

HYDRO-SHARK® 3

MODULATING MICRO BOILERS

Radiant Floor Heating Applications

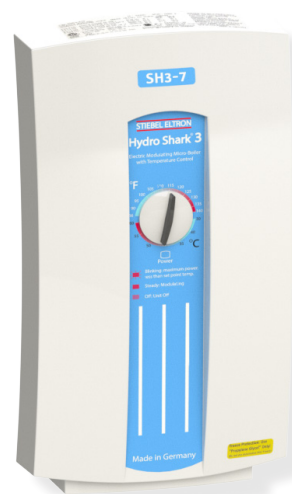
INSTALLATION INSTRUCTIONS FOR THE LICENSED PLUMBER & ELECTRICIAN

UL 834



MODEL #'S:

- SH3-12-834
- SH3-14-834
- SH3-19-834
- SH3-24-834
- SH3-29-834
- SH3-36-834



MODEL #'S:

- SH3-07-499
- SH3-10-499

Warning: Not to be used with potable water systems



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IMPORTANT!

BOILERS ARE TO BE USED FOR RADIANT FLOOR HEATING ONLY!

THIS MANUAL MUST BE READ CAREFULLY BEFORE ATTEMPTING TO INSTALL THE HYDRO-SHARK BOILERS. IF YOU DO NOT FOLLOW THE SAFETY RULES OR THE INSTRUCTIONS OUTLINED IN THIS MANUAL, THE UNIT MAY NOT OPERATE PROPERLY AND IT COULD CAUSE PROPERTY DAMAGE, SERIOUS BODILY INJURY AND/OR DEATH.

STIEBEL ELTRON, INC. WILL NOT BE LIABLE FOR ANY DAMAGES BECAUSE OF FAILURE TO COMPLY WITH INSTALLATION AND OPERATING INSTRUCTIONS OUTLINED IN THIS MANUAL OR BECAUSE OF IMPROPER USE. IMPROPER USE INCLUDES THE USE FOR THIS APPLIANCE TO HEAT ANY LIQUID OTHER THAN WATER OR PROPYLENE GLYCOL. FAILURE TO COMPLY WITH THE INSTALLATION AND OPERATING INSTRUCTIONS OR IMPROPER USE VOIDS THE WARRANTY. NEVER REMOVE THE UNITS FRONT COVER UNLESS POWER IS TURNED OFF.

IF YOU HAVE ANY QUESTIONS REGARDING THE INSTALLATION OR OPERATION OF THES BOILER, PLEASE CALL OUR TECHNICAL SERVICE LINE AT 800-582-8423 (U.S.A. AND CANADA ONLY). IF YOU ARE CALLING OUTSIDE OF THE U.S. AND CANADA CALL (413)-538-7850 AND WE WILL REFER YOU TO A QUALIFIED STIEBEL ELTRON SERVICE REPRESENTATIVE IN YOUR AREA.

GENERAL

- The output of heat from the boiler is electronically controlled. The Boiler will deliver any water temperture between 86° F and 140° F for the SH3-12,SH3-14, SH3-19, SH3-24. Please set the de-sired water delivery temperture using the knob on the front cover.
- When the Power light **is** flashing, full element power is being applied. When the Power light **is not** flashing, the element power is being modulated to the water delivery temperature.
- Recommended Setting for radiant floor heating in cement or gypcrete is 105° F to 125° F.
- Recommended Setting for staple up (floor warming) 130° F to 140° F.

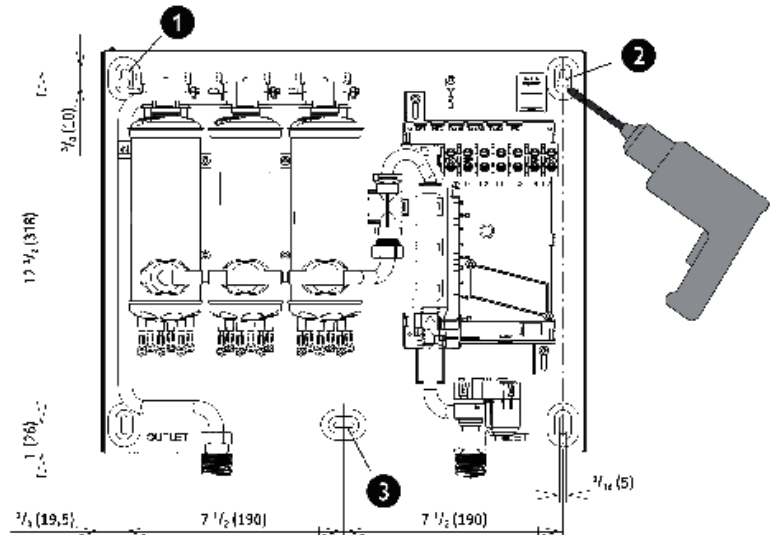
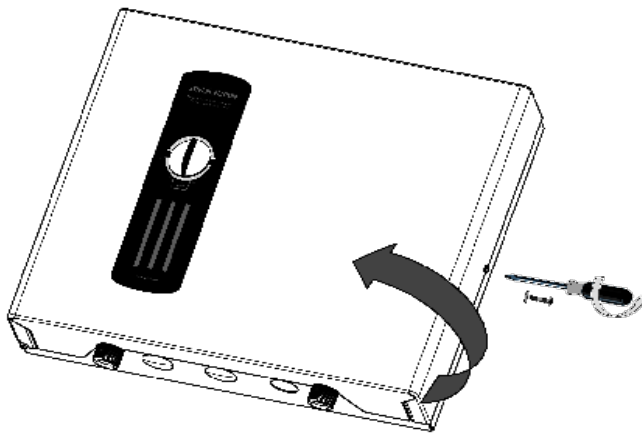
MOUNTING THE UNIT

SH3-12, SH3-14, SH3-19, SH3-24, SH3-29



UNIT MUST BE INSTALLED IN A VERTICAL POSITION WITH THE WATER FITTINGS POINTING DOWNWARD, DO NOT INSTALL UNIT WHERE IT WOULD ROUTINELY BE SPLASHED WITH WATER OR ELECTRICAL SHOCK MAY RESULT.

1. Leave a minimum of 5" of Clearance on all sides for servicing.
2. Make sure that the Power is Off.
3. Remove the Cover.
4. Mount securely to wall by putting four screws through mounting holes.
5. Screw and plastic wall anchors for mounting on masonry or wood are provided.



FLUID CONNECTIONS

NOTE: EXCESSIVE HEAT FROM SOLDERING COPPER PIPES NEAR THE BOILER MAY CAUSE DAMAGE.

1. All plumbing work must comply with the national, state, local & any other applicable codes.
2. Make sure the radiant floor system has been purged & is free of floating debris.
3. The return side (inlet) is on the right side of the unit, the supply side (outlet) is on the left of the unit.
4. A pressure & temperature relief valve should be installed on the hot water supply side (outlet) of the unit.
5. The boiler is designed for a connection to copper tubing and/or PEX tubing. If soldering the unit is necessary, please direct the flame away from the housing of the unit to avoid damage.
6. When all plumbing work is completed, check for leaks & take corrective action before proceeding.

ELECTRICAL CONNECTIONS

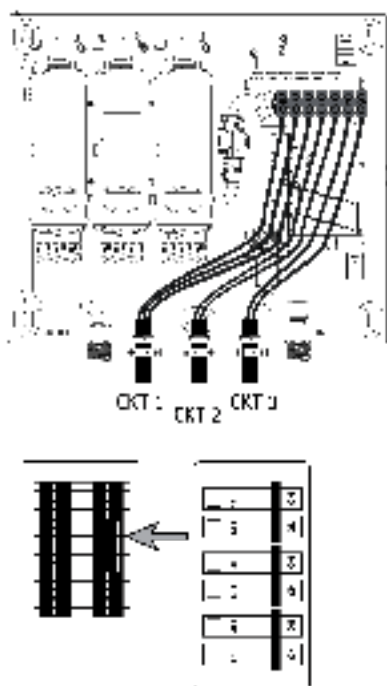
WARNING: BEFORE BEGINNING ANY WORK ON THE ELECTRIC INSTALLATION, BE SURE THAT THE MAIN BREAKER PANEL SWITCHES ARE “OFF” TO AVOID ANY DANGER OF ELECTRIC SHOCK. ALL MOUNTING AND PLUMBING MUST BE COMPLETED BEFORE PROCEEDING WITH ELECTRICAL HOOK-UP. WHERE REQUIRED BY LOCAL, STATE OR NATIONAL ELECTRICAL CODES THE CIRCUITS SHOULD BE EQUIPPED WITH A “GROUND FAULT INTERRUPTER”.

1. All electrical work must comply with the national, state, local & any other applicable codes.
2. The boiler should be connected to properly grounded dedicated branch circuits of proper voltage rating. Ground must be brought to the ‘Ground’ at the circuit breaker panel.
3. SH3-12 can be connected to ONE independent circuit (Figure A & B).
4. A SH3-14, SH3-19 & SH-24 can be connected to TWO independent circuits (Figure C).
Use supply table (See Technical Data table “B” on page 8). Protected by TWO double pole breakers sized for the load.
5. A SH3-29, can be connected to THREE independent circuits (Fig D.). Use supply cable (See Technical Data Table “C”) protected by THREE double pole breakers sized for the load.
6. Cut the electrical connection cable to length and strip.
7. The wire must be fed through the knockouts located between the Supply and Return fluid connections. The “Live” wires must be connected to the slots on the terminal block marked “L” and “L”. The ground wire must be connected to slot marked with the ground symbol.
8. Reinstall the cover screws.

WARNING! As with any electrical appliance, failure to electrically ground may result in serious injury or Death.

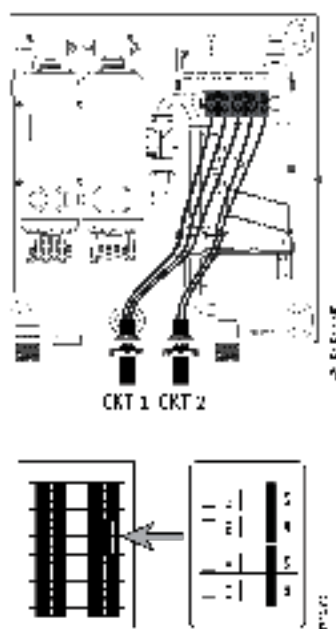
(Fig. 3)

SH3-29,SH3-36



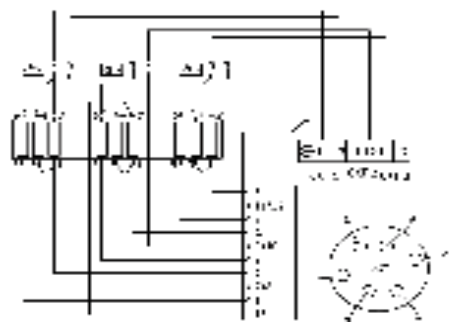
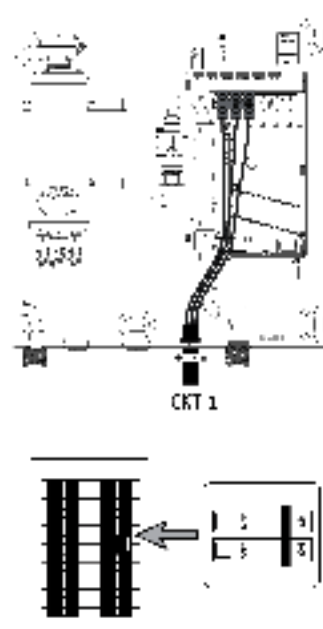
(Fig. 2)

SH3-14,SH3-19,SH3-24

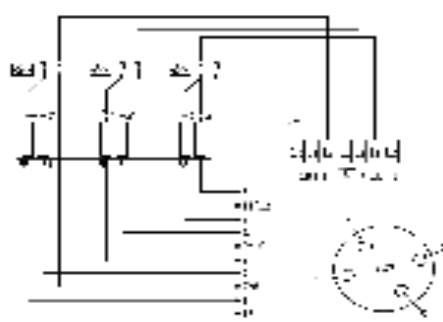


(Fig. 1)

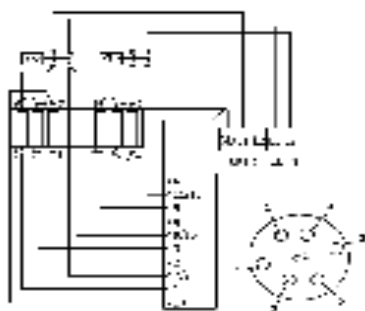
SH3-12



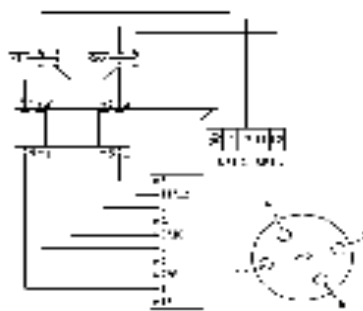
SH3-36



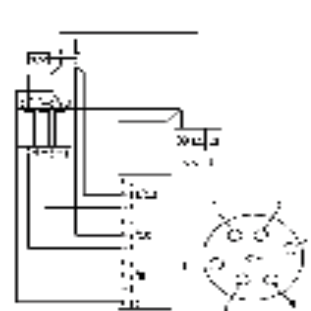
SH3-29



SH3-24



SH3-14, SH3-19



SH3-12

TECHNICAL DATA

“B” MODEL - 14 1/2 H X 16 5/8 W X 4 5/8 D - 3/4 PLUMBING FITTINGS						
MODEL	KW	BTU	VOLTS	AMPS	BRKR	WT-LBS
SH3-12	12	40,968	240	50	(1)70	17
SH3-14	14.4	49,161	240	60	(2)40	20
SH3-19	19.2	65,548	240	80	(2)50	20
SH3-24	24	81,936	240	100	(2)70	20

“C” MODEL - 14 1/2 H X 16 5/8 W X 4 5/8 D 3/4 PLUMBING FITTINGS						
MODEL	KW	BTU	VOLTS	AMPS	BRKR	WT-LBS
SH3-29	28.8	98,323	240	120	(3)50	24
SH3-36	36	122,904	240	150	(3)70	24

NOTE:

1. **Boilers are considered a continuous load.**
2. Copper conductors only.

WARRANTY

RESIDENTIAL & COMMERCIAL WARRANTY: STIEBEL-ELTRON WARRANTS TO THE ORIGINAL OWNER THAT ALL BOILERS (SH3-SERIES) WILL BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF THREE YEARS FROM THE DATE OF PURCHASE. SHOULD THE PART(S) PROVE TO BE DEFECTIVE UNDER NORMAL USE DURING THIS PERIOD STIEBEL-ELTRON, INC. WILL BE RESPONSIBLE FOR THE REPLACEMENT OF THE DEFECTIVE PART(S) ONLY. STIEBEL-ELTRON, INC. IS NOT RESPONSIBLE FOR LABOR CHARGES TO REMOVE AND OR REPLACE THE DEFECTIVE PART(S), OR ANY INCIDENTAL OR CONSEQUENTIAL EXPENSES.

SHOULD THE OWNER WISH TO RETURN THE BOILER FOR REPAIR, THE OWNER MUST FIRST SECURE WRITTEN AUTHORIZATION FROM STIEBEL-ELTRON, INC. THE OWNER SHALL BE REQUIRED TO SHOW PROOF OF PURCHASE DATE AND PAY ALL TRANSPORTATION (Shipping, Duties, Brokerage Fees etc...) COSTS BOTH DIRECTIONS FOR DEFECTIVE PART(S) OR BOILER FOR REPAIR OR REPLACEMENT. WARRANTY IS VOID IF BOILER HAS BEEN INSTALLED OR USED IMPROPERLY OR IF DESIGN HAS BEEN ALTERED IN ANYWAY.

SPARE PARTS

	1	2	3	4	5	6
	Safety thermal cut out	Flow Sensor	Electronic control Board	Housing	Electronic Setpoint selector	Heating System
Hydro-Shark 12	SH286369	SH286461	SH286366	SH286356	SH286359	SH286360
Hydro-Shark 14	SH286369	SH256461	SH286844	SH286356	SH286359	SH286361
Hydro-Shark 19	SH286369	SH256461	SH286844	SH286356	SH286359	SH286362
Hydro-Shark 24	SH286369	SH256461	SH286367	SH286356	SH286359	SH286364
Hydro-Shark 29	SH286369	SH256461	SH286378	SH286370	SH286372	SH286373
Hydro-Shark 36	SH286369	SH256461	SH286378	SH286370	SH286372	SH286374

HYDRO SMART™ WHOLESALE INC.

19974 IGUANA STREET NW - NOWTHEN, MN 55330

PHONE: 763-331-3066

FAX: 763-241-9628

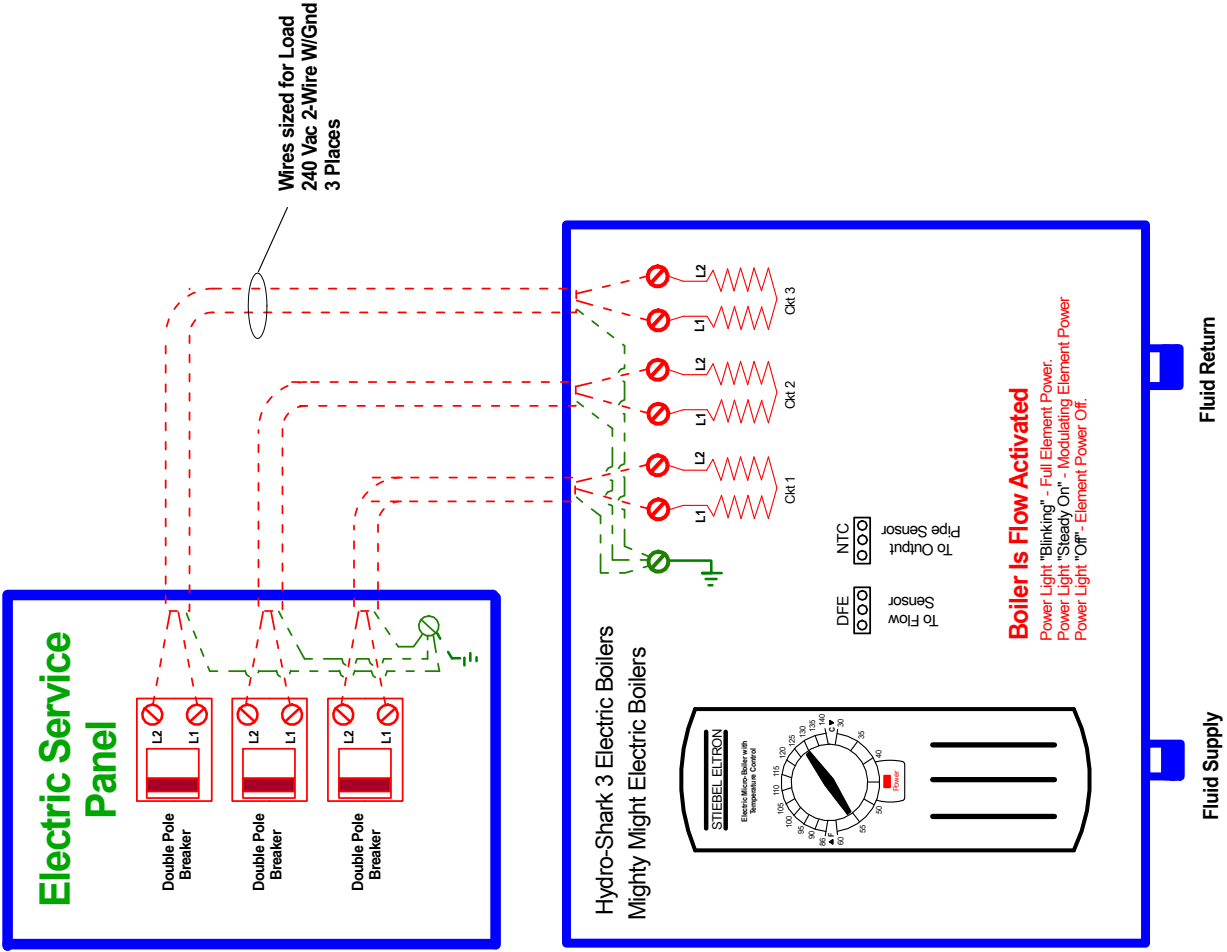
EMAIL: info@hydro-smartwholesale.com

1-Zone Primary/Secondary Piping System

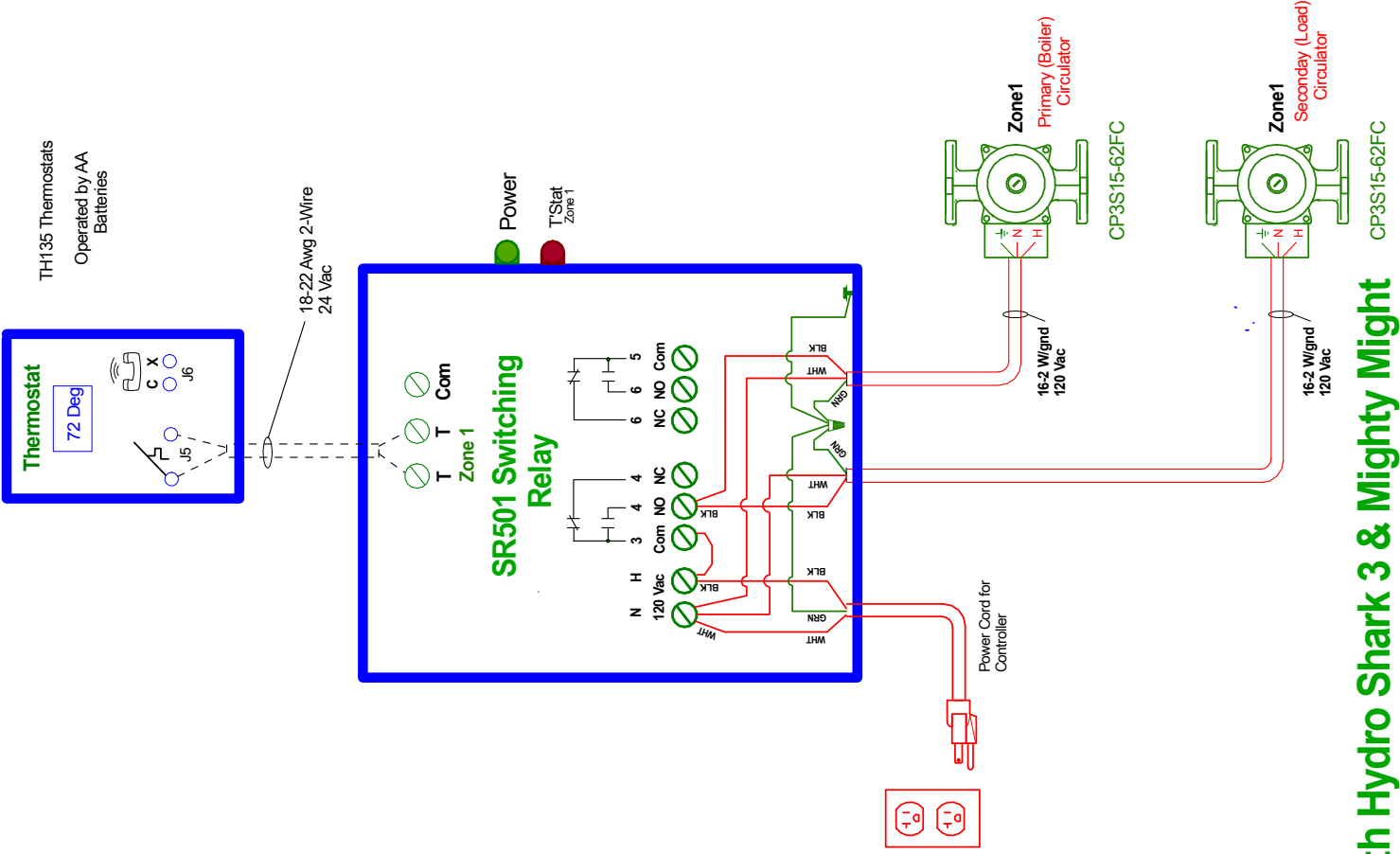


This wiring diagram works with the following components:

Integrator Panels: HSPS120LT
Zoning Panels: None
Boilers: SH3-07, 10, 12, 14, 19, 24, 29, 36

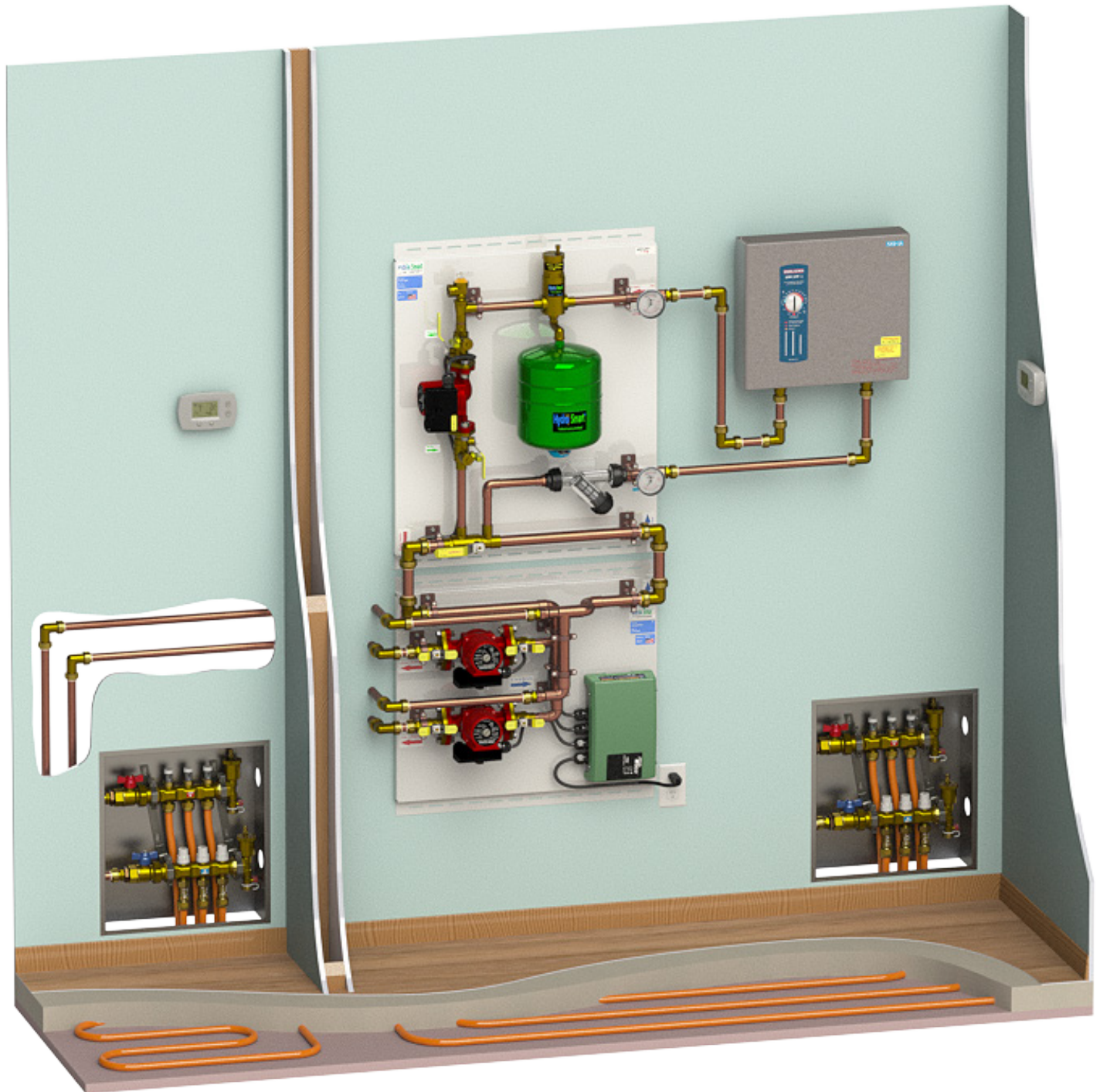


Zone 1



Wiring Diagram using TH135 TStat and Taco SR501 with Hydro Shark 3 & Mighty Might

Zoning By Pumps Primary/Secondary System



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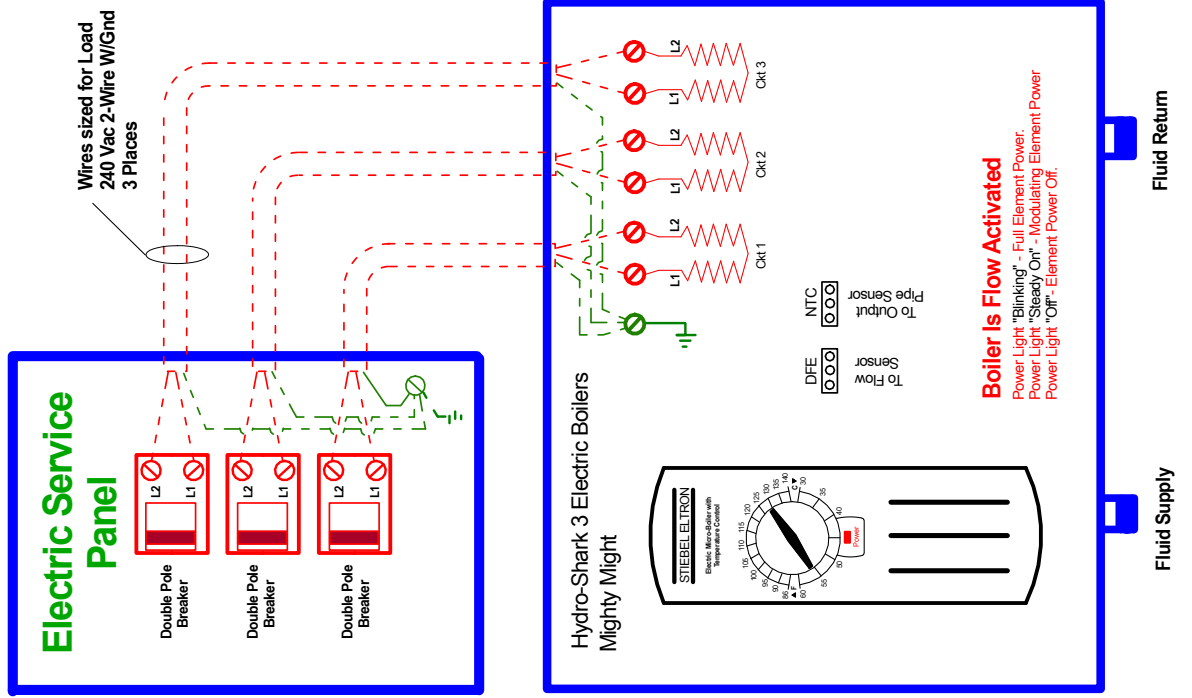
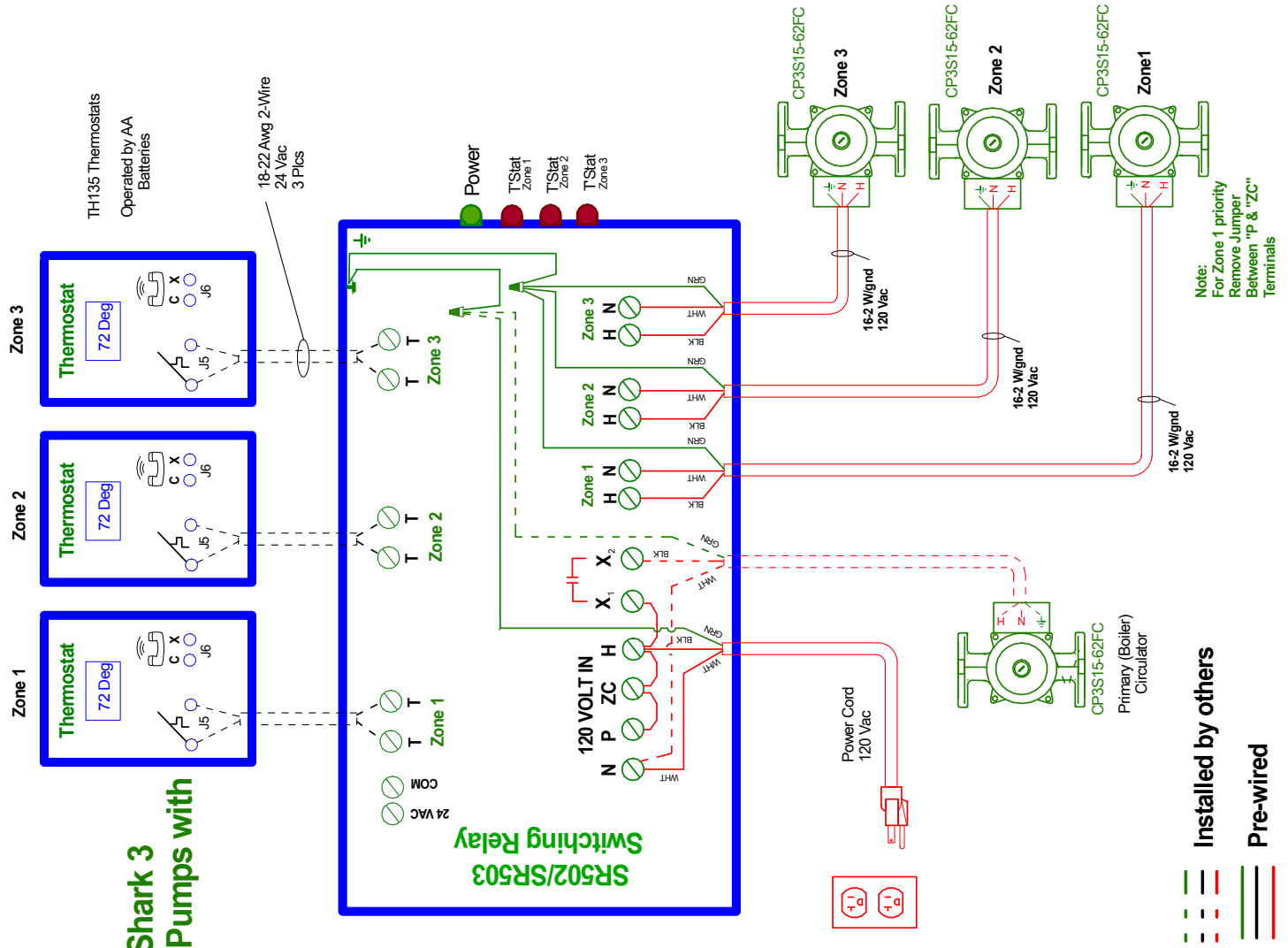
This wiring diagram works with the following components:

Integrator Panels: HSPS120MPL

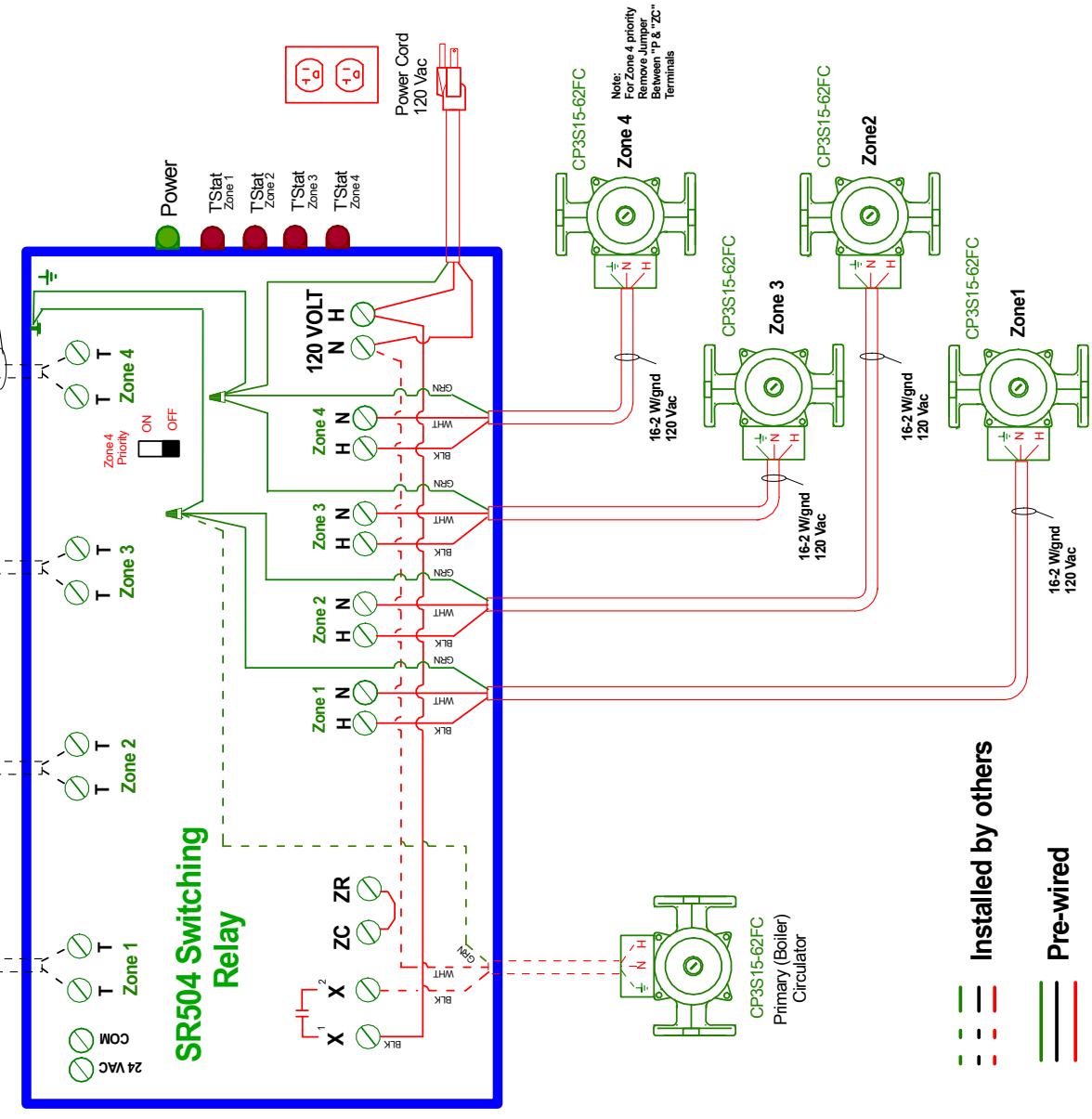
Zoning Panels: HST12ZPMP, HST13ZPMP

Boilers: Hydro Shark 3 - 07,10,12,14,19,24,29,36

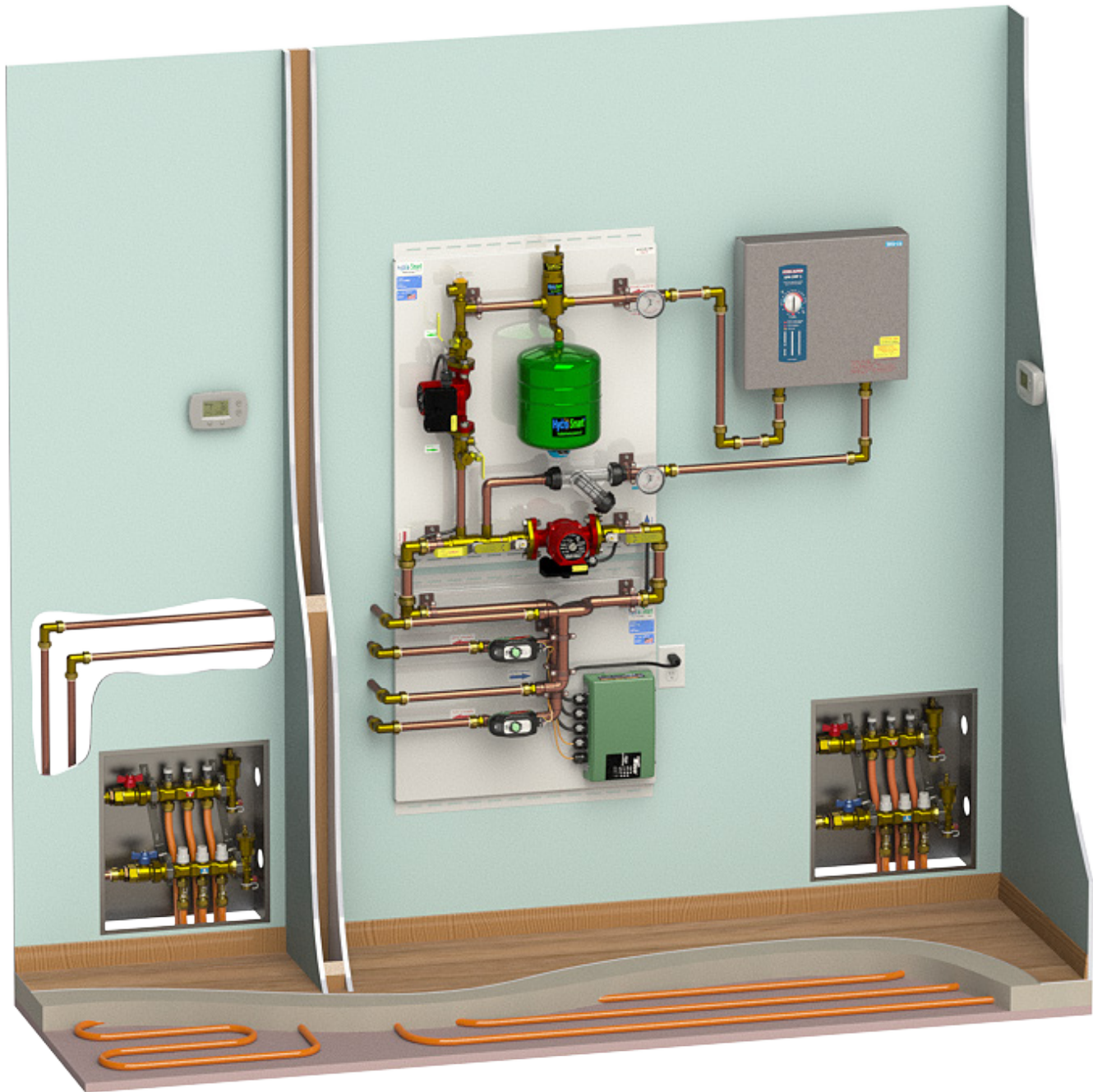
Wiring Diagram for Hydro-Shark 3 & Mighty Might 3-Zone by Pumps with TH135 Thermostats



Integrator Panels: HSPS120MPL
Zoning Panels: HS1T4ZPMP, HS2T4ZPMP
Boilers: Hydro Shark 3 - 07,10,12,14,19,24,29,36



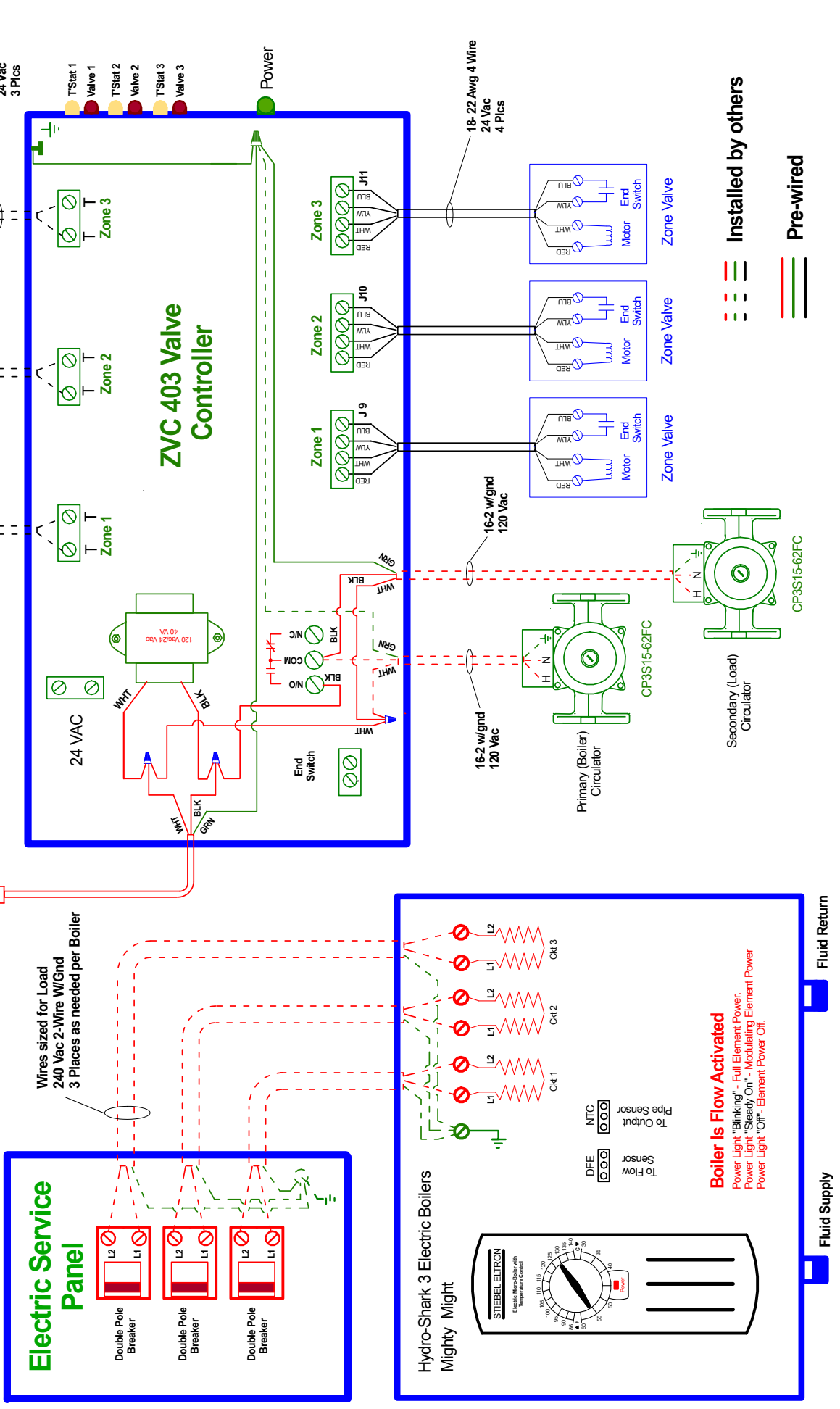
Zoning By Zone Valves Primary/Secondary System



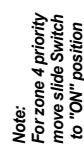
Wiring Diagram for Hydro-Shark 3 & Mighty Might 3-Zone by Valves with TH135 Thermostats

This wiring diagram works with the following components:

- Integrator Panels: HSP5MZL
Zoning Panels: HS1T2ZZV, HS1T3ZZV, HS2T2ZZV, HS2T3ZZV,
Boilers: Hydro-Shark 3-07,10,12,14,19,24,29,36



Boilers: SH3-07,10,12,14,19,24,29,36



Zoning by Telestat Primary/Secondary



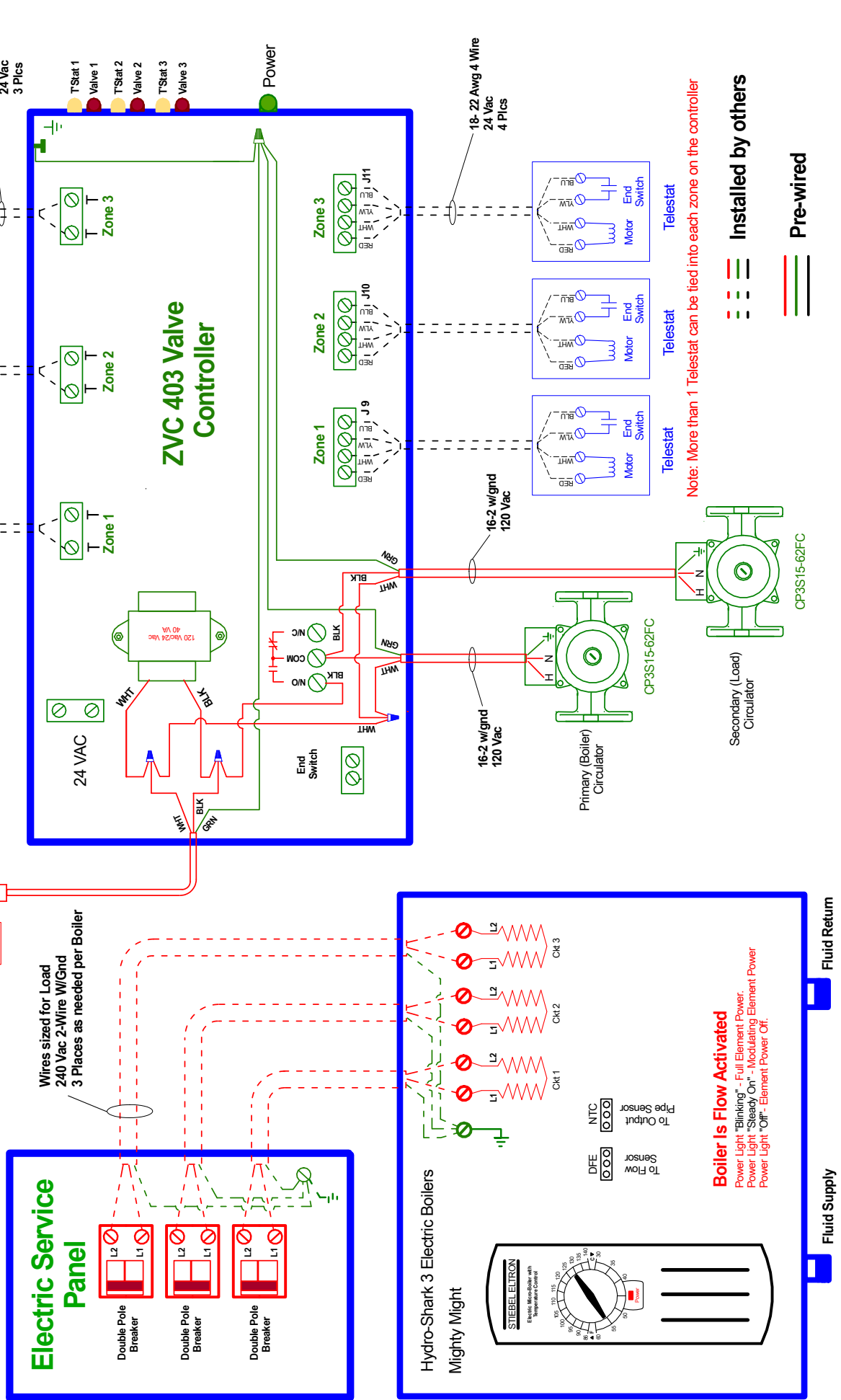
Wiring Diagram for Hydro-Shark 3 & Mighty Might 3-Zone by Telestats with TH135 Thermostats

This wiring diagram works with the following components:

Integrator Panels: HSPSMTL

Zoning Panels: HS1T2ZZV, HS1T3ZZV, HS2T2ZZV, HS2T3ZZV,

Boilers: Hydro-Shark 3-07, 10, 12, 14, 19, 24, 29, 36



Wiring Diagram for Hydro Shark 3 & Mighty Might using 4-Zone by Telestats with TH135 Thermostats

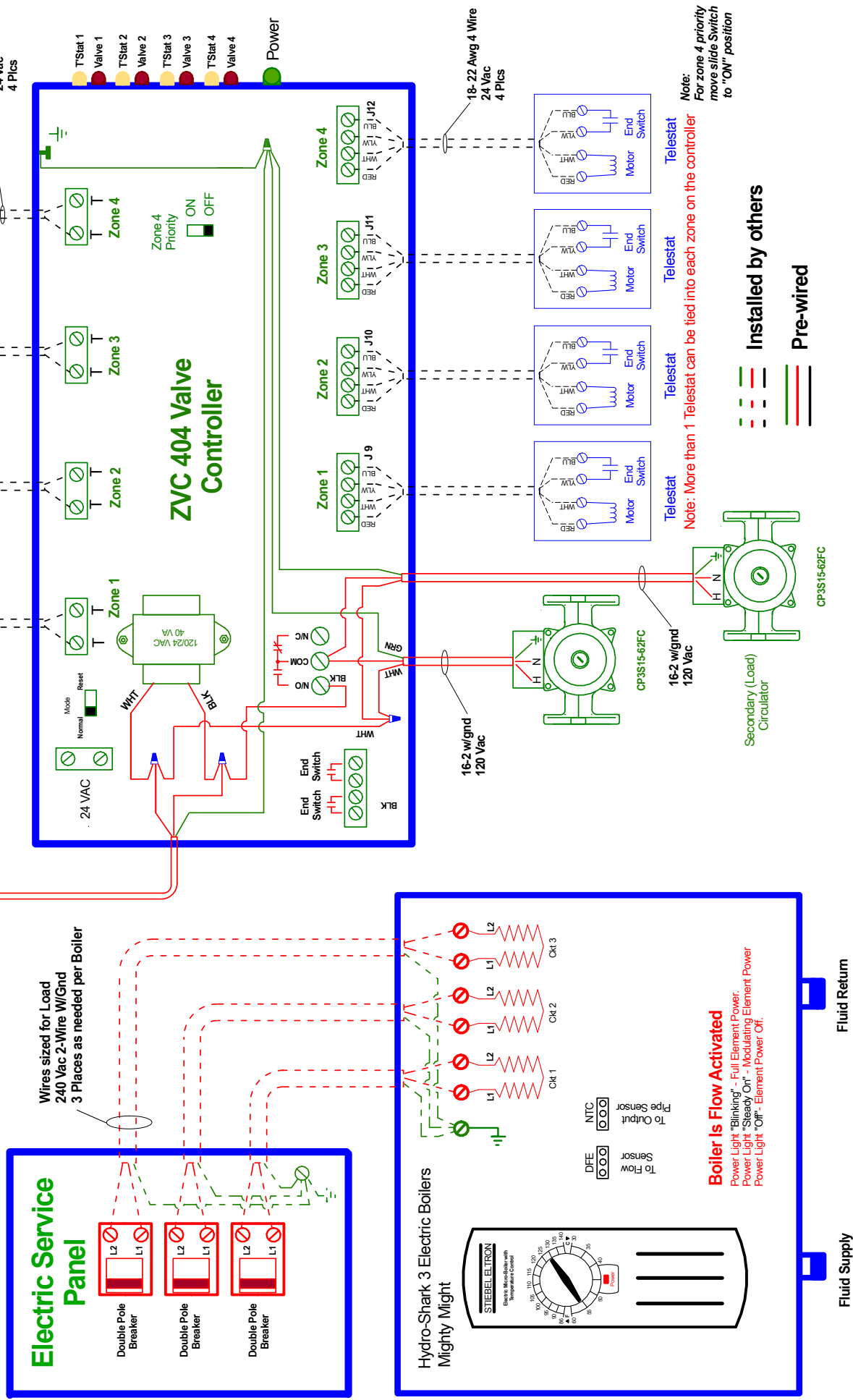
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info@hydro-smart.com

This wiring diagram works with the following components:

Integrator Panels: HSPS120MTL

Zoning Panels: HST14ZZV, HST214ZZV

Boilers: SH3-07, 10, 12, 14, 19, 24, 29, 36



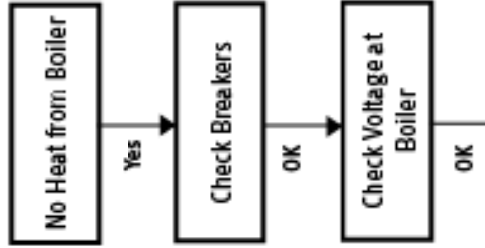
Trouble Shooting Flow Chart For Hydro Shark 3 Boilers

Element Power Status (Front Cover)

- ☀️ Blinking - Full
- Steady - Modulating
- Elements Off

Boiler Is Flow Activated

Minimum - .75 GPM
Maximum - 6 GPM



LED Diagnostics (Printed Circuit Board: Red-Green-Amber located behind power terminal block)

Red (Steady)- Freeze Protection

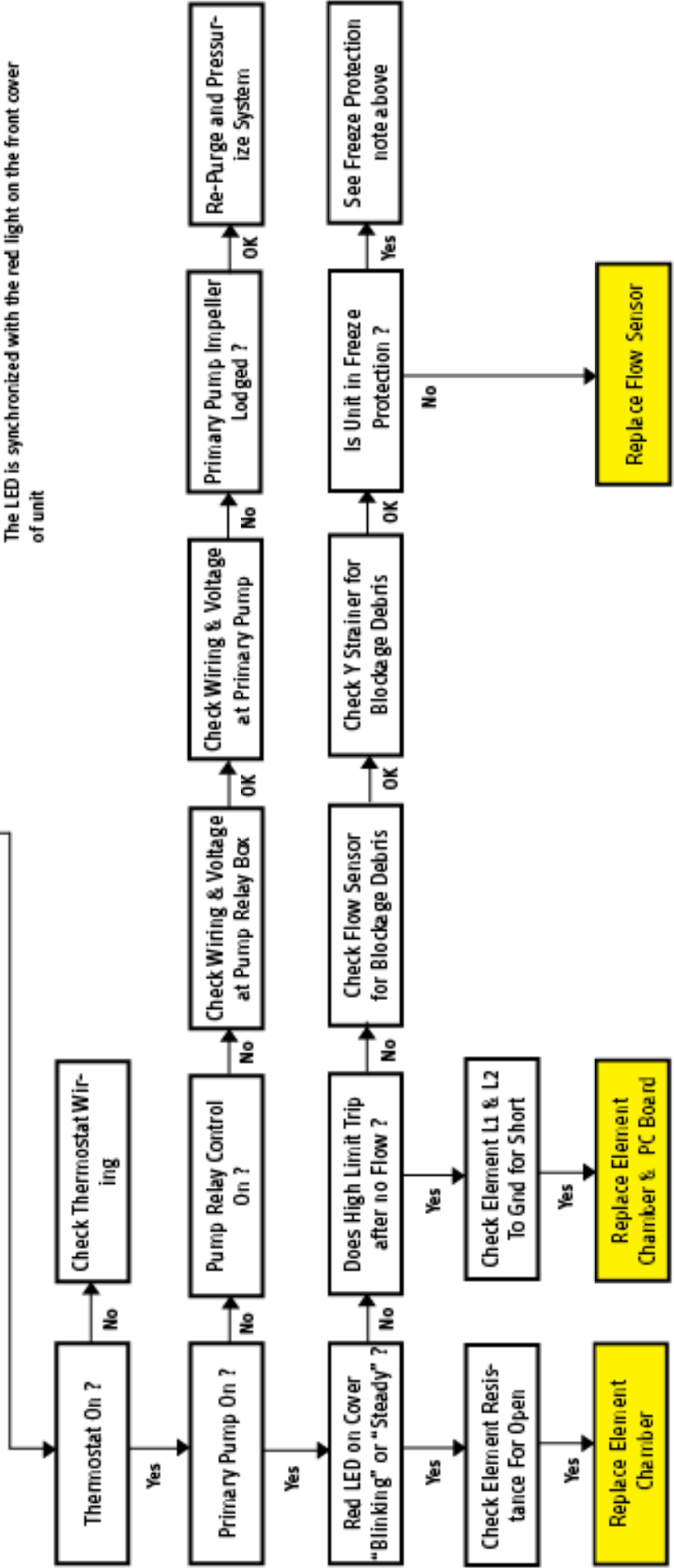
Some Units will not start when fluid is below 32 Deg F. To indicate this condition a solid red light on the board behind the Input electrical terminal block will solid red. To override this condition heat up input sensor with blow dryer and hold until fluid return is above 32 Deg F

Amber (Blinking) - Unit Power and Voltage Polarity

When this LED is blinking it indicates power, polarity and wiring is OK.

Green (Steady or Blinking) - Element Modulation Status

The LED is synchronized with the red light on the front cover of unit

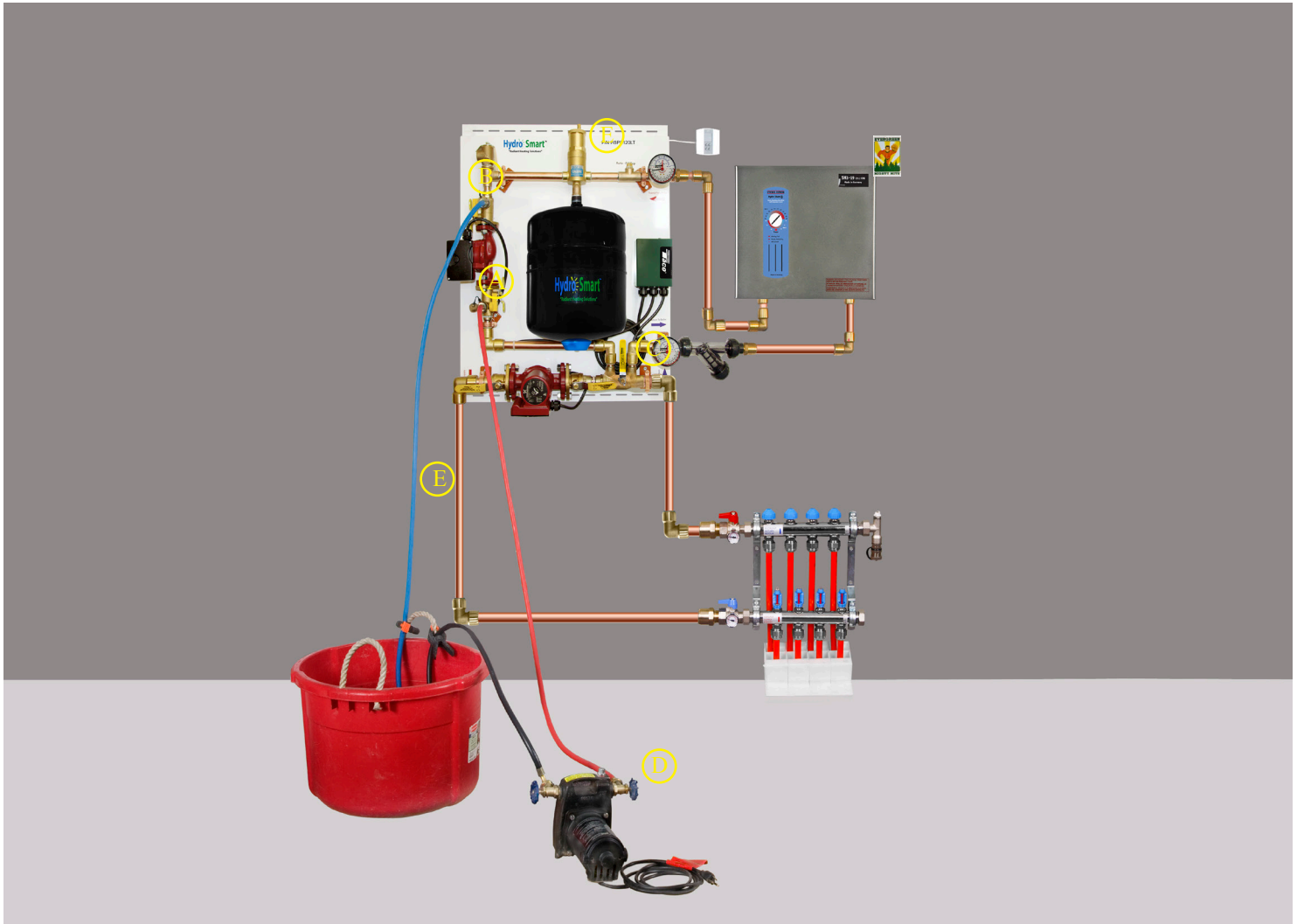


TROUBLE SHOOTING

SYMPTOM	POSSIBLE CAUSE	SOLUTION
NO HOT WATER	• No Power • Safety thermal cut-off tripped • Not enough flow rate to activate unit • Plugged flow sensor	• Utility Controlling Load • Reset Thermal cut-off • Wrong size Pump • Activate thermostat • Clean flow sensor
WATER NOT HOT ENOUGH	• Water flow too high • Voltage too low • Glycol/water ratio too high • Manifold or Ball Valve Closed	• Reduce water flow rate • Supply correct voltage to unit • More than 20% less than 50% • Open Loops/Ball Valve
LEDS DO NOT LIGHT	• Problem with electronic controls	• Call Tech Support 763-331-3066

FILLING THE SYSTEM

OVERVIEW OF A TYPICAL SYSTEM



When filling the system you need a “Fill Entry Point” (A) and a “Fill Exit Point” (B), 10 gallon bucket, 3 wash machine hoses (F) (6 Ft), 1/2 Hp “Transfer Pump” (D) and system fluids.

When filling purge 1-loop at a time with the rest of the remaining loops closed. Use propylene glycol (not ethylene glycol - car antifreeze). Make sure “Purge Tee” (C) is in position shown. Close “Air Eliminator” (E) when purging and pressurizing. When purging one loop (2-3 minutes) at a time observe bubbles in bucket dissipating for removal of air. When all loops are purged free of air it is time to pressurize. With Transfer Pump (D) running close of “Fill Exit Point” (B) valve pressure will now rise. When pressure gauge shows 15-20 PSI close off “Fill Entry Point” (A). System is now purged in pressurized. For boiler operation rotate “Purge Tee” (C) to horizontal position and rotate “Air Eliminator”(E) stem cap screw CCW 1 turn.

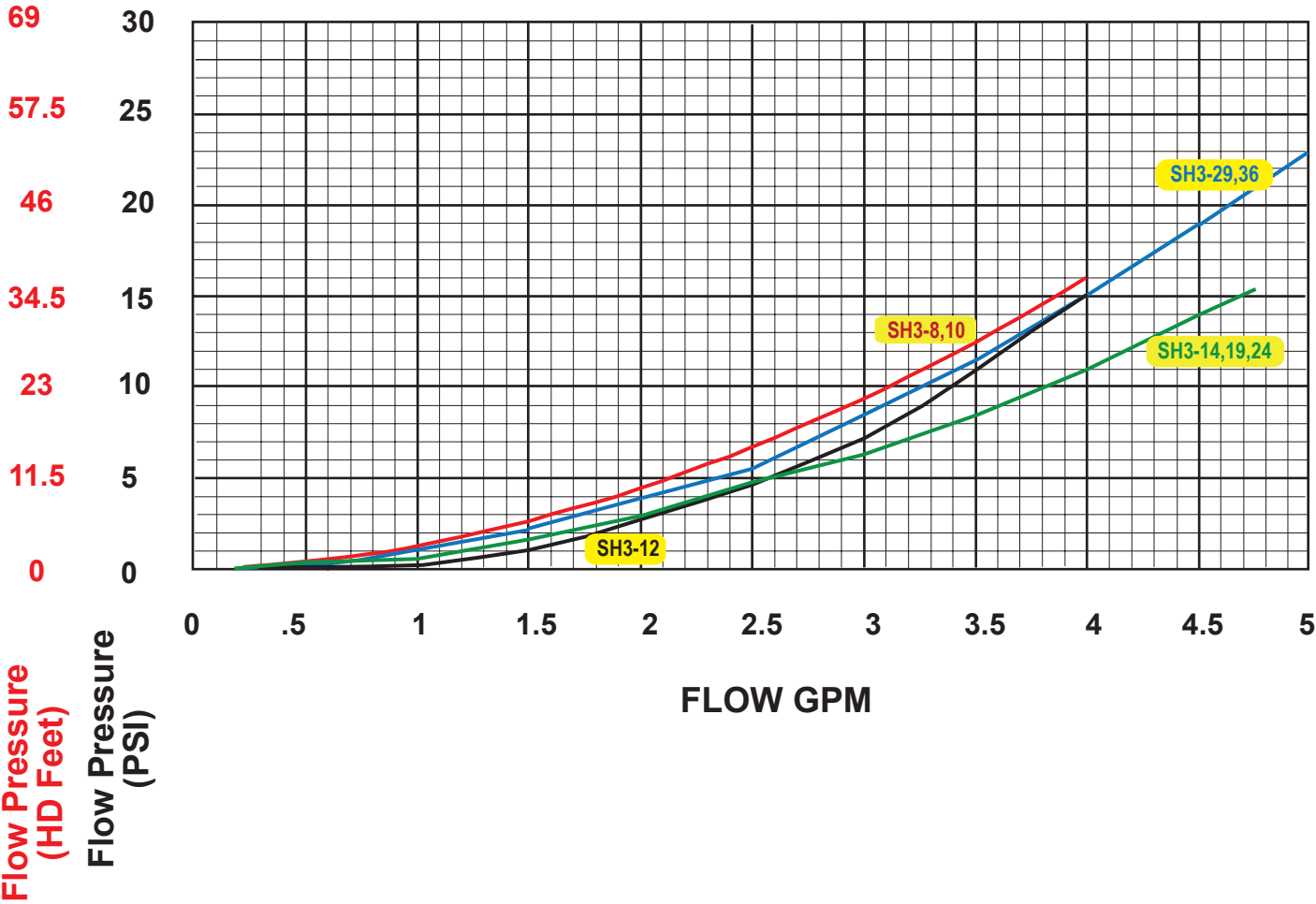
ITEM D: 1/2 HP Transfer Pump P/N: 4850C (763-331-3066)

Boiler Pressure Drops Table

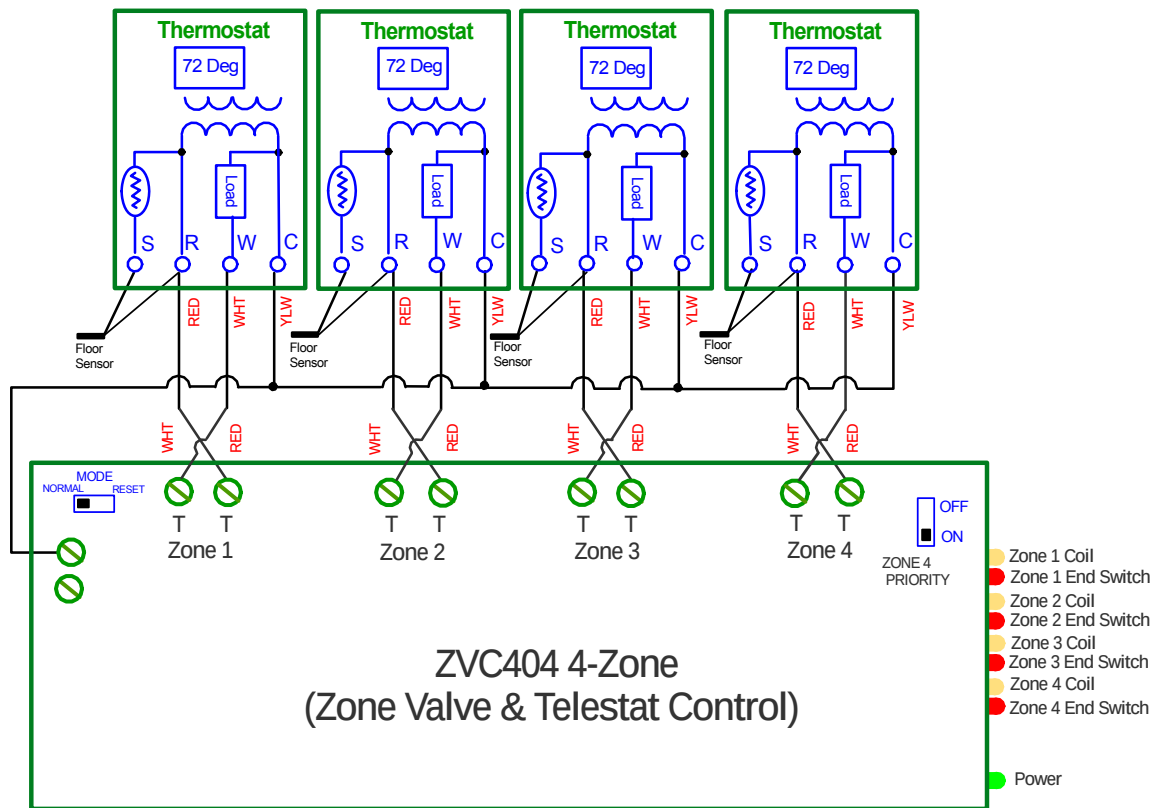
(Boilers SH3-12 thru SH3-29)

This table is used for sizing Primary (Boiler) Circulator

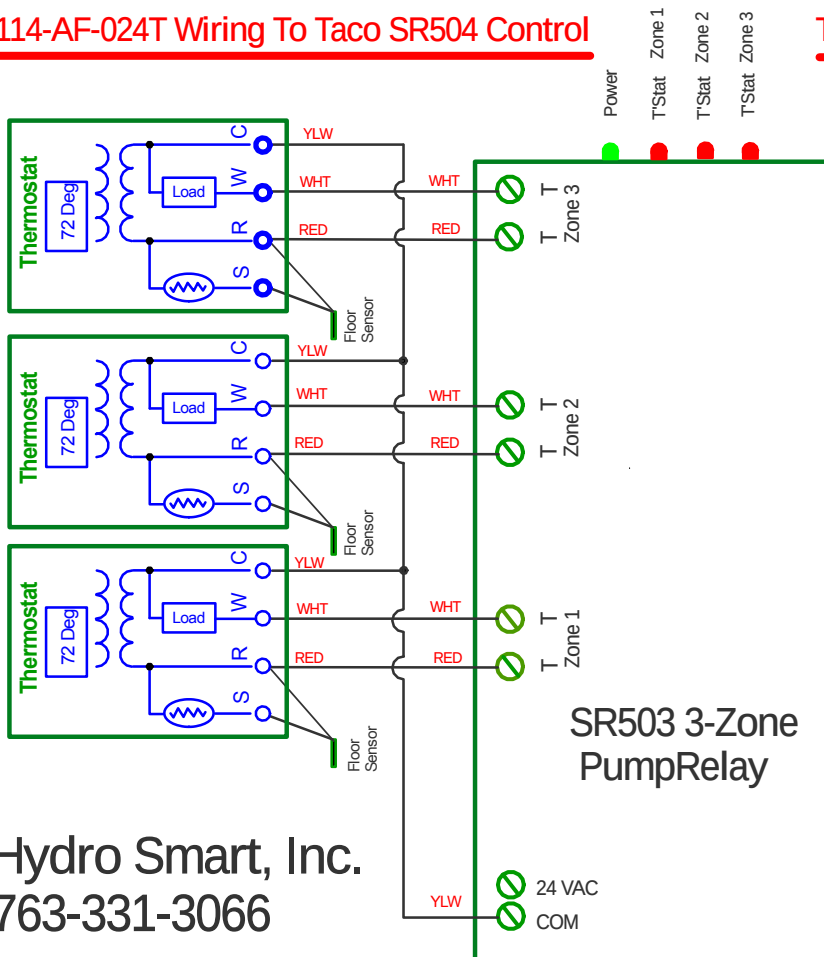
All boilers must use Primary/Secondary circuitry. This is used to create Hydraulic separation between the Boiler and Emitter circulators allowing you to create different flow rates for each circuit.



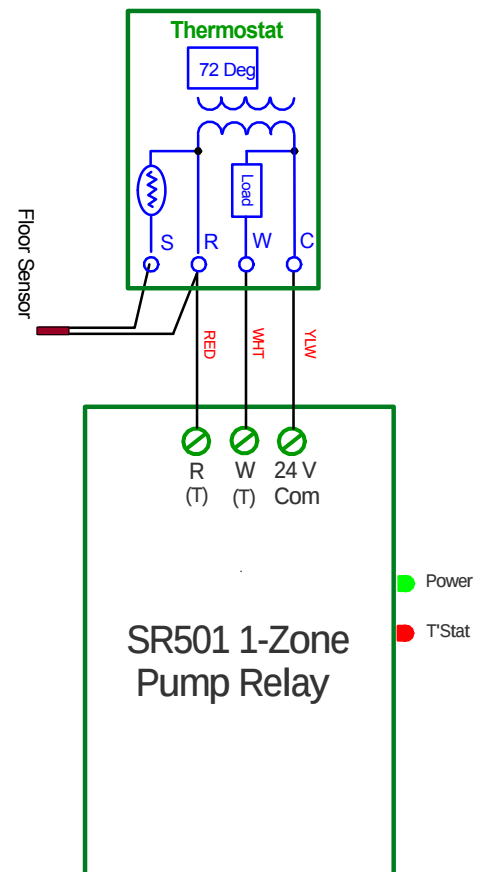
TH114-AF-024T Wiring To Taco ZVC404 Control



TH114-AF-024T Wiring To Taco SR504 Control



TH114-AF-024T Wiring To Taco SR501 Control



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