Water to Water Geothermal Heat Pump

Installation Instructions for Dual Compressor Models

RD-WE-072
RD-WE-100
RD-WE-114
RD-WE-140

Reference: Primary Manual NI701

These installation instructions provide additional plumbing and electrical hookup information and suggestions for the dual unit which is basically two RA-WE Series units, stacked.

The basic mechanical installation information detailed in NI701 pages 5 through 17 applies.

Drawings: **NH702, NH703, NH704, NH705, NH706**

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Dual Compressor Water To Water

Hydronic – Mechanical Specifications – R410A Compressor

MODEL	RD-WE-072 (6 ton)	RD-WE-100 (8 ton)	RD-WE-114 (10 ton)	RD-WE-140 (12 ton)
Hydronic GPM, min.	2 x 12	2 x 16	2 x 20	2 x 24
Loop GPM	2 x 12	2 x 16	2 x 20	2 x 24
Factory Charge R410A - (oz) *	2 x 48	2 x 84	2 x 84	2 x 84
Water Connection (NPT)	2 x 1”	2 x 1”	2 x 1”	2 x 1”
Loop Coil & Piping Water Volume (gal)	2 x.77	2 x 1.1	2 x 1.1	2 x 1.5
Loop Coil Int Press Drop (feet)	2 x 5.9	2 x 8.0	2 x 8.0	2 x 10
Load Coil Water Volume (gal)	2 x 0.98	2 x 0.98	2 x 1.34	2 x 1.58
Load Coil Int Press Drop (feet)	2 x 5.6	2 x 5.6	2 x 9.5	2 x 12
Weight– Packaged (lbs)	820	830	850	860

*Shown as reference information only, see unit nameplate for the supplied factory charge for each specific unit.
Note: Specifications above denoted with a (2X) indicate that the value must be multiplied by two in order to determine the total system capacity.

ISO 13256-2 Performance – Energy Star

Model	**Capacity Modulation**	**Ground Water Heat Pump**				**Ground Loop Heat Pump**			
		Cooling 59° F		**Heating 50° F**		**Cooling Full Load 77° F**		**Heating Full Load 32° F**	
		Capacity Btu/h	**EER Btu/h/W**	**Capacity Btu/h**	**COP**	**Capacity Btu/h**	**EER Btu/h/W**	**Capacity Btu/h**	**COP**
072	Full (FL)	80,600	22.9	74,000	4.1	69,000	16.0	64,400	3.09
	Part (PL)	40,300	22.9	37,000	4.1	34,500	16.0	32,200	3.09
100	Full (FL)	109,000	21.0	100,600	3.5	98,400	16.1	89,000	3.10
	Part (PL)	54,500	21.0	50,300	3.5	49,200	16.1	44,500	3.10
114	Full (FL)	128,400	22.7	118,000	4.0	108,000	16.7	103,000	3.10
	Part (PL)	64,200	22.7	59,000	4.0	54,000	16.7	51,500	3.10
140	Full (FL)	157,800	21.6	144,800	3.8	134,800	16.2	126,000	3.06
	Part (PL)	78,900	21.6	72,400	3.8	67,400	16.2	63,000	3.06

Heating capacities based upon 104° F hydronic return water.
Cooling capacities based upon 53° F hydronic return water.
Ground Loop Heat Pump ratings based on 15% antifreeze solution.
All ratings based upon operation at lower voltage of dual voltage rated models.

Electrical Data – Single Phase

Model	Voltage	Compressor		Hydronic Pump (max)	Desup. Pump	Loop Pump (Ext)	Total	Min.	Max. Fuse/ HACR
	(60 Hz)	RLA	LRA	FLA	FLA	FLA	FLA	Ampac.	
036	208/230-1	18.6	105	1.75	.15	4.4	23.2	31.2	50
050	208/230-1	26.9	145	1.75	.15	4.4	31.5	41.4	80
057	208/230-1	30.1	158	1.75	.15	4.4	34.7	45.4	80
070	208/230-1	32.1	148	1.75	.15	4.4	36.4	45.4	80

Note: The electrical information in this table is listed per individual compressor section.

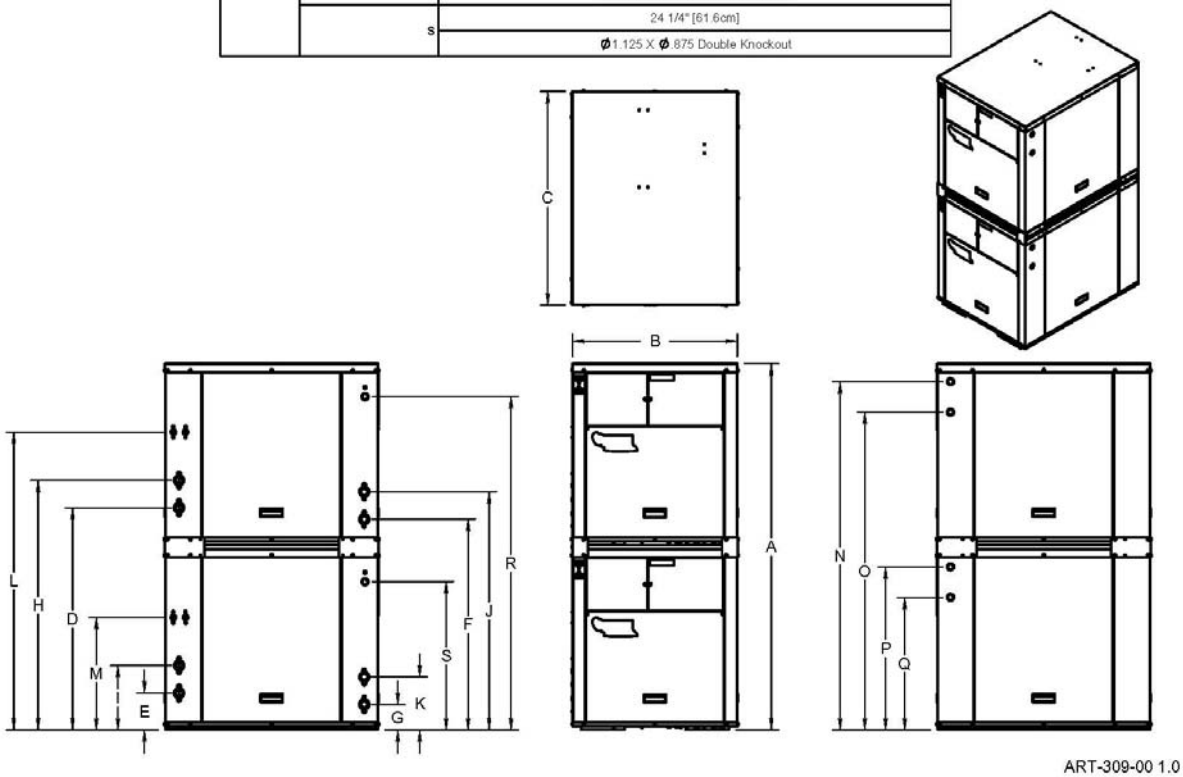
Electrical Data – Three-Phase

Model	Voltage	Compressor		Hydronic Pump (max)	Desup. Pump	Loop Pump (Ext)	Total	Min.	Max. Fuse/ HACR
	(60 Hz)	RLA	LRA	FLA	FLA	FLA	FLA	FLA	
024	200/230-3	7.1	59	1.8	.15	4.4	14.7	16.7	30
030	200/230-3	11.2	58	1.8	.15	4.4	15.4	17.6	30
036	200/230-3	13.5	88	1.8	.15	4.4	19.9	23.2	40
050	200/230-3	17.6	123	1.8	.15	4.4	24.0	28.4	50
057	200/230-3	20.5	155	1.8	.15	4.4	26.9	32.0	60

Note: The electrical information in this table is listed per individual compressor section.

Product Dimensions

		Water To Water - Dual Compressor Models			
		RD-WE-140	RD-WE-114	RD-WE-100	RD-WE-072
Overall Cabinet	A (Height)	59 7/8" [152.2cm]			
	B (Width)	27" [68.5cm]			
	C (Depth)	34 7/8" [88.7cm]			
Water Connections	D (Source In 1)	36 3/8" [92.3cm]			
	E (Source In 2)	6 1/8" [15.4cm]			
	F (Source Out 1)	34 1/2" [87.5cm]			
	G (Source Out 2)	4 1/4" [10.6cm]			
	H (Hydronic In 1)	40 7/8" [103.7cm]			
	I (Hydronic In 2)	10 5/8" [26.8cm]			
	J (Hydronic Out 1)	39" [99cm]			
	K (Hydronic Out 2)	8 3/4" [22.1cm]			
	L (Desuperheater 1 In/Out)	48 3/4" [123.7cm]			
	M (Desuperheater 2 In/Out)	18 1/2" [46.8cm]			
	Source 1,2 In/Out	1" NPT			
	Hydronic 1,2 In/Out	1" NPT			
	Desuperheater 1,2 In/Out	1/2" NPT			
Electrical Connections	N	57" [144.7cm]			
		Ø1.125 X Ø.875 Double Knockout			
	O	52" [132cm]			
		Ø1.125 X Ø.875 Double Knockout			
	P	26 3/4" [67.8cm]			
		Ø1.125 X Ø.875 Double Knockout			
	Q	21 3/4" [55.1cm]			
		Ø1.125 X Ø.875 Double Knockout			
	R	54 1/2" [138.5cm]			
		Ø1.125 X Ø.875 Double Knockout			
	S	24 1/4" [61.6cm]			
		Ø1.125 X Ø.875 Double Knockout			



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Suggested Loop or Source Plumbing Connections & Arrangement

The attached drawings provide several suggestions and sketch information for two possible **source** fluid connections.

- NH702 – two units as parallel **source** connections, one pumping station for both units.
- NH703 – flow centers can be purchased and/or arranged for two split pumping outputs. This is the recommended approach. The pumping station two outputs flow to each compressor unit. Note – when connecting the loop manifold with a tee, two check valves are required.

Hydronics/Load Piping Arrangements

Buffer tank – drawing NH704 suggests a **load** pump for each compressor unit. Considering the required flow rates, this is probably the most economical concept. With the two **load** pumps, a 2-stage buffer tank controller can easily cause this system to operate as two stage heat and possibly one stage cool.

Hydronics/load, direct heating loop manifolds – drawings NH705 and NH706 provide some suggestions. NH705 should go with NH703, split **load** center.

Electrical Hookup

⚠ WARNING

DISCONNECT ALL ELECTRICAL POWER BEFORE ELECTRICALLY CONNECTING OR SERVICING THE UNIT. FAILURE TO DISCONNECT THE ELECTRICAL POWER BEFORE WORKING ON THIS PRODUCT CAN CREATE A HAZARD LEADING TO PERSONAL INJURY OR DEATH.

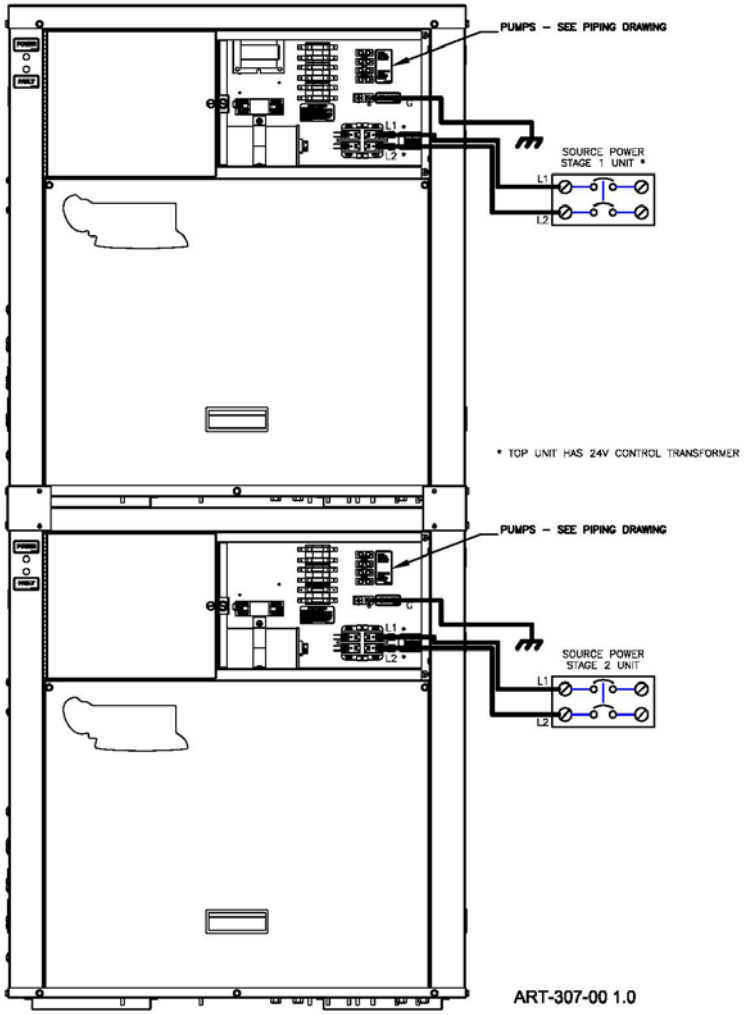
Line Voltage

The nameplate and/or Installation and Operating Manual specification page provides RLA, LRA, and total amps requirement. Select the proper wire size to comply with your type of wire routing and NEC field wiring requirements.

Reference NI701 page 18. This dual product is power **source** wired as if they are two individual units, as shown in the drawing below. Disconnect, grounding, and other information within NI701 applies.

Interpret all specification page information.

- RD-WE-072 – two RA-WE-036-**
- RD-WE-100 – two RA-WE-050-**
- RD-WE-114 – two RA-WE-057-**
- RD-WE-140 – two RA-WE-070-**



Control Wiring

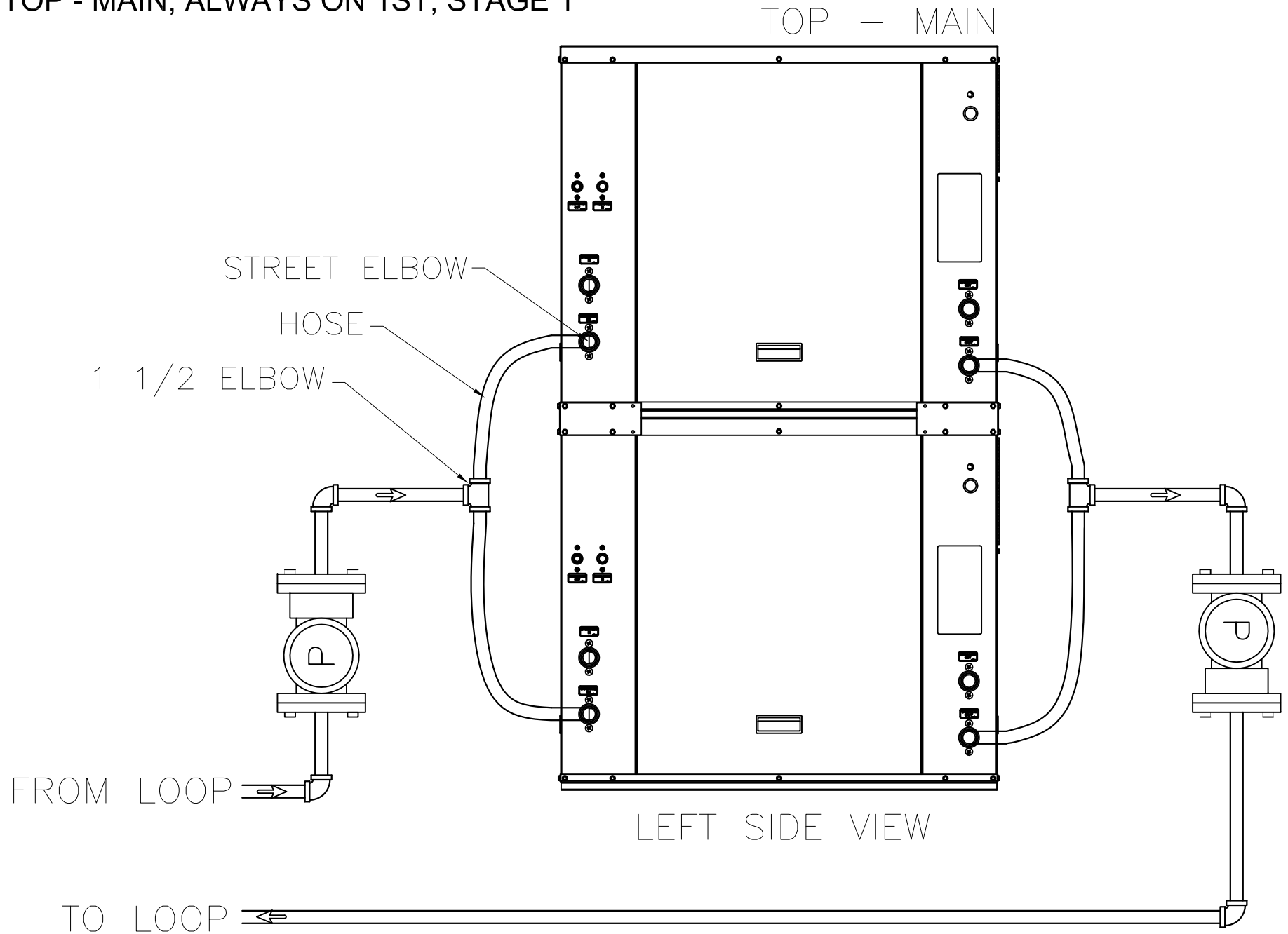
See page 2 of the various attached drawings. In all cases except NH702-2 each compressor unit is operated independent as a 2-stage system (FL or PL).

If this dual compressor unit is to be operated as one system or one stage, NH702-2 details disconnecting the 24-volt transformer from the bottom unit, tying the R and C together, and the single aquastat contact goes to both WH screw terminals.

Operating Indicators, Etc.

Use NI701 information.

SOURCE - ONE PUMP STATION
TOP - MAIN, ALWAYS ON 1ST, STAGE 1



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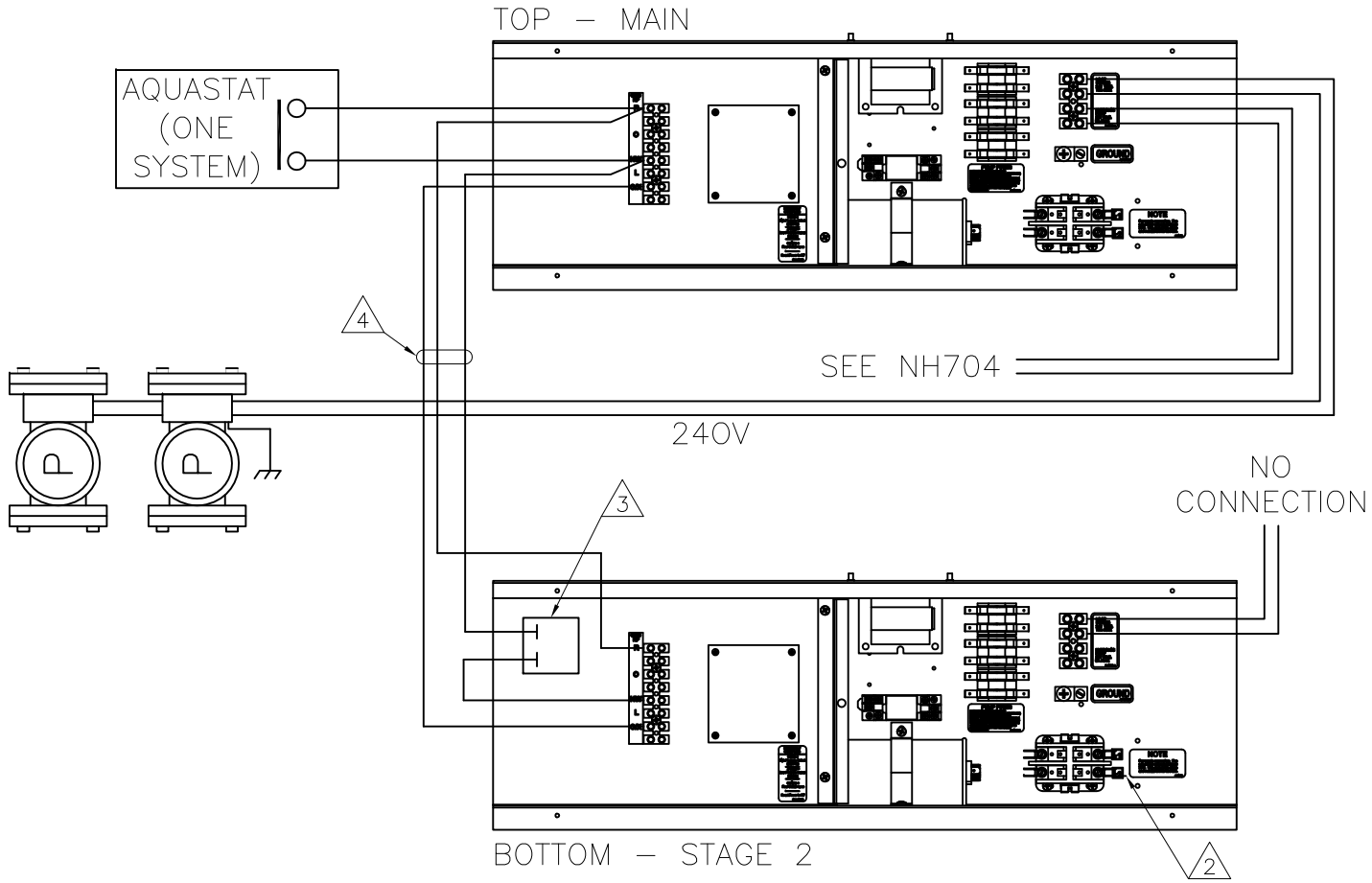
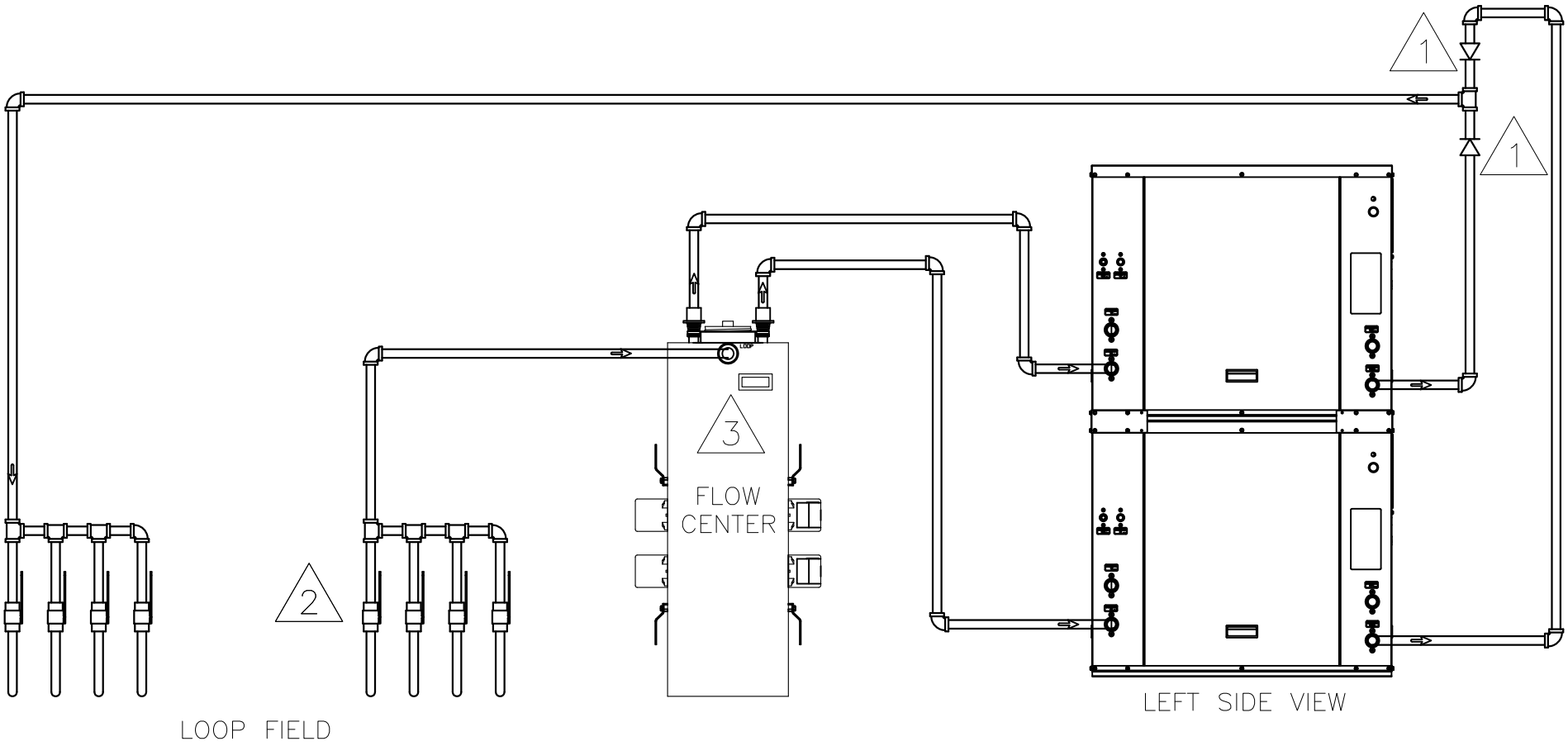
ONE PUMP STATION HOOKUP



NOTES:

1. ONE CONTROL INPUT, ONE LOOP PUMP SYSTEM.
2. REMOVE RED PRIMARY WIRE FROM TRANSFORMER ON BOTTOM UNIT.
3. FIELD ADD 1 TO 3 MIN. DELAY ON–MAKE TIMER.
4. FIELD ADD HW TO HW WIRE, R TO R WIRE, AND C TO C WIRE.

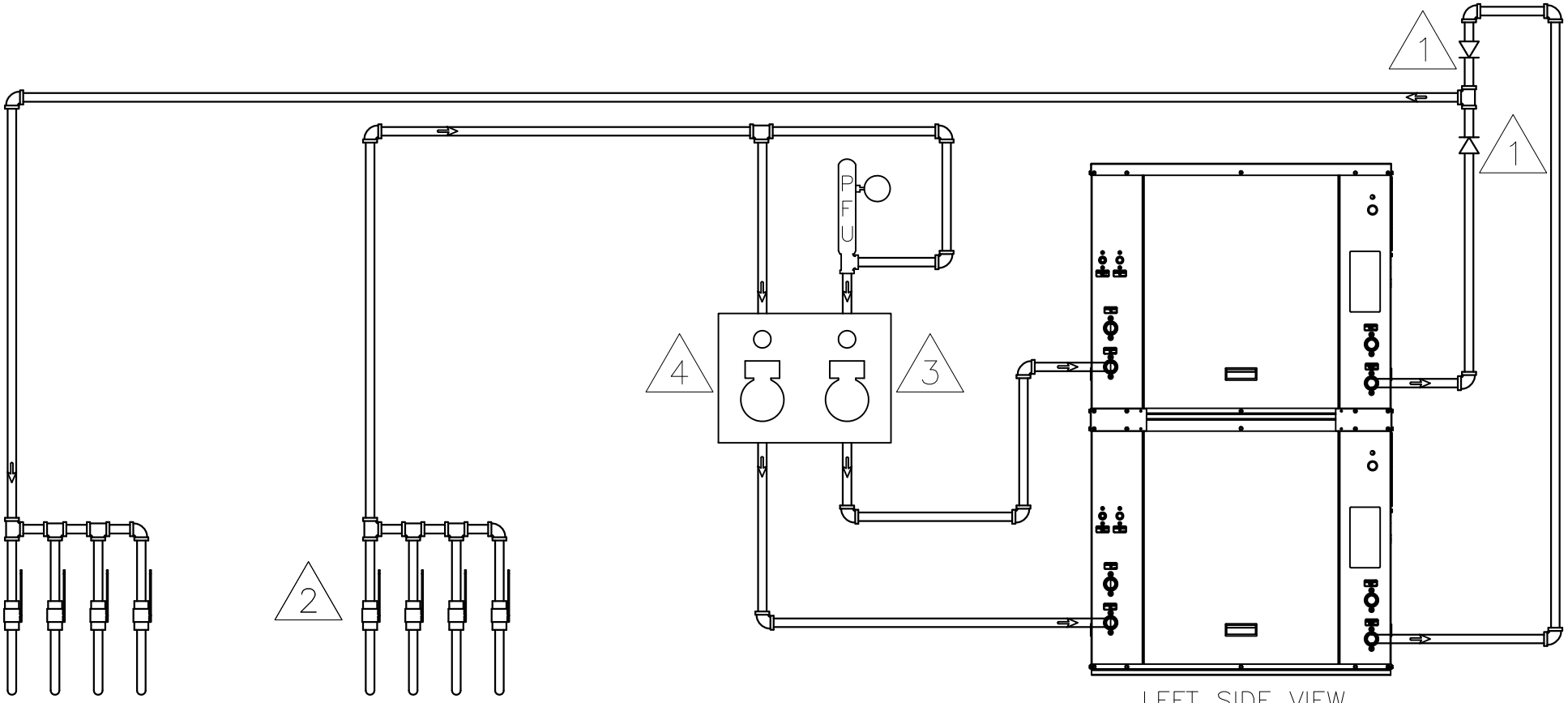
SOURCE - QT-2EA-SS-QFC LOAD CENTER - NON-PRESSURE
4 PUMP - SPLIT



NOTES:

1. CHECK VALVE REQUIRED.
2. RETURN.
3. FLOW CENTER WIRING, SEE PAGE 3.

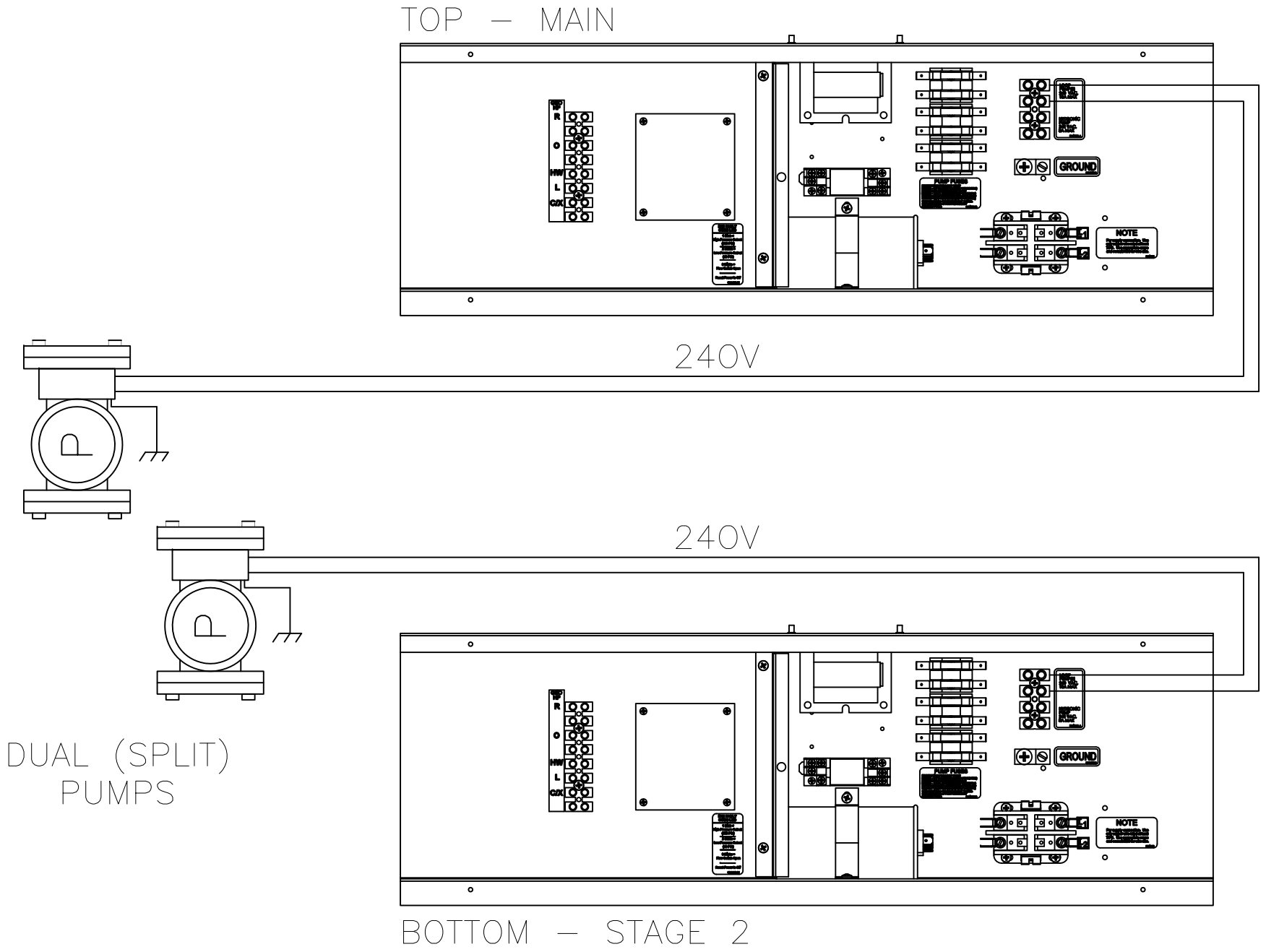
SOURCE - BGM*55 LOAD CENTER - PRESSURE
LARGE DUAL PUMP - SPLIT



NOTES:

1. CHECK VALVE REQUIRED.
2. RETURN.
3. FLOW CENTER WIRING, SEE PAGE 3.
4. PUMP CAN HAVE SPLIT LOAD RATING.

DUAL (SPLIT) PUMPS WIRING



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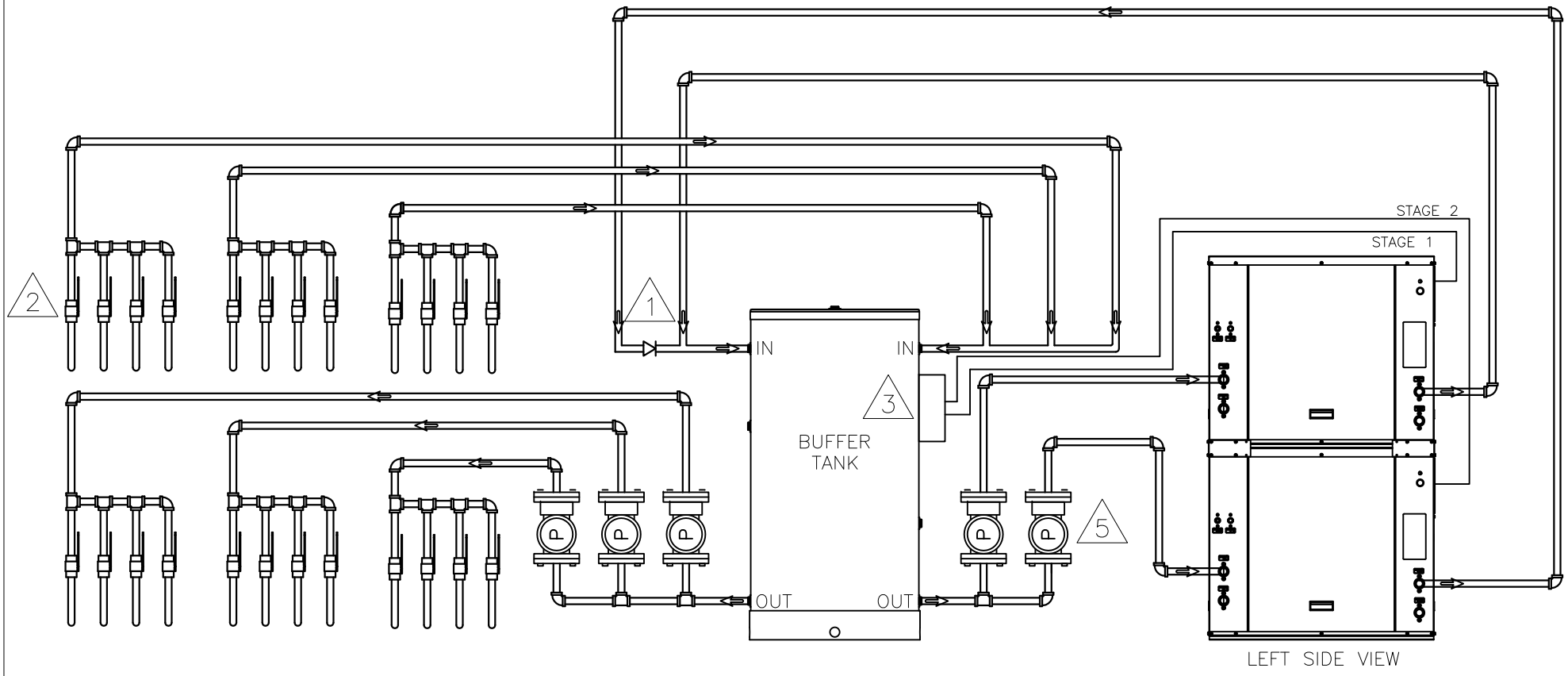
HYDRONIC - LOAD
BUFFER TANK
TWO STAGE CONTROL



NOTES:

1. CHECK VALVE REQUIRED.
2. RETURN.
3. BUFFER TANK CONTROLLER, 2 STAGE.
4. LOOP CONTROL CAN BE NH702 OR NH703.
5. PUMP GPM IS $\frac{1}{2}$ FL RATING.

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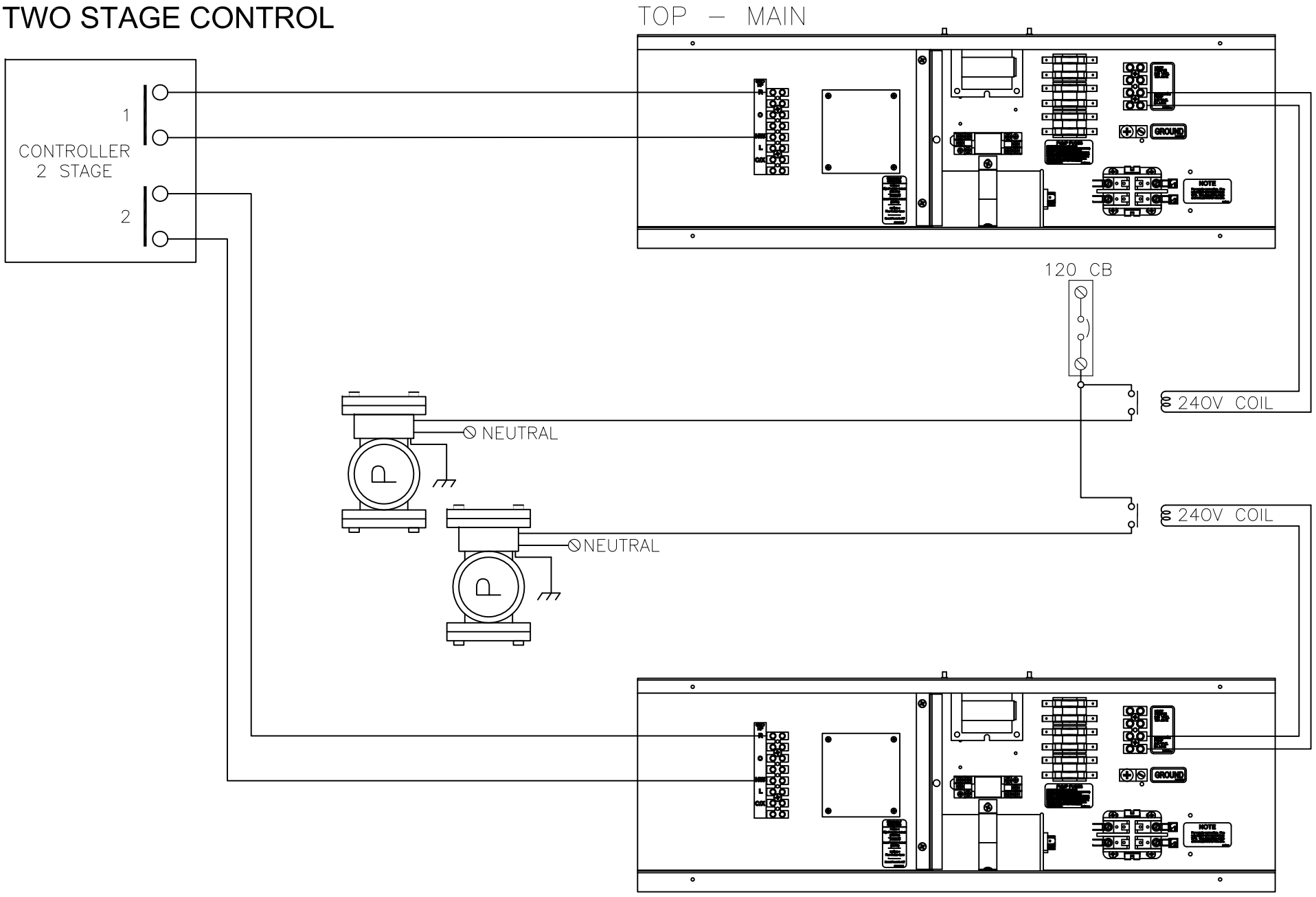
HYDRONIC - LOAD
BUFFER TANK
TWO STAGE CONTROL



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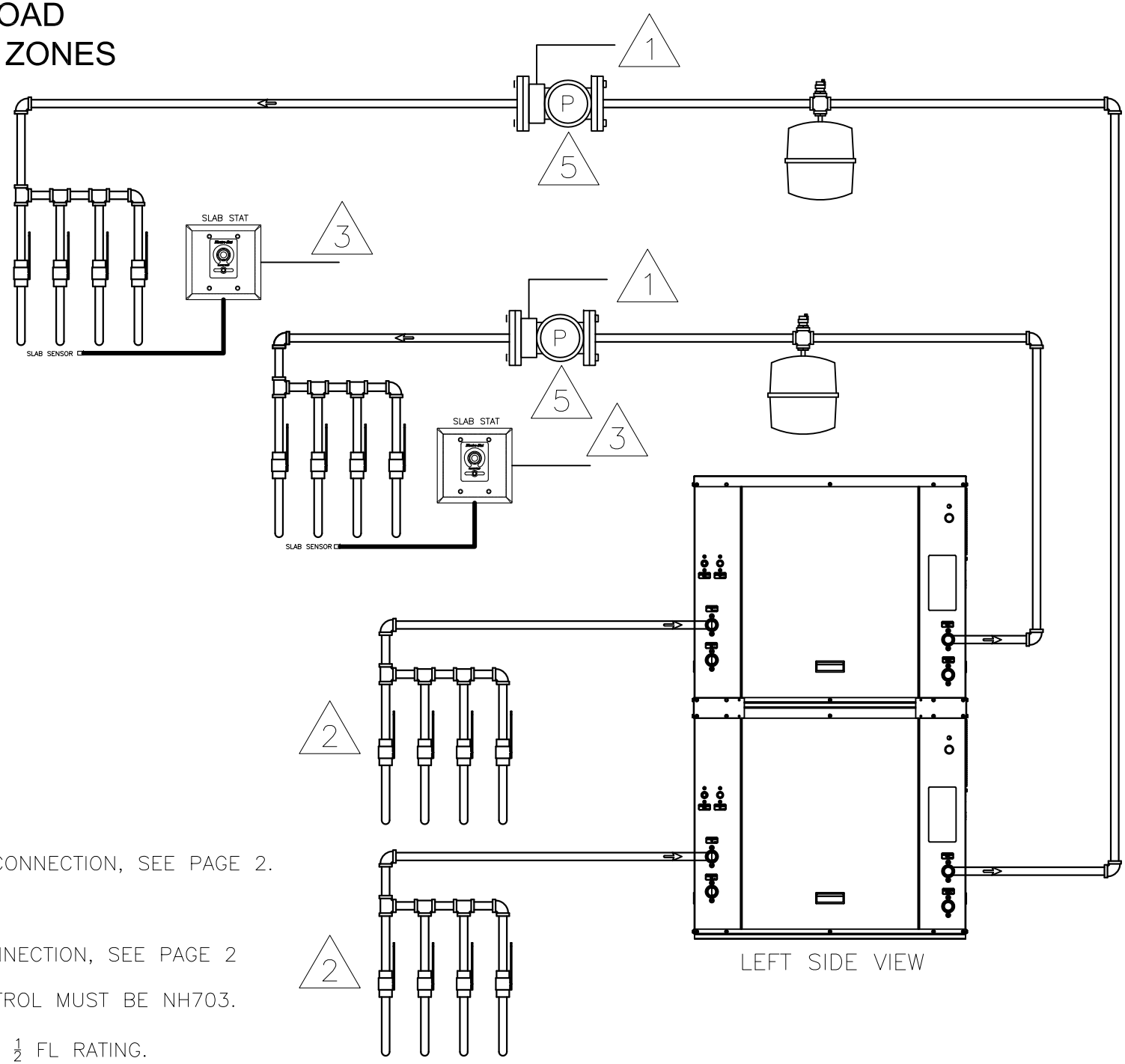
HYDRONICS - LOAD
TWO LARGE ZONES



NOTES:

1. LOAD PUMP CONNECTION, SEE PAGE 2.
2. RETURN.
3. CONTROL CONNECTION, SEE PAGE 2
4. SOURCE CONTROL MUST BE NH703.
5. PUMP GPM IS $\frac{1}{2}$ FL RATING.

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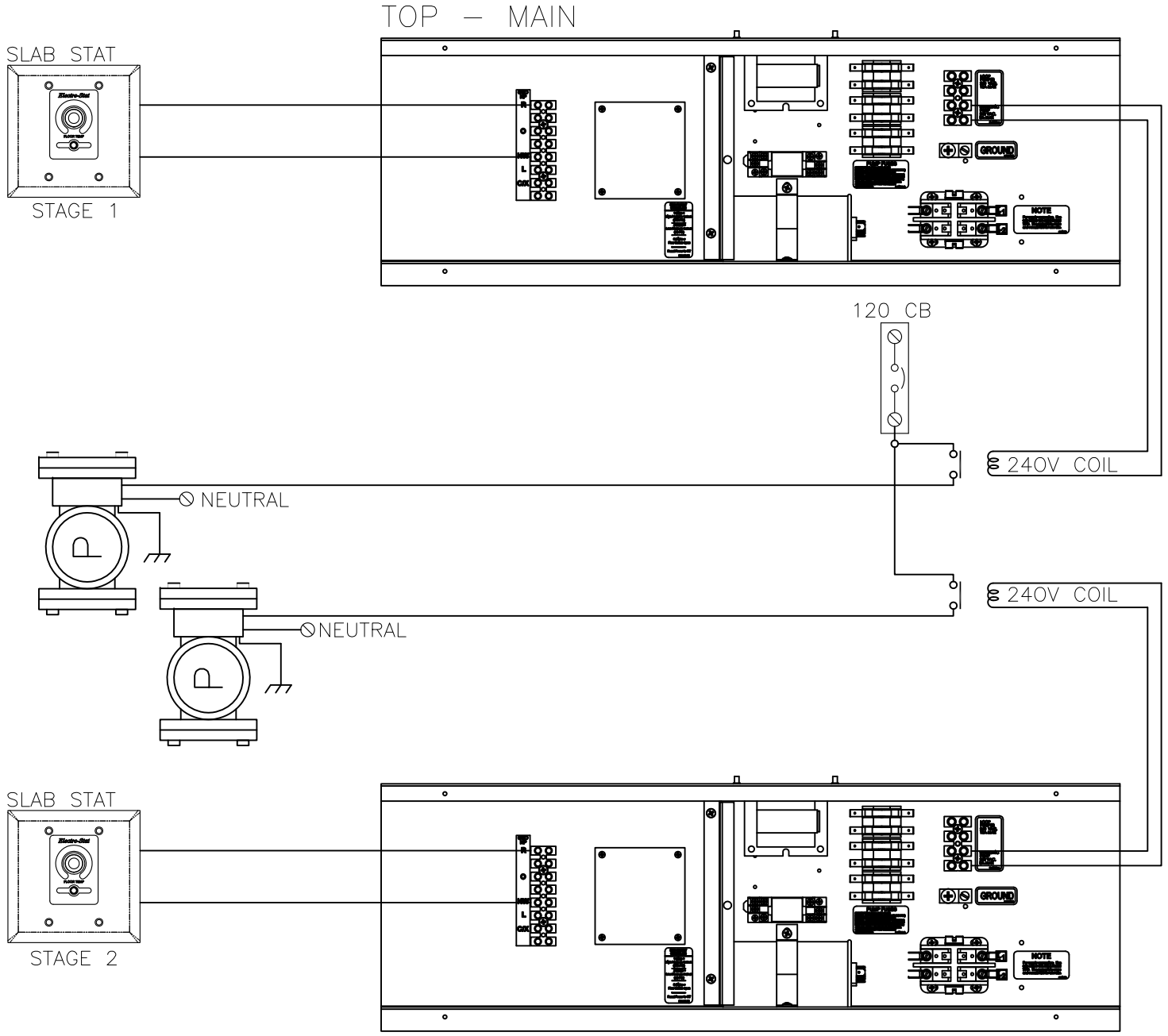
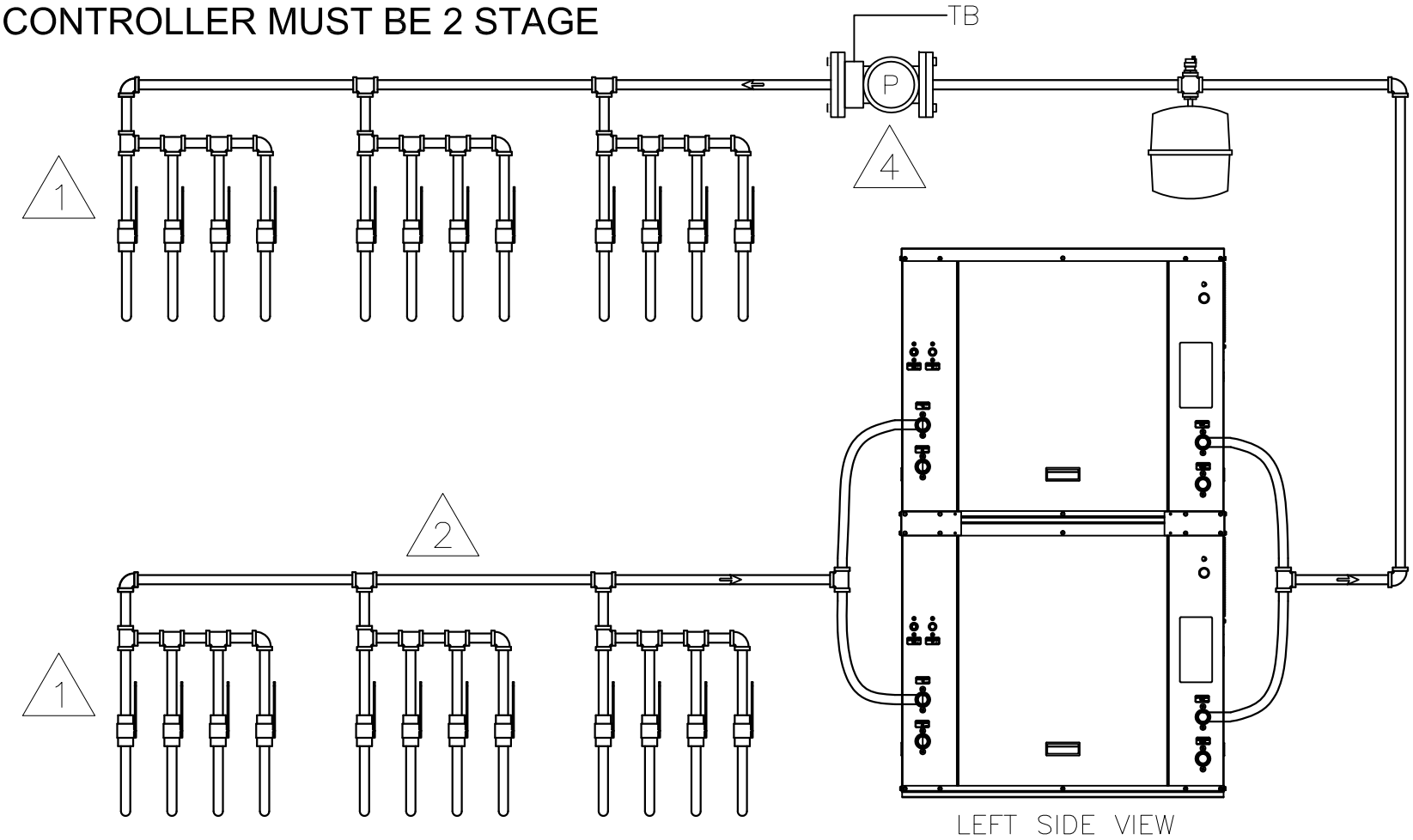
HYDRONICS - LOAD
TWO LARGE ZONES HOOKUP



HYDRONICS - LOAD
ONE LOAD DISTRIBUTION
ZONE CONTROLLER MUST BE 2 STAGE



LEFT SIDE VIEW

NOTES:

1. ZONE CONTROLLER (EB–Z**) 2 STAGE END SWITCH. END SWITCHES CONNECTED TO R & WH.
2. RETURN.
3. LOOP CONTROL CAN BE NH702, NH703.
4. PUMP GPM MUST BE FL RATING.

HYDRONICS - LOAD
ZONE CONTROLLER HOOKUP