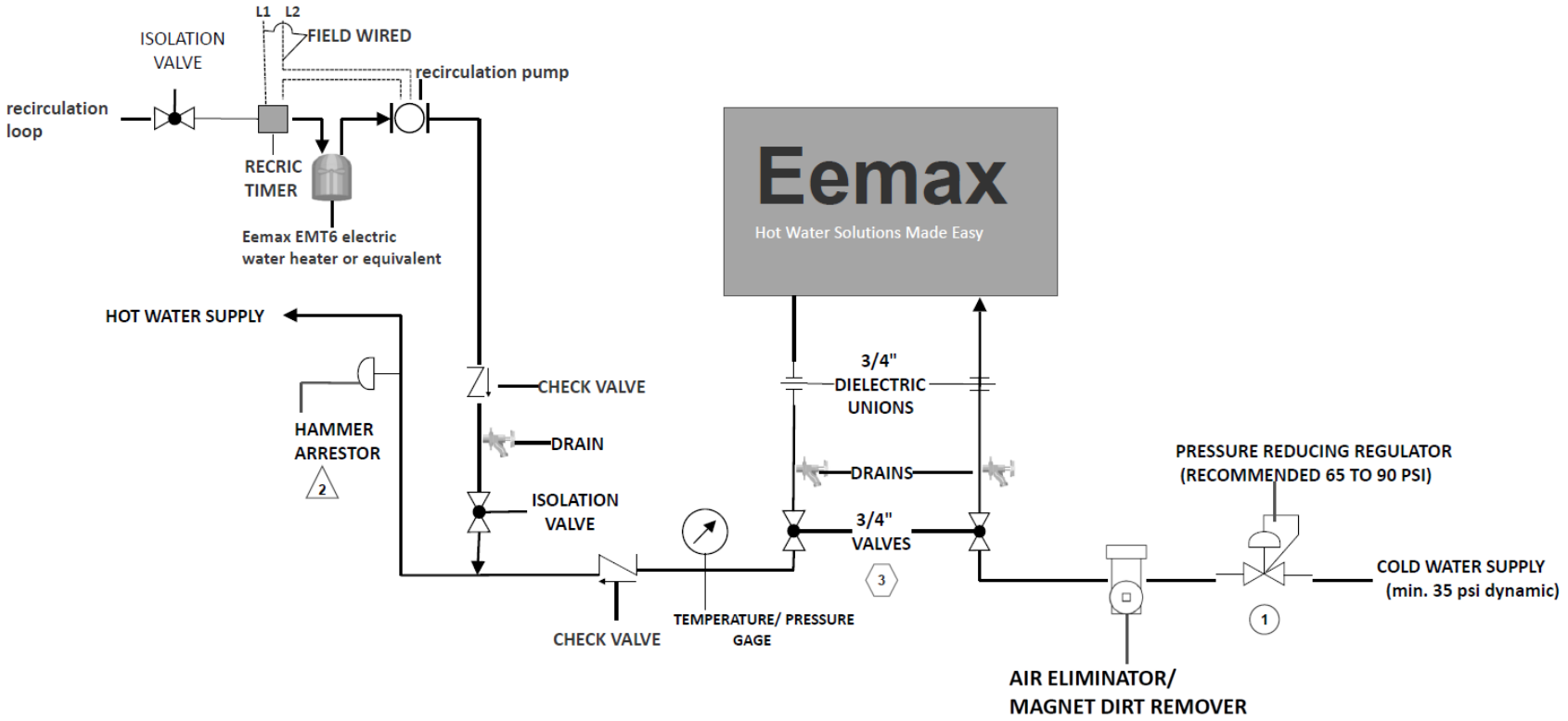
RECIRCULATION LOOP THROUGH HEATER OPTION 1

DRAWING SCHEMATIC IS A RECOMMENDATION ONLY.
THIS IS NOT AN ENGINEERING DRAWING. IT IS INTENDED ONLY AS A GUIDE AND NOT AS A REPLACEMENT FOR PROFESSIONAL ENGINEERING PROJECT DRAWINGS. THIS DRAWING IS NOT INTENDED TO DESCRIBE A COMPLETE SYSTEM. IT IS UP TO THE CONTRACTOR OR ENGINEER TO DETERMINE THE NECESSARY COMPONENTS AND CONFIGURATION OF THE PARTICULAR SYSTEM TO BE INSTALLED. THE DRAWING DOES NOT IMPLY COMPLIANCE WITH LOCAL BUILDING CODE REQUIREMENTS. IT IS THE RESPONSIBILITY OF THE ENGINEER OR CONTRACTOR TO ENSURE THAT THE INSTALLATION IS IN ACCORDANCE WITH ALL LOCAL BUILDING CODES. CONFER WITH LOCAL BUILDING OFFICIALS BEFORE INSTALLATION.



NOTES:

1. CHECK LOCAL CODES
2. WATER HAMMER ARRESTOR MUST BE INSTALLED
   CHECK MANUFACTURERS INSTALLATION INSTRUCTIONS FOR PROPER LOCATION AND SIZE
3. SLOW ACTING VALVES ARE RECOMMENDED TO PREVENT POSSIBLE DAMAGE TO HEATERS DUE TO WATER HAMMER

CHECK VALVE MUST BE INSTALLED ON THE OUTLET PORT IF HEATER IS TO BE LOCATED ABOVE FIXTURE TO PREVENT AIR ACCUMULATION

RELIEF VALVE NOT REQUIRED ON HEATERS- REFER TO STATE AND LOCAL CODES

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SINGLE WATER HEATER WITH RECIRCULATION LOOP

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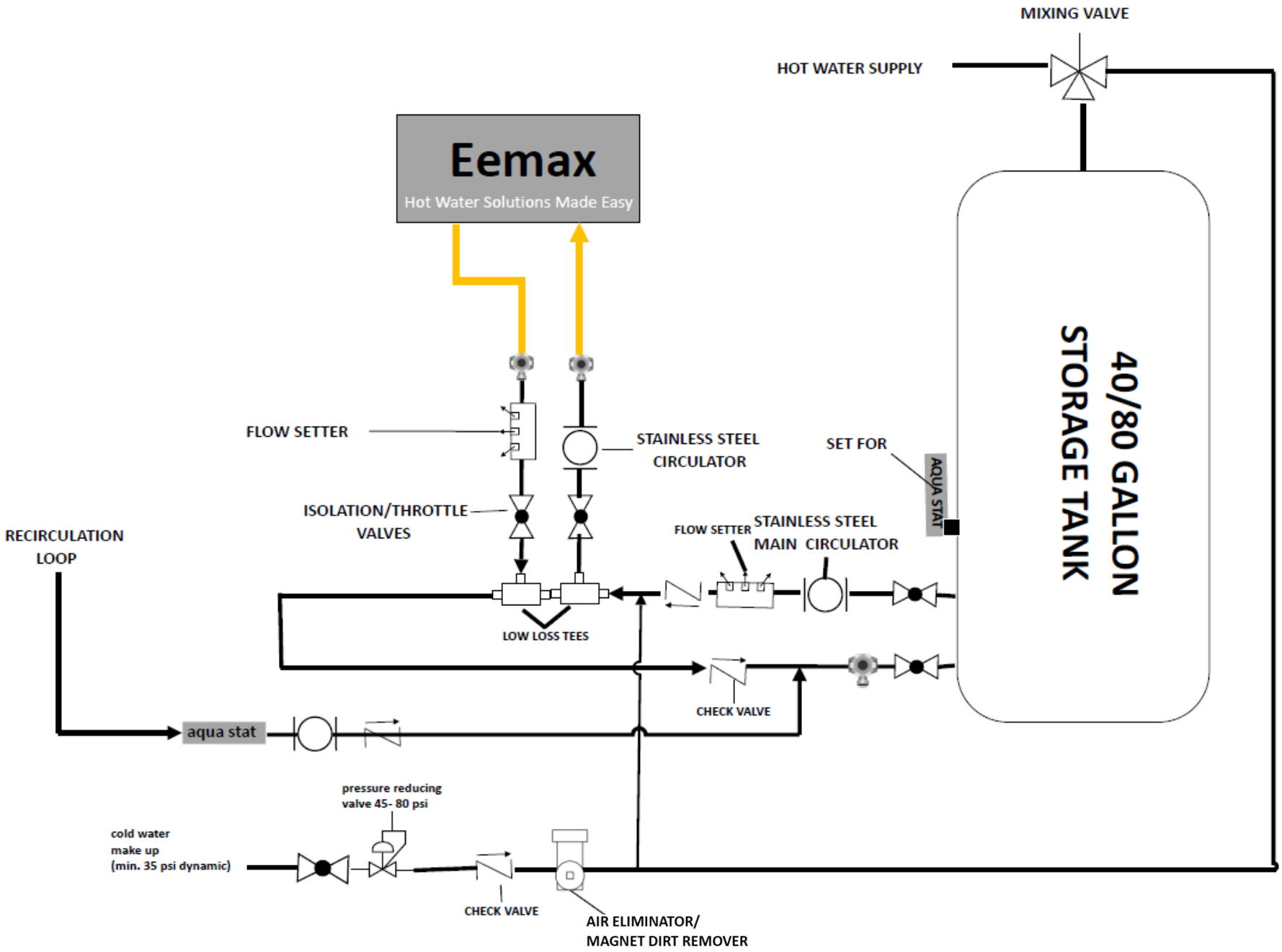
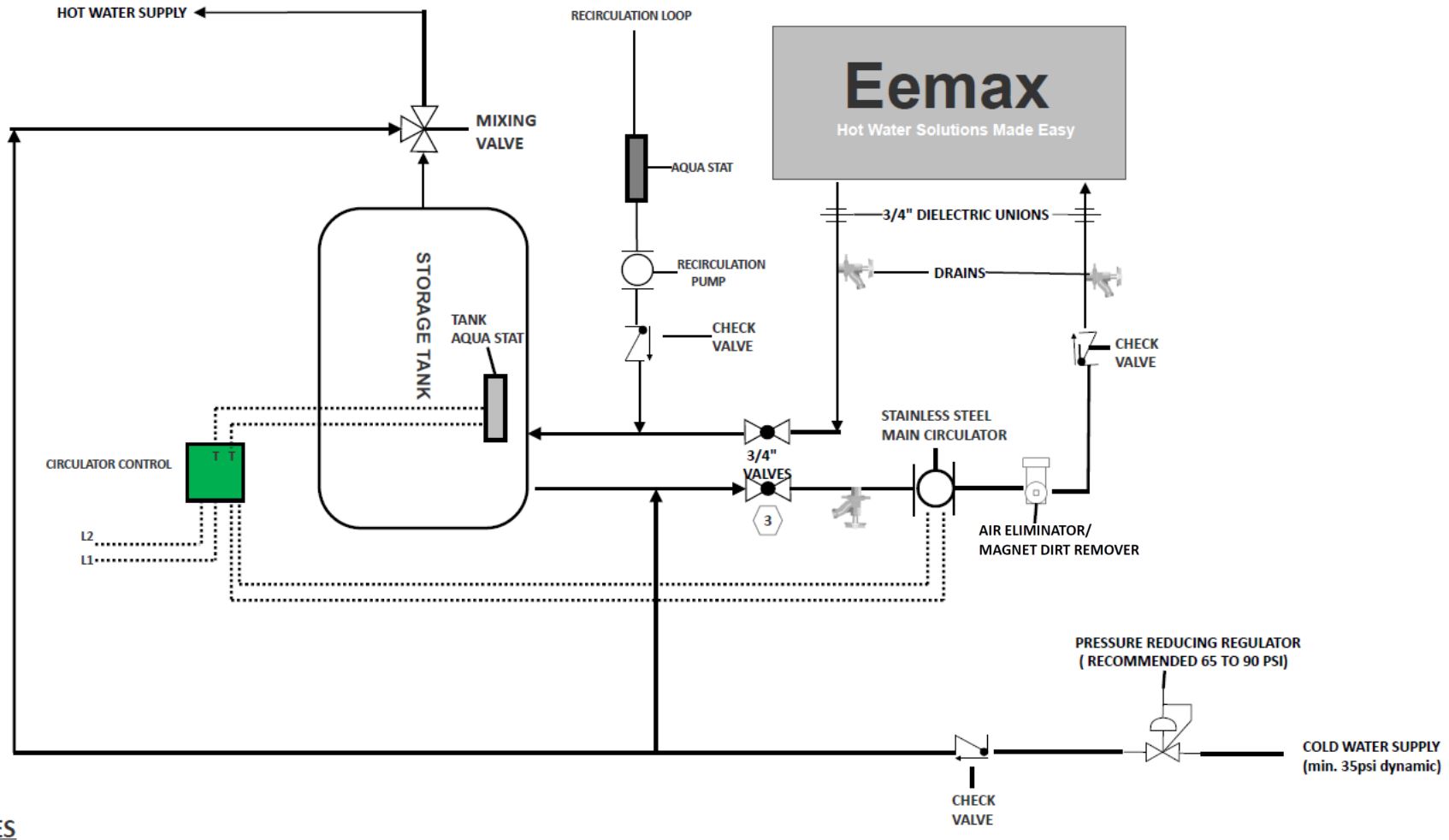
SINGLE HEATER / STORAGE TANK /PRIMARY SECONDARY LOOP



SINGLE HEATER/ STORAGE TANK/ PARALLEL PIPING



NOTES

MAIN CIRCULATOR TACO 008 STAINLESS STEEL OR EQUIVALENT.

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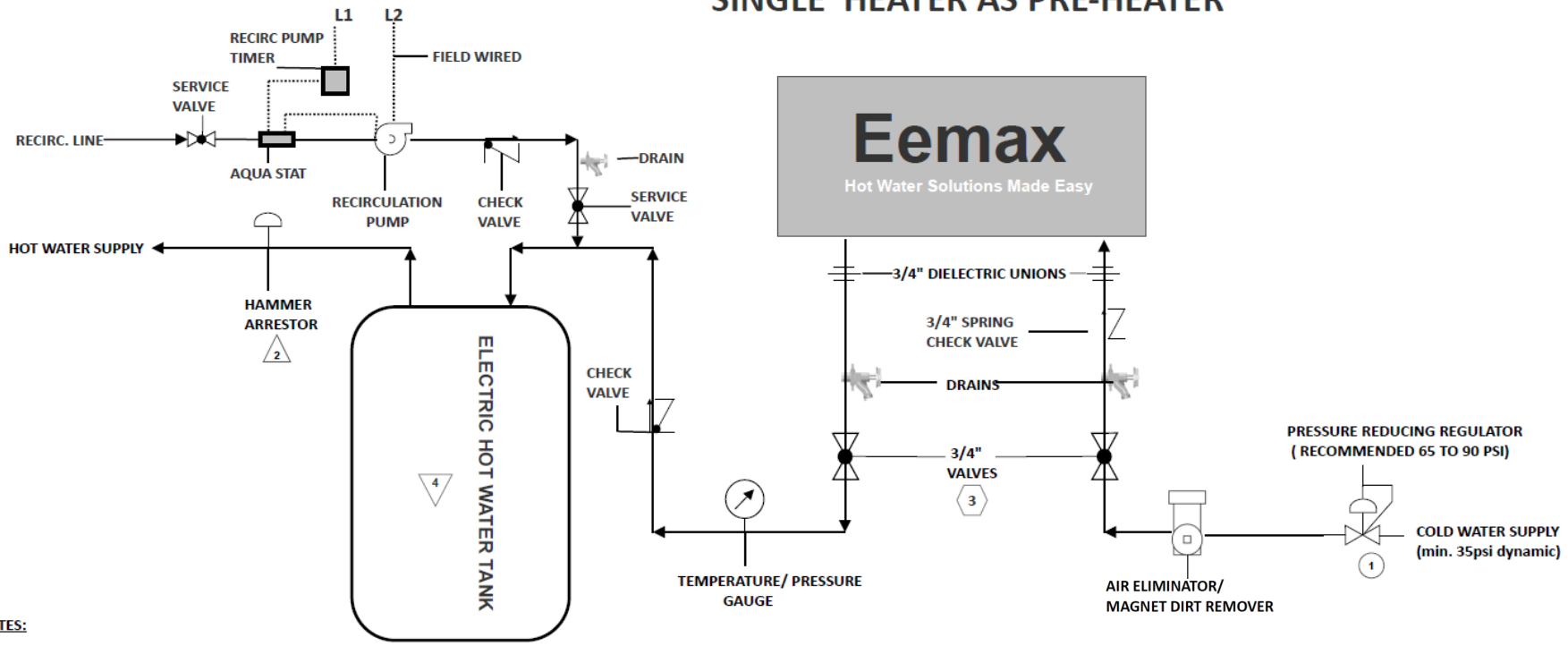
SINGLE HEATER AS PRE-HEATER



NOTES:

1. CHECK LOCAL CODES
2. WATER HAMMER ARRESTOR MUST BE INSTALLED CHECK MANUFACTURERS INSTALLATION INSTRUCTIONS FOR PROPER LOCATION AND SIZE
3. SLOW ACTING VALVES ARE RECOMMENDED TO PREVENT DAMAGE TO HEATERS
4. AQUA STAT SET TO DESIRED LOOP TEMPERATURE

CHECK VALVE MUST BE INSTALLED IN OUTLET PORT IF HEATER IS TO BE LOCATED ABOVE TANK OR FIXTURES

RELIEF VALVE NOT REQUIRED ON HEATERS- REFER TO STATE AND LOCAL CODES

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SINGLE HEATER WITH TANK

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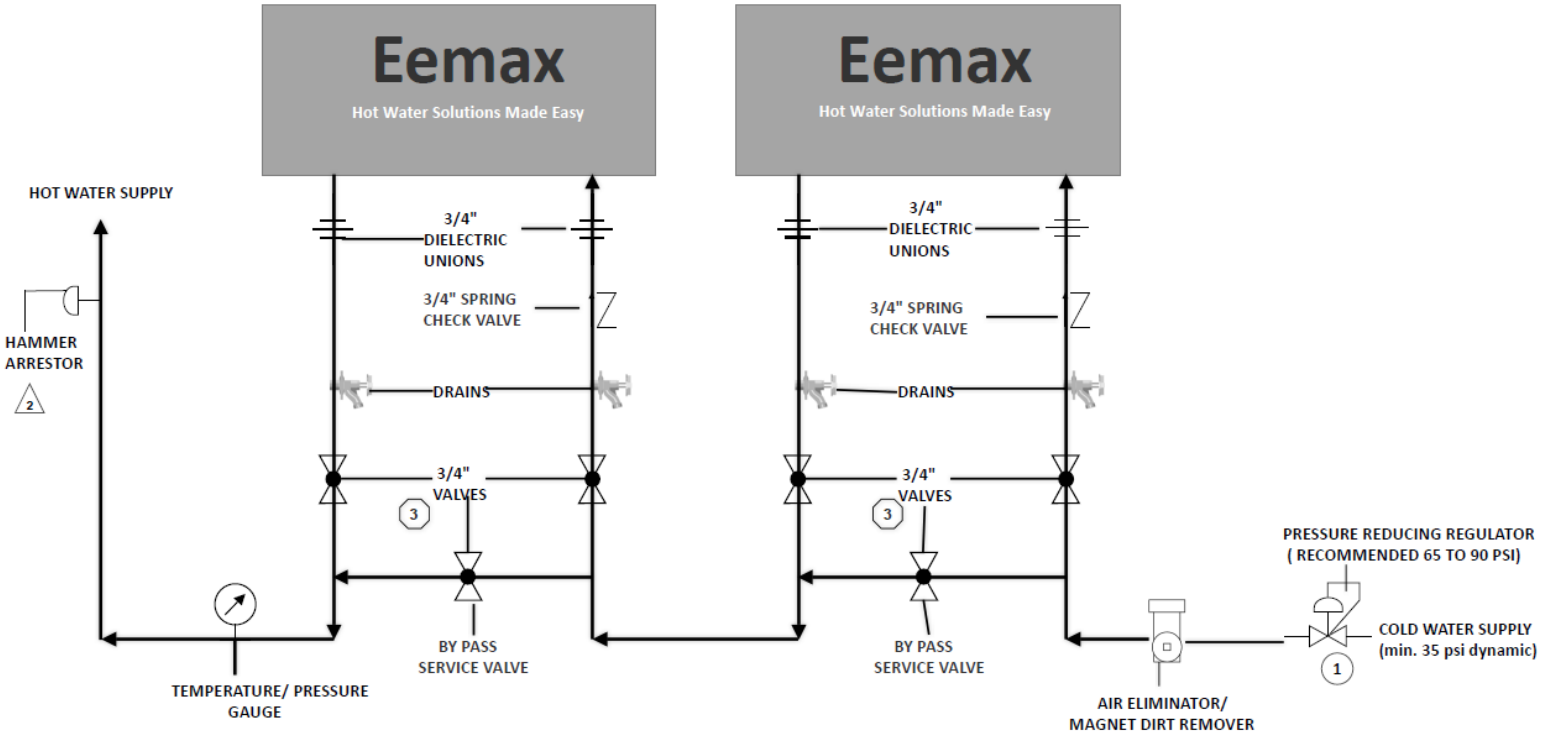
SERIES APPLICATION



NOTES:

1. CHECK LOCAL CODES
2. WATER HAMMER ARRESTOR MUST BE INSTALLED
   CHECK MANUFACTURERS INSTALLATION INSTRUCTIONS FOR PROPER LOCATION AND SIZING
3. SLOW ACTING VALVES RECOMMENDED TO PREVENT POSSIBLE DAMAGE DUE TO WATER HAMMER
   RELIEF VALVE NOT REQUIRED ON HEATERS- REFER TO STATE AND LOCAL CODES

   CHECK VALVE MUST BE INSTALLED ON OUTLET PORT IF HEATER IS TO BE LOCATED ABOVE FIXTURES

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SERIES APPLICATION

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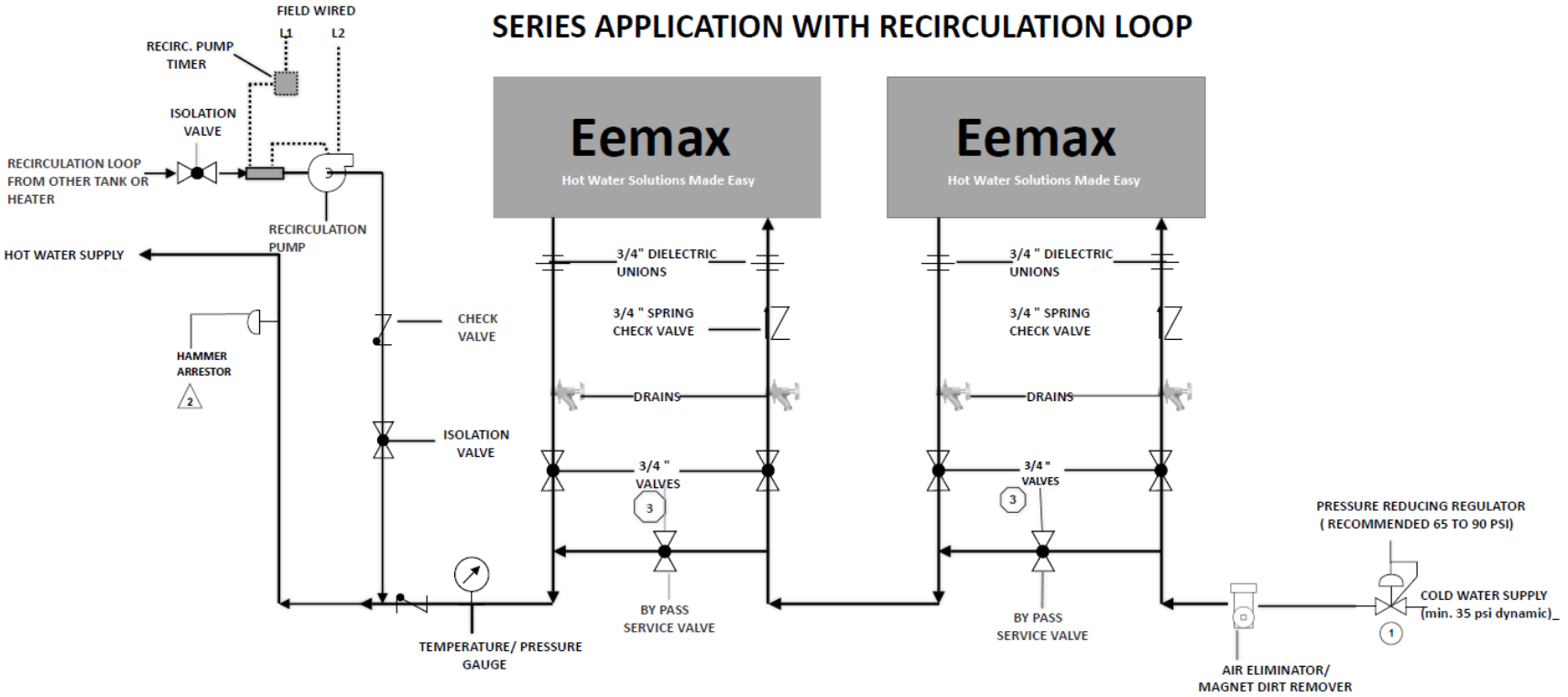
SERIES APPLICATION WITH RECIRCULATION LOOP



NOTES:

1. CHECK LOCAL CODES
2. WATER HAMMER ARRESTOR MUST BE INSTALLED CHECK MANUFACTURERS INSTALLATION INSTRUCTIONS FOR PROPER LOCATION AND SIZING
3. SLOW ACTING VALVES RECOMMENDED TO PREVENT POSSIBLE DAMAGE DUE TO WATER HAMMER

CHECK VALVE MUST BE INSTALLED IN OUTLET PORT IF HEATER IS TO BE LOCATED ABOVE FIXTURES

RELIEF VALVE NOT REQUIRED ON HEATERS- REFER TO STATE AND LOCAL CODES

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SERIES APPLICATION WITH RECIRCULATION LOOP

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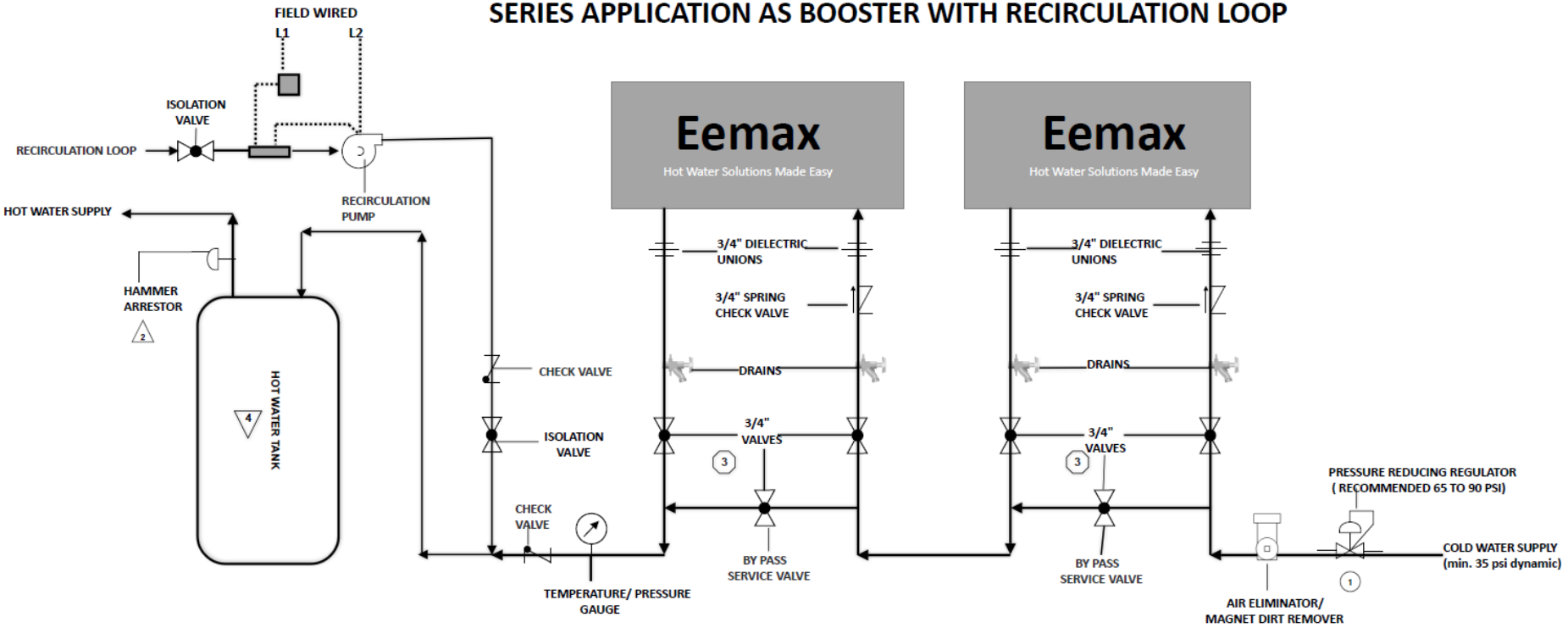
SERIES APPLICATION AS BOOSTER WITH RECIRCULATION LOOP



NOTES:

1. CHECK LOCAL CODES
2. WATER HAMMER ARRESTOR MUST BE INSTALLED CHECK MANUFACTURERS INSTALLATION INSTRUCTIONS FOR PROPER LOCATION AND SIZING
3. SLOW ACTING VALVES RECOMMENDED TO PREVENT POSSIBLE DAMAGE DUE TO WATER HAMMER
4. AQUASTAT SET TO DESIRED SUPPLY TEMPERATURE

RELIEF VALVE NOT REQUIRED ON HEATERS- REFER TO STATE AND LOCAL CODES

TOTAL PRESSURE DROP IS EQUAL TO THE TOTAL OF ALL PRESSURE DROPS ACROSS ALL WATER HEATERS COMBINED

CHECK VALVE MUST BE INSTALLED ON OUTLET PORT IF HEATER IS TO BE LOCATED ABOVE THE TANKS OR OUTLETS

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SERIES WITH TANK AND RECIRCULATION LOOP

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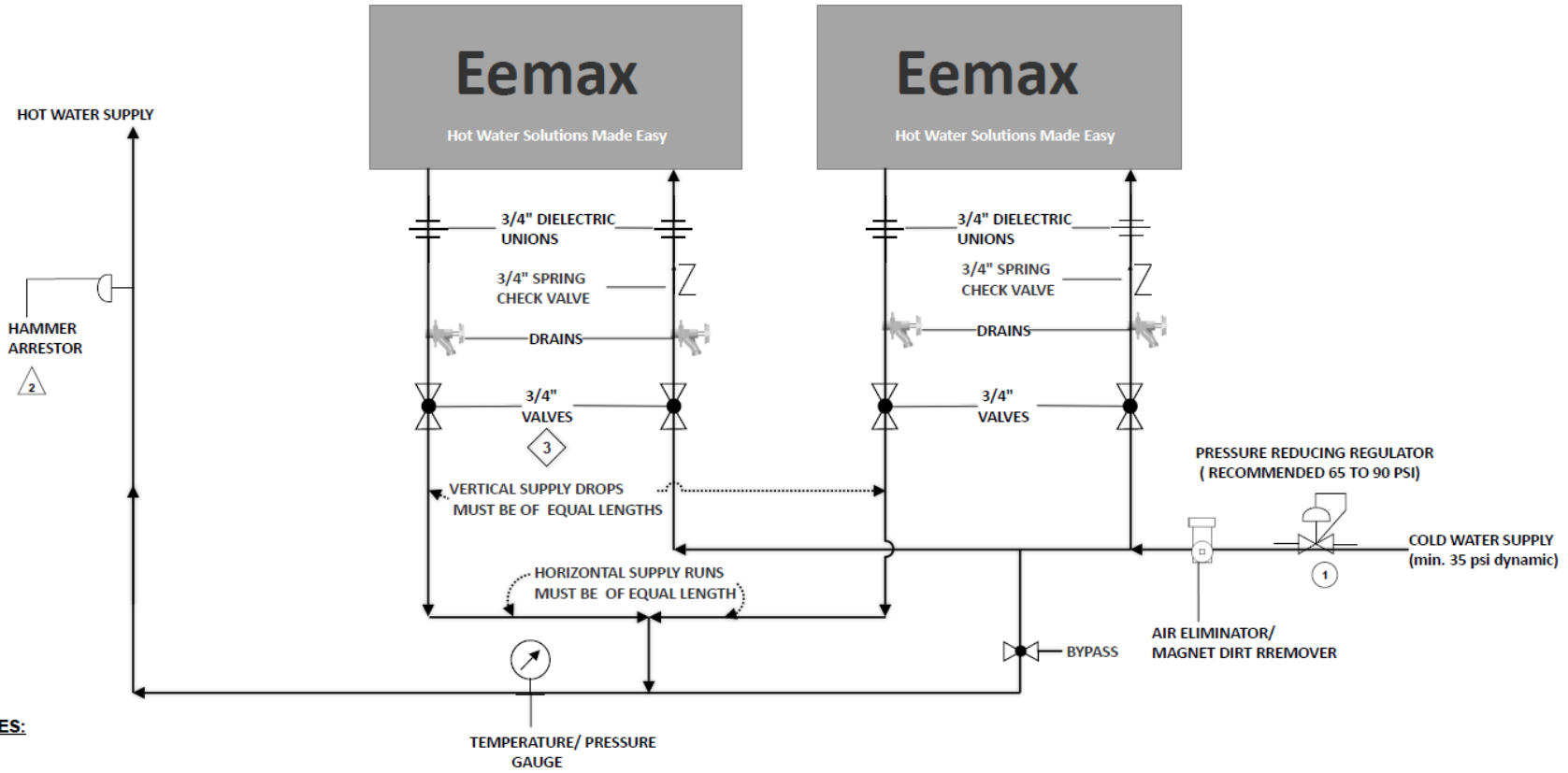
PARALLEL APPLICATION



NOTES:

1. CHECK LOCAL CODES
2. **WATER HAMMER ARRESTOR MUST BE INSTALLED CHECK MANUFACTURERS INSTALLATION INSTRUCTIONS FOR PROPER LOCATION AND SIZING**
3. SLOW ACTING VALVES RECOMMENDED TO PREVENT POSSIBLE DAMAGE DUE TO WATER HAMMER

RELIEF VALVE NOT REQUIRED ON HEATERS- REFER TO STATE AND LOCAL CODES

CHECK VALVE MUST BE INSTALLED IN OUTLET PORT IF HEATER IS TO BE LOCATED ABOVE FIXTURES

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PARALLEL APPLICATION

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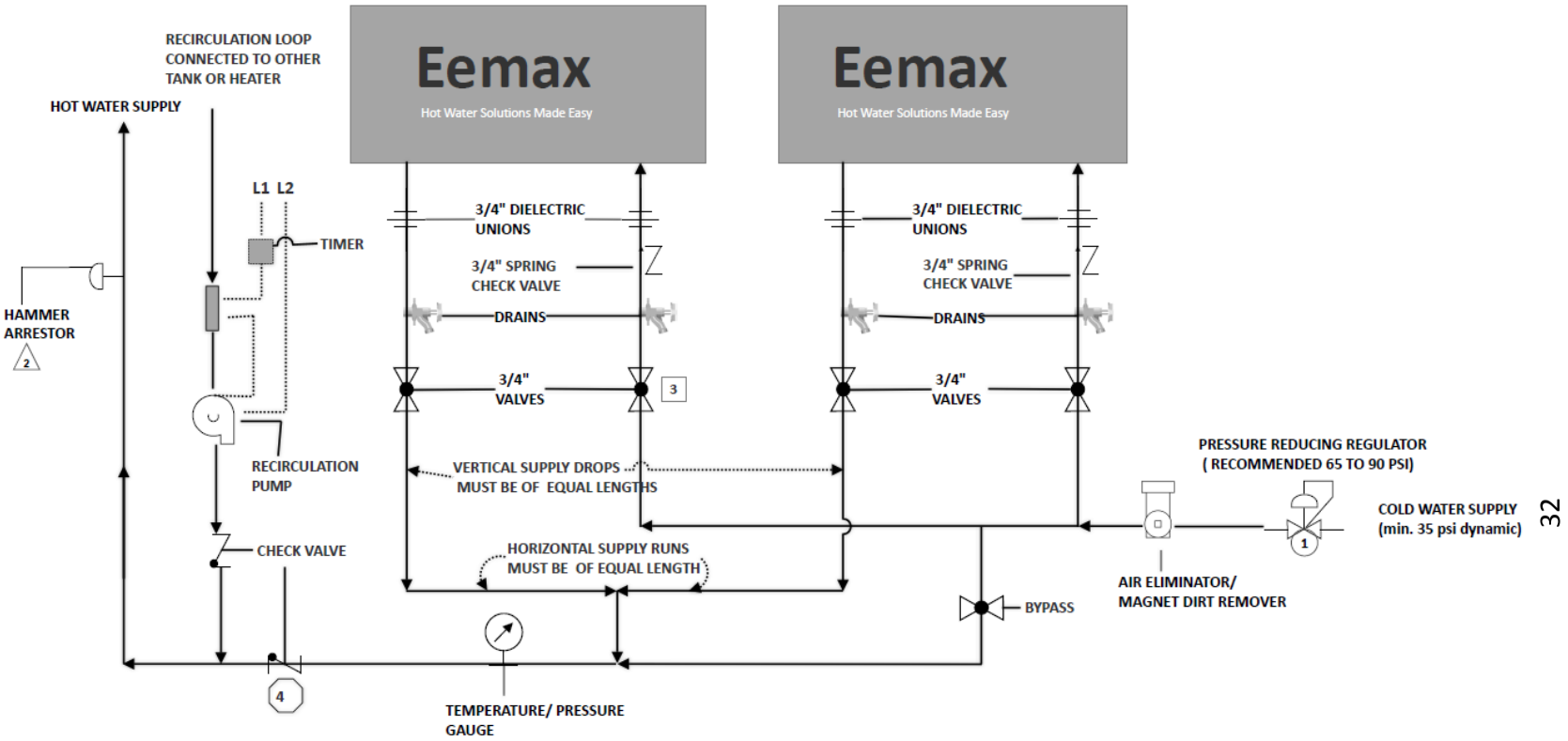
PARALLEL APPLICATION WITH RECIRCULATION LOOP



NOTES:

1. CHECK LOCAL CODES
2. WATER HAMMER ARRESTOR MUST BE INSTALLED
   CHECK MANUFACTURERS INSTALLATION
   INSTRUCTIONS FOR PROPER LOCATION AND SIZING
3. SLOW ACTING VALVES RECOMMENDED
   TO PREVENT POSSIBLE DAMAGE
   DUE TO WATER HAMMER
4. CHECK VALVE ONLY USED IF
   RECIRCULATION LOOP IS
   INSTALLED

RELIEF VALVE NOT REQUIRED ON HEATERS-
REFER TO STATE AND LOCAL CODES

CHECK VALVE MUST BE INSTALLED
IN OUTLET PORT IF HEATER IS TO
BE LOCATED ABOVE FIXTURES

***USE OF RECIRCULATION PUMP
THROUGH UNIT IS NOT RECOMMENDED

*** TURN ON RATE IS 6 GPM
*** MUST OBTAIN 12 GPM TO
REACH 180 DEGREES

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PARALLEL WITH RECIRCULATION LOOP

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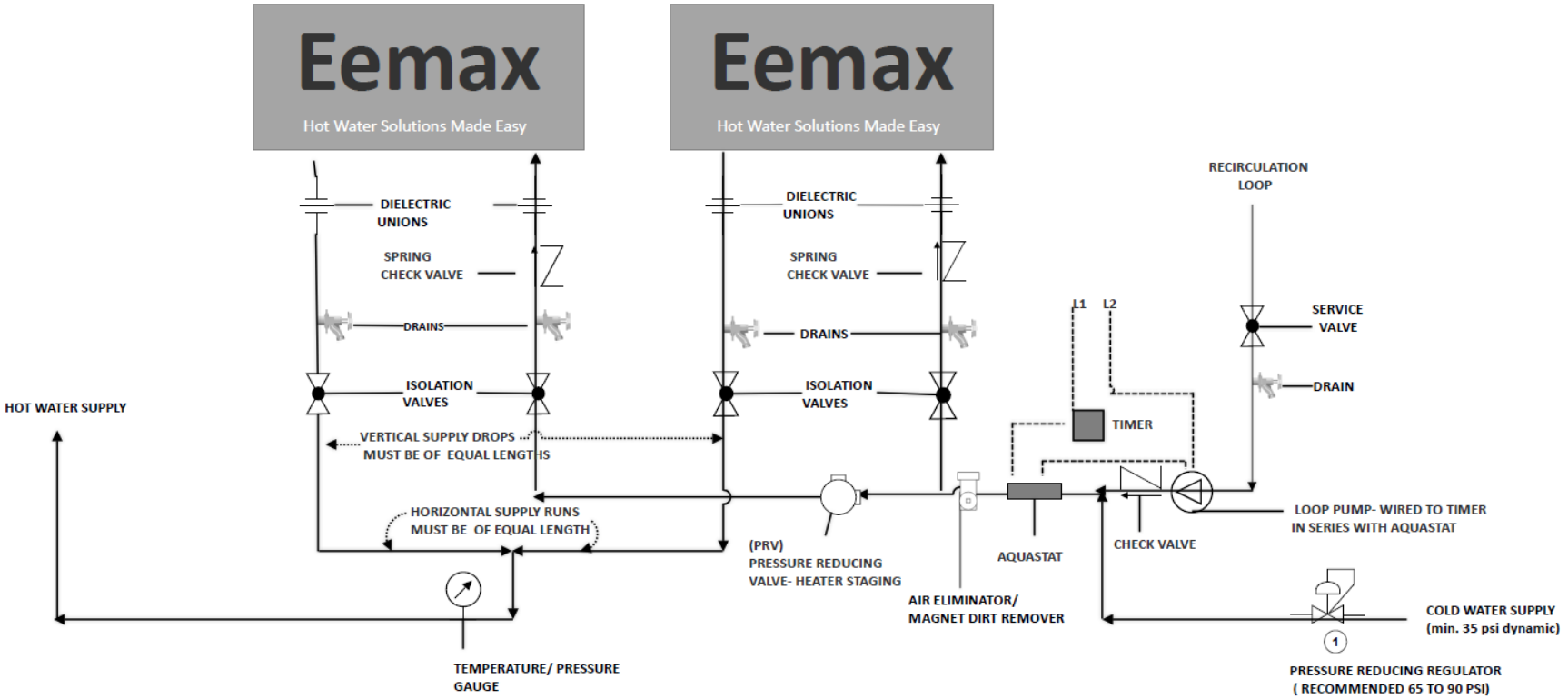
PARALLEL WITH RECIRCULATION LOOP



NOTES:

1. CHECK LOCAL CODES

   CHECK VALVE MUST BE INSTALLED IN OUTLET PORT IF HEATER IS TO BE LOCATED ABOVE FIXTURES

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PARALLEL APPLICATION IN LOOP CONFIGURATION

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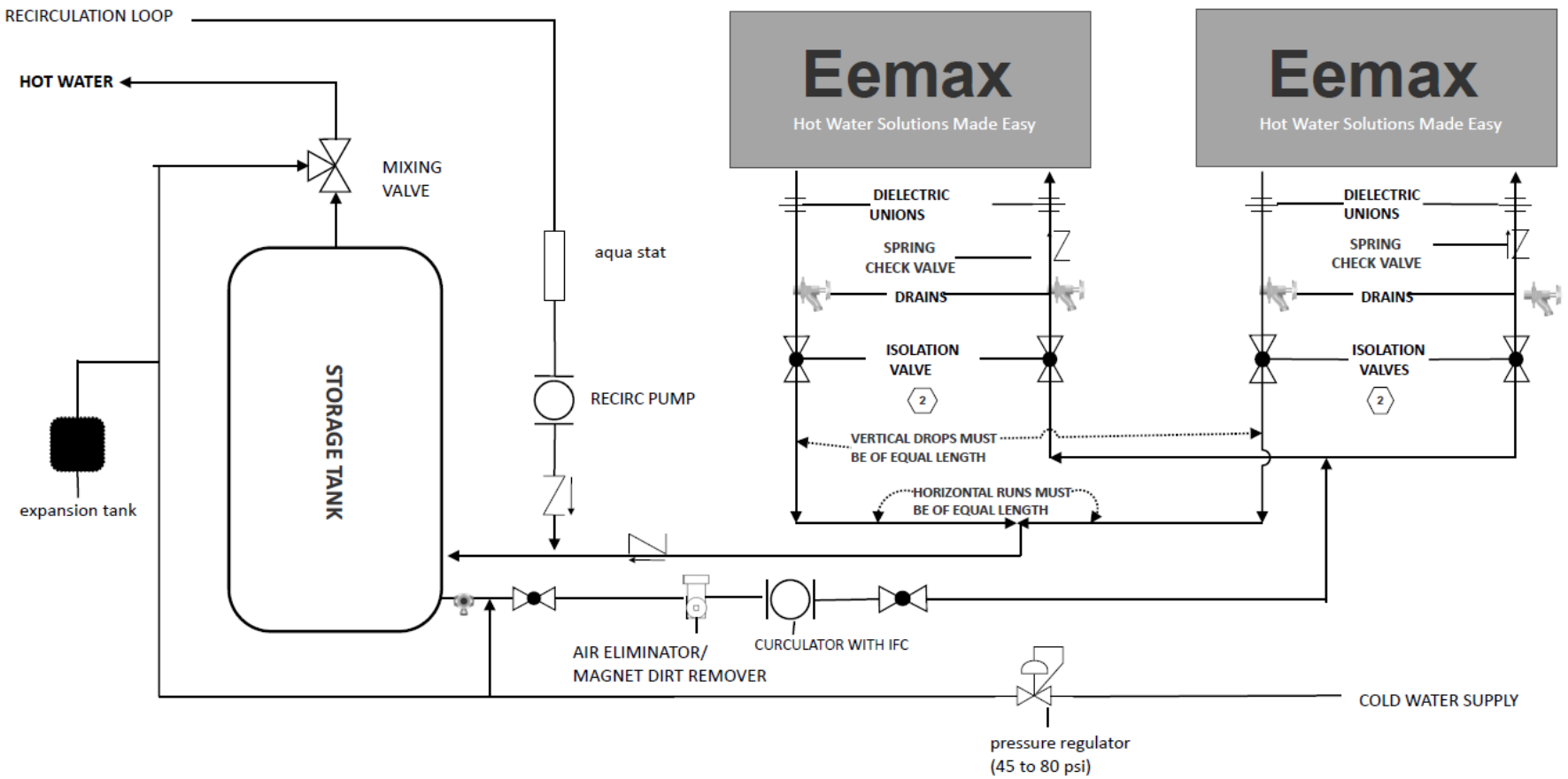
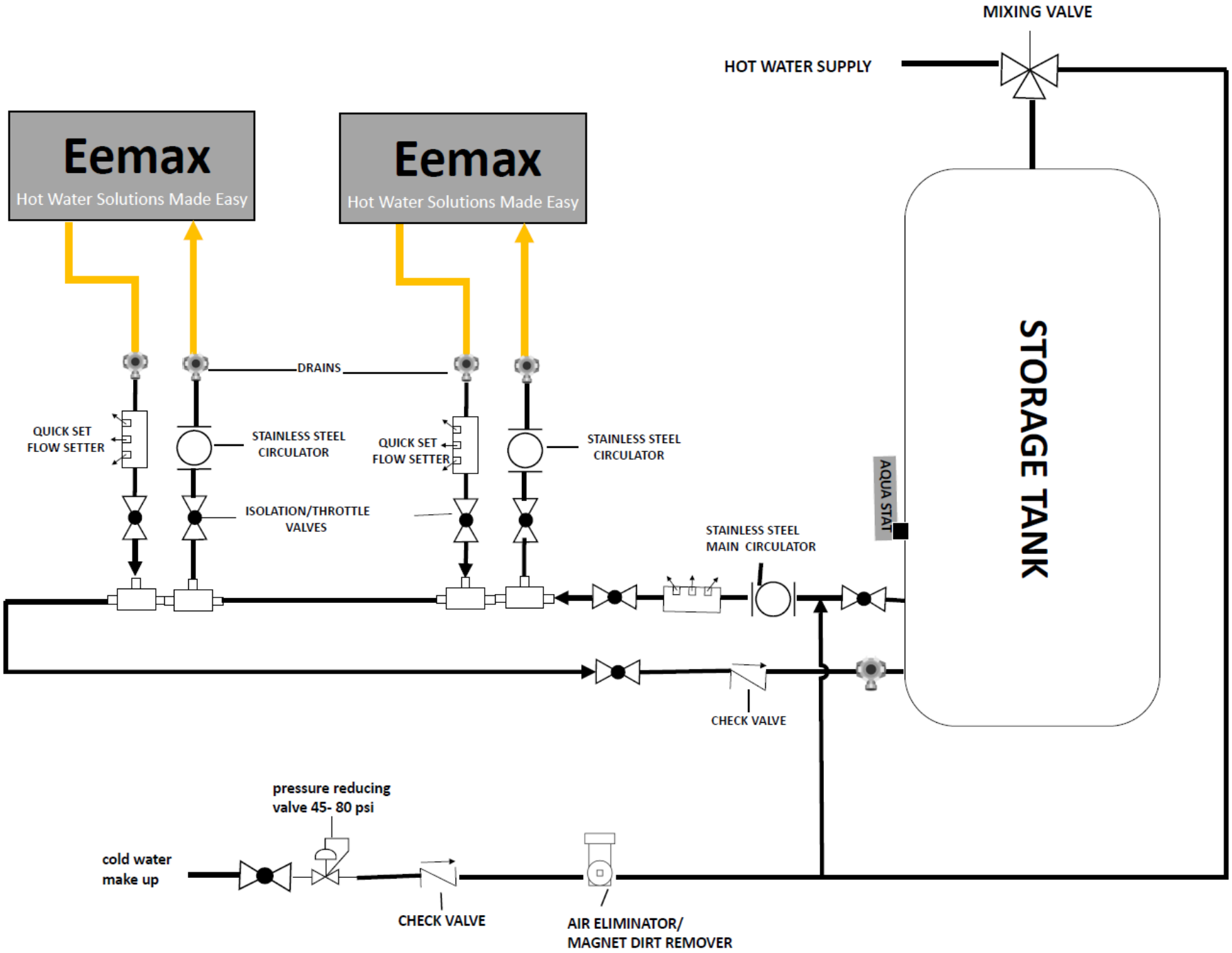
PARALLEL APPLICATION WITH STORAGE TANK

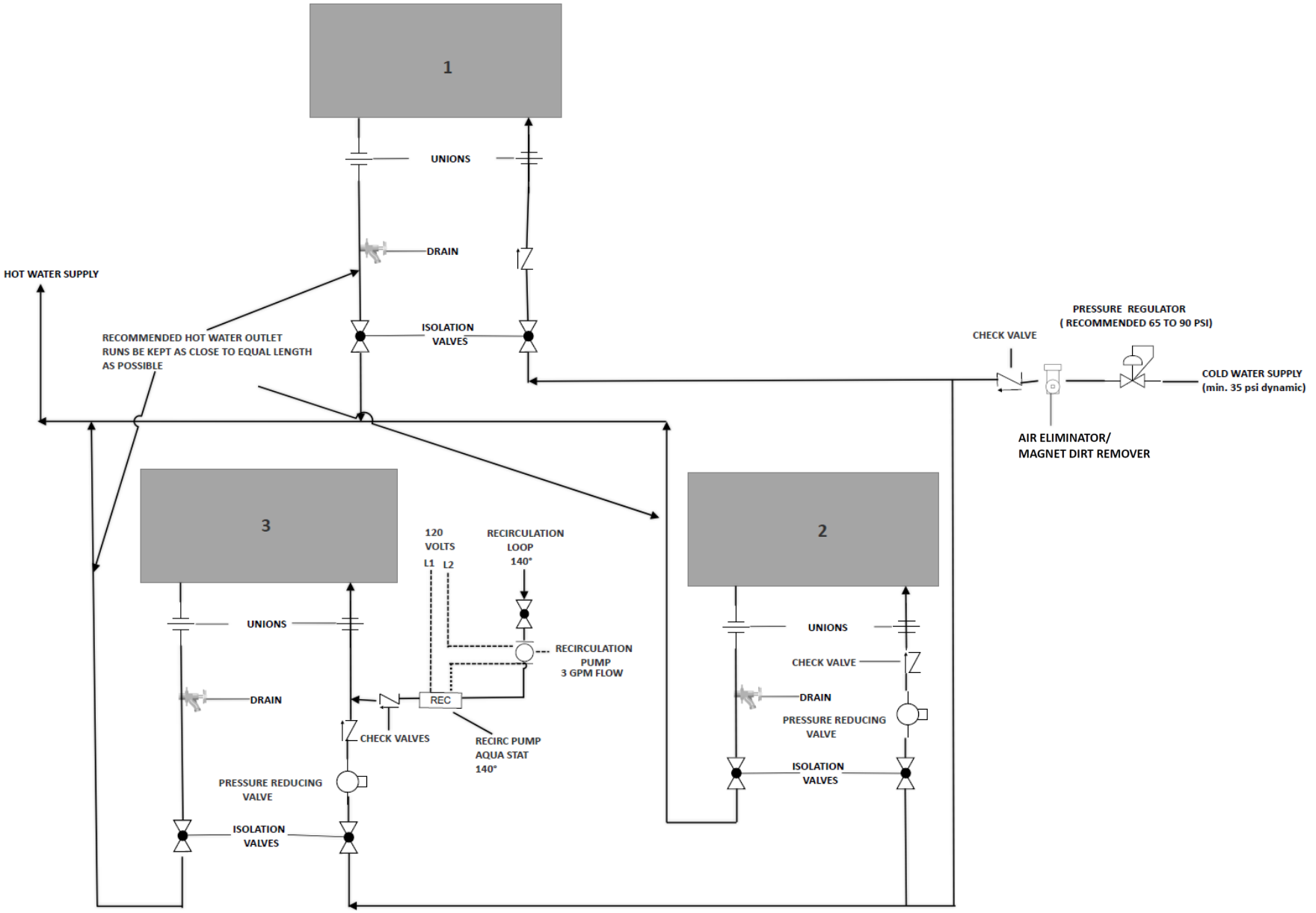


*****MUST PURGE WATER HEATER FOR A MINIMUM OF 3 MINUTES
OPEN AND CLOSE DRAIN VALVE WHILE PURGING TO REMOVE ANY AIR POCKETS. *****

PARALLEL PIPING/ STORAGE TANK/ PRIMARY SECONDARY LOOPS



MULTIPLE HEATERS IN PARALLEL WITH PRV VALVES



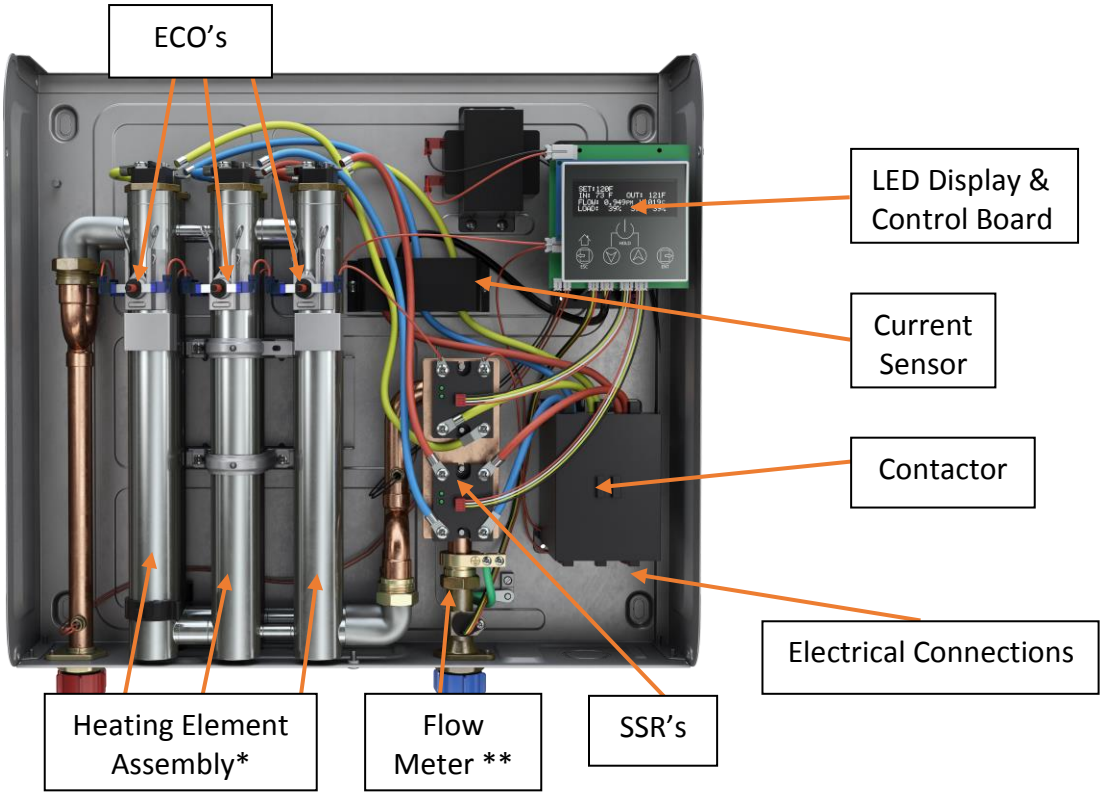
REPAIRS

Repair Parts

> **⚠ WARNING**
>
> Service and repairs are to be performed by licensed electricians or qualified servicemen.

> **⚠ WARNING**
>
> Before attempting any repairs to the heater, make sure that the electrical breaker is “off” and confirm that there is no voltage at the heater.

p



* HEATING ELEMENT ASSEMBLY CONSISTS OF ONE HEATER CORE AND WIRE ELEMENT(S)

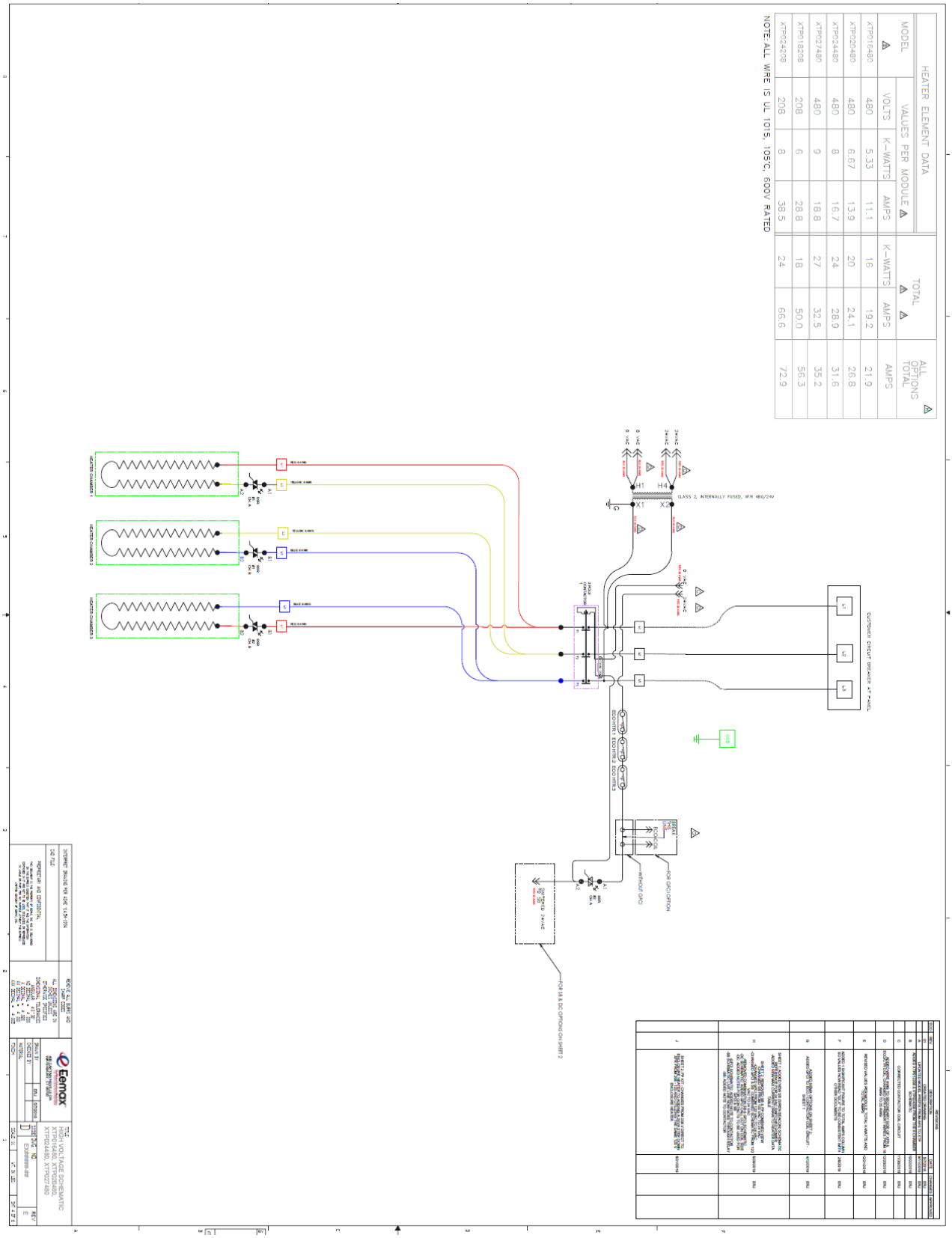
** FLOW METER KIT CONSISTS OF PADDLE WHEEL, DOWEL PIN, O RING AND 4 MOUNTING SCREWS.

Repair Parts (continued)

Model Number	Element Number Assembly	Flow Meter Assembly (inc board)	Master Display Board	Transformer	Inlet & Outlet Thermistors	SSR	ECO Assembly	Contactor	Inlet Manifold Kit	Outlet Manifold Kit	Inlet Fitting Flow Meter Kit
XTP018208	EX05502-00	EX76042-02	EX09100-01	EX08303-07	EX08200-16 & EX08200-17	EX08200-12	EX279D	EX08309-02	EX78016-00	EX78017-00	EX78018-00
XTP024208	EX05502-01	EX76042-02	EX09100-01	EX08303-07	EX08200-16 & EX08200-17	EX08200-12	EX279D	EX08100-11	EX78016-00	EX78017-00	EX78018-00
XTP032208	EX05502-02	EX76042-02	EX09100-01	EX08303-07	EX08200-16 & EX08200-17	EX08200-12	EX279D	EX08100-10	EX78016-00	EX78017-00	EX78018-00
XTP016480	EX05502-03	EX76042-02	EX09100-01	EX08303-08	EX08200-16 & EX08200-17	EX08200-12	EX279D	EX08309-02	EX78016-00	EX78017-00	EX78018-00
XTP020480	EX05502-04	EX76042-02	EX09100-01	EX08303-08	EX08200-16 & EX08200-17	EX08200-12	EX279D	EX08309-02	EX78016-00	EX78017-00	EX78018-00
XTP024480	EX05502-05	EX76042-02	EX09100-01	EX08303-08	EX08200-16 & EX08200-17	EX08200-12	EX279D	EX08309-02	EX78016-00	EX78017-00	EX78018-00
XTP027480	EX05502-06	EX76042-02	EX09100-01	EX08303-08	EX08200-16 & EX08200-17	EX08200-12	EX279D	EX08309-02	EX78016-00	EX78017-00	EX78018-00
XTP036480	EX05502-07	EX76042-02	EX09100-01	EX08303-08	EX08200-16 & EX08200-17	EX08200-12	EX279D	EX08309-02	EX78016-00	EX78017-00	EX78018-00
XTP048480	HA-P004	EX76042-02	EX09100-01	EX08303-08	EX08200-16 & EX08200-17	EX08200-12	EX279D	EX08306-00	EX78016-00	EX78017-00	EX78018-00
XTP054480	HA-P005	EX76042-02	EX09100-01	EX08303-08	EX08200-16 & EX08200-17	EX08200-12	EX279D	EX08306-00	EX78016-00	EX78017-00	EX78018-00

WIRING SCHEMATICS

XTP016480-027480 & XTP018208-024208 WIRING SCHEMATIC



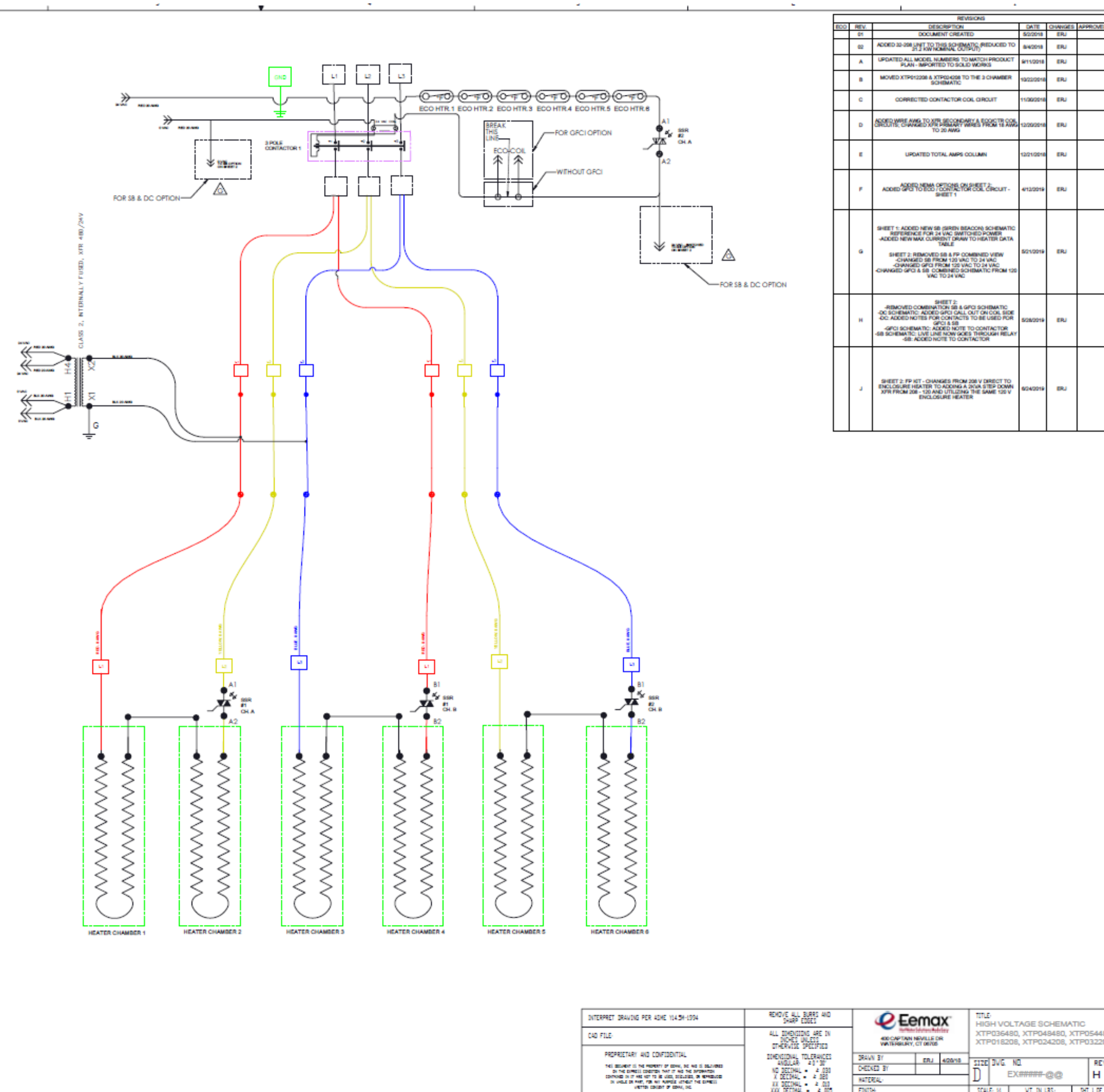
MODEL	HEATER ELEMENT DATA VALUES PER MODULE			TOTAL		ALL OPTIONS TOTAL
	VOLTS	K-WATTS	AMPS	K-WATTS	AMPS	AMPS
XTP016480	480	5.33	11.1	16	19.2	21.9
XTP020480	480	6.67	13.9	20	24.1	26.8
XTP024480	480	8	16.7	24	28.9	31.6
XTP027480	480	9	18.8	27	32.5	35.2
XTP018208	208	6	28.8	18	50.0	56.3
XTP024208	208	8	38.5	24	66.6	72.9

NOTE: ALL WIRE IS UL 1015, 105°C, 600V RATED

XTP036480-054480 & XTP032208 WIRING SCHEMATIC

HEATER ELEMENT DATA						
MODEL	VALUES PER MODULE			BASE TOTAL ⚠		ALL OPTIONS TOTAL ⚠
⚠	VOLTS	K-WATTS	AMPS	K-WATTS	AMPS	AMPS
XTP036480	480	12.33	25.0	36	43.3	46.0
XTP048480	480	16	33.33	48	57.7	60.4
XTP054480	480	18	37.5	54	65	67.7
XTP032208	208	10.4	50	31.2	86.6	92.9

NOTE: ALL WIRE IS UL 1015, 105°C, 600V RATED



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