



GEO-DELTA™ GW Series High Efficiency Geothermal/Water Source Water-to-Water Step-Capacity Heat Pump — R-410A

Ground Water Application: Water Temp 45° to 75°

Ground Loop Application: Temp Range 20° to 110°

The GEO-DELTA™ GW-Series Water-to-Water comfort system offers many hydronic options: radiant floor heating, domestic water heating and snow/ice melt. Reverse cycle models can also be coupled with fan-coil units where hot or cold water is passed through a water coil in an air handler to supply conditioned air to be distributed through a ducted supply and return air system.



NOTE: GEO-DELTA™ GW-SERIES MODELS ARE NOT APPROVED FOR USE AS POOL HEATERS OR FOR MARINE APPLICATIONS

Engineered Features

Steel Cabinet:

Galvanized 16 gauge zinc coated structural steel cabinet with baked-on, textured enamel which allows it to withstand 1000 hours of salt spray exposure per ASTM B117-03. Front and rear service doors are 20 gauge.

Stackable:

Units designed and constructed so they may be stacked up to 3 high where multiple unit installations are required. Component layout allows for full service ability even when units are stacked. Stacking tie-plates included.

Multi-Capacity Two-Stage:

Simple Aquastat control seamlessly stages the compressor between full and part load capacity operation without cycling the compressor. This helps to maximize energy efficiency and overall reduction in compressor cycling for improved system life.

Step Capacity Compressor:

Copeland step-capacity (2-stage) scroll compressors are designed for increased efficiency, quieter operation and improved reliability for longer life.

Compressor Sound Reduction:

Compressor is mounted on full floating base with double grommets and equipped with a sound cover.

R-410A Refrigerant:

Designed with R-410A (HFC) non-ozone depleting refrigerant in compliance with the Montreal protocol and 2010 EPA requirements.

Liquid Line Drier:

Protects system against moisture.

Lockout Circuit:

Built-in lockout circuit resets from the Aquastat. Provides commercial quality protection to the compressor with diagnostic lights to indicate the mode of failure.

High Pressure Switch:

Provides additional protection for the system.

Low Pressure Switch:

Two switches provided. Factory wired switch is for ground water applications, alternate switch is field connected for ground loop applications.

Fluid Flow Switches:

Provided for both source and load coils to assure proper flow for safe operation.

Thermostatic Expansion Valve:

For wide range refrigerant control (2-way operation).

Service Access Ports:

Permits service pressure check of discharge and suction pressures.

Source Fluid Connections:

Located on outside of cabinet. Brass full swivel double o-ring connection with 1" full flow ports.

Geothermal Logic Control:

With diagnostic lights for ease of troubleshooting.

Load Fluid Connections:

Located on outside of cabinet. 1" FPT copper connections.

Domestic Hot Water Generator:

Double wall vented heat exchanger, standard factory installed on reversible models, optional on heating only models. Circulating pump with ECM motor is factory installed. ½" FPT bronze connections.

Coaxial Source & Load Coils:

Dipped fully insulated water to refrigerant coils. Load coil is copper and both copper and cupronickel source coils available.

NOTE: Copper source coils are not warranted for ground water/open loop installations.

Power Supply for Source Fluid Flow Center:

Circuit breaker protected power for field installed source flow center.

24 Transformer:

75VA with built-in circuit breaker.

Reversible Control Panel:

Unit control panel can be reversed to opposite end from piping connections if needed for ease of installation and service.

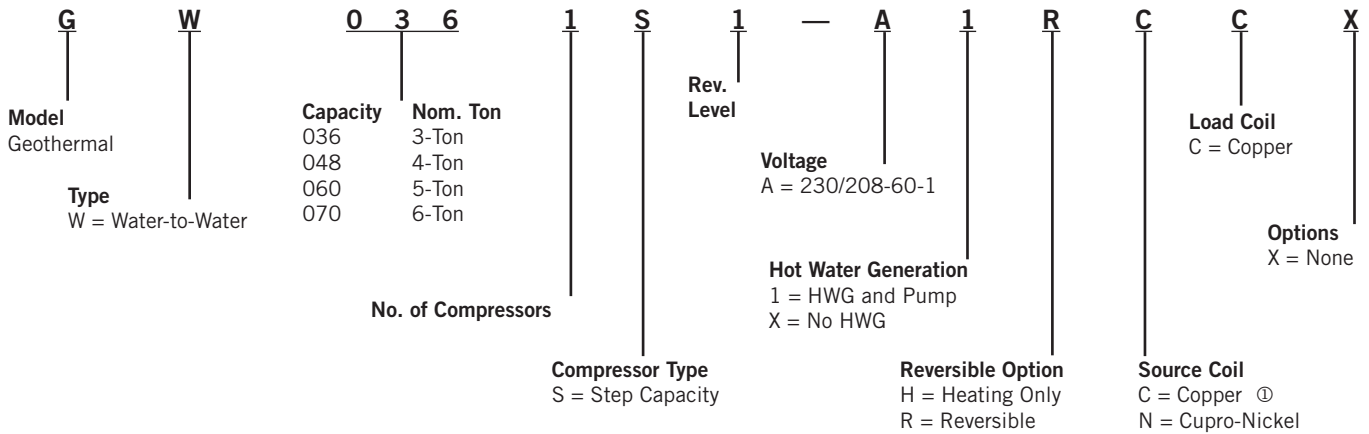
Electrical Entrance:

Four (4) field selectable electrical entrance locations for maximized installation flexibility.

Optional Accessories:

Water connection accessories and kits, Waterflow controls

GW-Series Geothermal / Water Source Heat Pump Nomenclature



① Copper source coils are not warranted for ground water/open loop installations.

Electrical Specifications

MODEL	GW036	GW048	GW060	GW070
Electrical Rating (Volts/Hertz/Phase)	208/230-60-1			
Operating Voltage Range	253-197 VAC			
Minimum Circuit Ampacity	21.4	28.8	36.1	39.4
+Field Wire Size	8	6	6	6
Ground Wire Size	12	10	10	10
++Delay Fuse of Circuit Breaker Max.	35	50	60	60
COMPRESSOR				
Volts				
Rated Load Amps (230/208)	12.2 / 14.0	17.6 / 20.3	21.8 / 24.1	29 / 32
Branch Circuit Selection Current	15.3	21.2	27.1	29.7
Locked Rotor Amps (230/208)	83.0	104.0	152.9	179.2
Flow Center (Based upon DORFC-2)				
Volts				
Amps				
Desuperheater Pump Motor				
Volts				
Amps				

+ 75°C copper wire ++ HACR type circuit breaker

Weights — Lbs.

MODEL	GW036	GW048	GW060	GW070
Shipping Weight with HWG (Reversible)	340	385	405	440

ISO 13256-2 Performance Data ①

MODEL	SYSTEM CAPACITY MODULATION	SOURCE FLUID FLOW RATE GPM	LOAD SIDE FLUID FLOW RATE GPM	GROUND LOOP HEAT PUMP Tested & Certified to ISO 13256-2			
				Cooling Brine ② Full Load 77°F Part Load 68°F		Heating Brine Full Load 32°F Part Load 41°F	
				CAPACITY BTUH ②	EER BTU/W ②	CAPACITY BTUH	COP
GW036	Full Load Part Load	9	9	29,000	15.3	27,000	3.10
				24,000	21.1	21,800	3.25
GW048	Full Load Part Load	11	11	42,500	16.5	36,000	3.05
				33,500	21.3	29,000	3.15
GW060	Full Load Part Load	13	13	50,500	15.6	44,500	3.00
				40,000	19.8	33,500	2.90
GW070	Full Load Part Load	15	15	60,000	15.0	52,000	2.90
				48,500	18.6	44,000	3.05

MODEL	SYSTEM CAPACITY MODULATION	SOURCE FLUID FLOW RATE GPM	LOAD SIDE FLUID FLOW RATE GPM	GROUND WATER HEAT PUMP Tested & Certified to ISO 13256-2			
				Cooling – 59°F EWT ②		Heating – 50°F EWT	
				CAPACITY BTUH ②	EER BTU/W ②	CAPACITY BTUH	COP
GW036	Full Load Part Load	9	9	28,000	18.3	34,000	3.85
				24,800	24.5	25,000	3.80
GW048	Full Load Part Load	11	11	44,000	21.2	47,000	3.85
				34,500	24.8	33,500	3.75
GW060	Full Load Part Load	13	13	54,000	20.0	57,000	3.70
				41,500	23.4	41,500	3.60
GW070	Full Load Part Load	15	15	65,500	19.7	66,000	3.60
				50,500	22.2	50,000	3.50

① ISO Standard 13256-2, “Water-to-Water & Brine-to-Water Heat Pumps”, which includes watt allowance for water pumping.
Cooling capacity based on 53.6°F liquid entering load side coil. Heating capacity based on 104°F liquid entering load side coil.

② Cooling ratings do not apply to Heating only models.



• Intertek ETL Listed to Standard for Safety Heating and Cooling Equipment ANSI/UL 1995/CSA 22.2 No. 236-05, Fourth Edition.

* The AHRI Certified® mark indicates Bard Manufacturing Company participation in the AHRI Certification program. For verification of individual certified products, go to www.ahridirectory.org.

RATED FLOW RATES FOR VARIOUS FLUIDS

APPLICATION	SOURCE	MODEL				
		GW024	GW036	GW048	GW060	GW070
Ground Loop (15% Methanol, Propylene, Glycol, etc.)	LOOP LOAD	7	9	11	13	15
		7	9	11	13	15
Ground Water	LOOP LOAD	7	9	11	13	15
		7	9	11	13	15

**WATER COIL PRESSURE DROPS
(Based upon 15% Methanol in Heating Mode @ 50°F EWT)**

MODEL	GW036		GW048		GW060		GW070		
	GPM	PSID	Ft. Hd.	PSID	Ft. Hd.	PSID	Ft. Hd.	PSID	Ft. Hd.
5		1.57	3.62						
6		2.19	5.05	1.63	3.75				
7		2.81	6.48	2.21	5.10				
8		3.56	8.21	2.80	6.45	1.76	4.06		
9		4.31	9.94	3.38	7.80	2.20	5.08		
10		5.18	11.95	4.12	9.49	2.64	6.09	2.6	6.07
11		6.05	13.96	4.85	11.19	3.08	7.11	3.1	7.17
12				5.70	13.15	3.58	8.25	3.6	8.28
13				6.55	15.11	4.07	9.39	4.1	9.39
14						4.63	10.67	4.6	10.58
15						5.18	11.95	5.1	11.77
16						5.74	13.23	5.7	13.12
17								6.3	14.46
18								6.9	15.81

MULTIPLIERS

NOTE: All Capacity Tables in this Specification are based upon 15% Methanol Solution

SOLUTION	ANTIFREEZE %	HEATING EWT (°F)		COOLING EWT (°F)		PRESSURE DROP
		LOAD	SOURCE	LOAD	SOURCE	
		90	30	45	90	
WATER	0	1.0225	1.0633	1.0588	1.0225	0.8606
ETHANOL	10	1.0133	0.9856	0.9963	1.0133	1.0688
	15	1.0036	0.9644	0.9751	1.0036	1.1123
	20	0.9939	0.9431	0.9539	0.9939	1.1558
	25	0.9811	0.9266	0.9354	0.9811	1.1730
	30	0.9683	0.9102	0.9169	0.9683	1.1902
	35	0.9596	0.8884	0.8957	0.9596	1.2504
	40	0.9509	0.8666	0.8745	0.9509	1.3107
METHANOL	10	1.0082	1.0175	1.0174	1.0082	0.9699
	15	1.0000	1.0000	1.0000	1.0000	1.0000
	20	0.9918	0.9825	0.9825	0.9918	1.0301
	25	0.9821	0.9670	0.9661	0.9821	1.0465
	30	0.9724	0.9516	0.9497	0.9724	1.0628
	35	0.9647	0.9346	0.9328	0.9647	1.1007
	40	0.9571	0.9176	0.9158	0.9571	1.1386
PROPYLENE GLYCOL	10	1.0031	1.0186	1.0154	1.0031	0.9725
	15	0.9969	0.9947	0.9942	0.9969	1.0327
	20	0.9908	0.9708	0.9730	0.9908	1.0929
	25	0.9811	0.9394	0.9449	0.9811	1.1631
	30	0.9714	0.9080	0.9169	0.9714	1.2332
	35	0.9647	0.8862	0.8973	0.9647	1.3111
	40	0.9581	0.8644	0.8777	0.9581	1.3890

Antifreeze concentrations above 35% should be avoided due to the extreme performance penalty presented.

LEGEND:

EWT = Entering Water Temperature

LWT = Leaving Water Temperature

GPM = Gallons per Minute

LOAD = Water Loop servicing the conditioned/controlled space

SOURCE = Heat Absorption or Heat Rejection Loop (ground loop or ground water system)

KW = Kilowatts

BtuH = British thermal units per Hour

Antifreeze Percentages by Volume

MINIMUM TEMPERATURE FOR FREEZE PROTECTION

Type	25°F (-3.9°C)	20°F (-6.7°C)	15°F (-9.4°C)	10°F (-12.2°C)
Ethanol *	14%	20%	25%	29%
Methanol	10%	16%	21%	25%
100% USP Food Grade Propylene Glycol	13%	20%	24%	27%

* Must not be denatured with any petroleum based product.

Ground Water/Water Loop Accessories

Heat Pump Model	Bard Part Number	Required Quantity	Description
All	GWK-1	1	Ground Water Kit containing: (2) 1" MPT 90° double o-ring elbows with 1/4" FPT ports and 8603-026 pressure/temperature test plugs (for heat pump connection). See DORMP1-90 for reference (1) 3/4" FPT 24V brass motorized slow open/close ball valve w/end switch—See 8603-033 for reference.
NOTE: Order correct constant flow valve for rated GPM of heat pump, 1 required per unit			
GW036	CFV-9	1	Constant flow valve, 9 GPM, 3/4" FPT
GW048	CFV-11	1	Constant flow valve, 11 GPM, 3/4" FPT
GW060	CFV-13	1	Constant flow valve, 13 GPM, 3/4" FPT
GW070	CFV-15	1	Constant flow valve, 15 GPM, 3/4" FPT



Elbow, 1" MPT X Double
O-ring with 1/4" Port and Pressure/
Temperature Test Plugs
DORMP1-90



8603-033 (3/4" FPT)
8603-038 (1" FPT)



8603-006

Water Supply Valves			
8603-033	Each	3/4" FPT 24V brass slow open/close ball valve with end switch	
8603-038	Each	1" FPT 24V brass slow open/close ball valve with end switch	
8603-006	Each	1" FPT 24V PVC solenoid valve with flow control and internal manual bleed lever	

Individual Double O-Ring Fitting Packs (Qty. 2 per pack)	
DORB1-90-4HC	(2) 1" barbed 90° double o-ring elbows with 1/4" FPT ports, 8603-026 pressure/temperature test plugs, and (4) SS 1" hose clamps
DORB1-S-4HC	(2) 1" barbed straight double o-ring fittings with (4) 1" SS hose clamps
DORMP1-90	(2) 1" MPT 90° double o-ring elbows with 1/4" FPT ports and 8603-026 pressure/temperature test plugs
DORMP1-S	(2) 1" MPT straight double o-ring fittings
DORFP1-S	(2) 1" FPT straight double o-ring fittings
DORS1-S	(2) 1" copper sweat straight double o-ring fittings with 1/4" FPT ports and 8603-026 pressure/temperature test plugs



1" MPT X Double O-ring
DORMP1-S



1" FPT X Double O-ring
DORFP1-S



1" Copper Sweat X Double O-ring with 1/4"
FPT Port & Pressure/Temperature Test Plugs
DORS1-S

Ground Water/Water Loop Service Accessories

All	8603-012	Each	Flow Meter, 1-10 GPM, 3/4" FPT
All	8603-017	Each	Flow Meter, 1-17 GPM, 1" FPT
All	8603-026	Each	1/4" pressure/temperature test plug
All	8603-027	Each	1/4" FPT gauge adapter w/ 1/8" heavy duty probe
All	8603-028	Each	1/4" MPT 0-100 PSI gauge
All	8603-029	Each	Pocket thermometer, 1/8" probe, 0 to +220F



8603-017



8603-026



8603-027



8603-028



8603-029

Ground Loop Accessories

Heat Pump Model	Bard Part Number	Required Quantity	Description
NOTE: Order 1 loop flow center based on required GPM for heat pump and feet of head required for loop:			
All	DORFC-1	1	Loop Flow Center with Cabinet, 230V-60Hz-1Ph, (1) 3-speed pump, 22 Ft. Hd. @ 16 GPM, double o-ring fittings
All	DORFC-2	1	Loop Flow Center with Cabinet, 230V-60Hz-1Ph, (2) 3-speeds pump, 44 Ft. Hd. @ 16 GPM, double o-ring fittings
All	DORGPT-1	1	Geo-Prime non-pressurized tank with double o-ring fittings; designed for use with DORFC Loop Flow Centers to create a non-pressurized flow center system.
All	DORLFCK-1	1	Loop Flow Center Kit containing: (2) 1" barbed 90° double o-ring elbows with 1/4" FPT ports and 8603-026 pressure/temperature test plugs (for heat pump connection). See DORB1-90-4HC for reference (2) 1" barbed straight double o-ring fittings (for loop flow center connection on heat pump side) See DORB1-S-4HC for reference (1) 12' section of 1" ID 150 PSI hose (8) 1" SS hose clamps
NOTE: Order 1 of the following for loop-side connections to loop flow center:			
All	DORB1-S-4HC	1	(2) 1" barbed straight double o-ring fittings with (4) 1" SS hose clamps
All	DORF125-S	1	(2) 1.25" fusion straight double o-ring fittings

* See Bard 2100-518 Installation Manual for pump curves and additional information.



DORFC-2
(Shown)



DORGPT-1



Elbow, 1" Hose Barb X Double O-ring with 1/4" Port and Pressure/Temperature Test Plugs
DORB1-90-4HC



1" Hose Barb X Double O-ring
DORB1-S-4HC



1-1/4" Socket Fusion X Double O-ring
DORF125-S

Ground Loop Service Accessories

Heat Pump Model	Bard Part Number	Required Quantity	Description
	DORCL1-90	Each	(2) 90° double o-ring quick-connect cam-lever male fittings for flush attachment to loop flow center
	CLB1-S	Each	(2) 1" straight barbed quick-connect cam-lever female fittings to connect to DORCL1-90 fittings above
	GGK-1	Each	(1) Geo-Gooser w/shut-off valve, 0-100 PSI gauge, garden hose connection, P/T fitting 1/8" probe
	DORGHMT	Each	(2) Double o-ring x male garden hose adapter fitting for loop flow center (to burp/boost loop)



1" Cam Lever Male X Double O-ring
DORCL1-90



CLB1-S

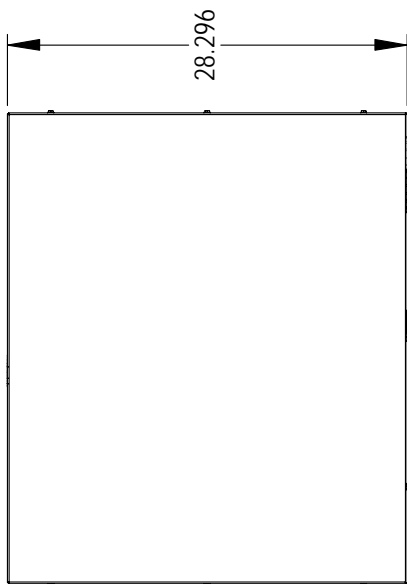


Garden Hose Male X O-ring (single) Adapter
DORGHMT

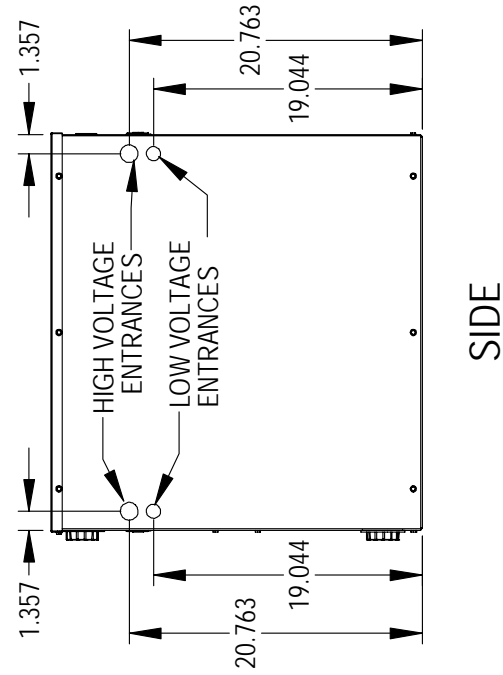
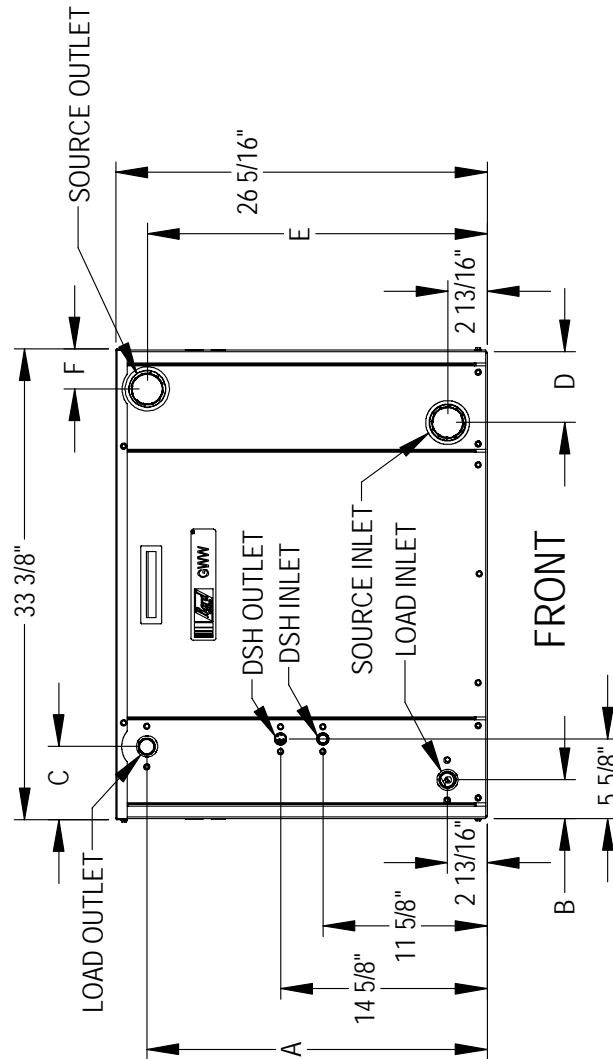


GGK-1

TOP

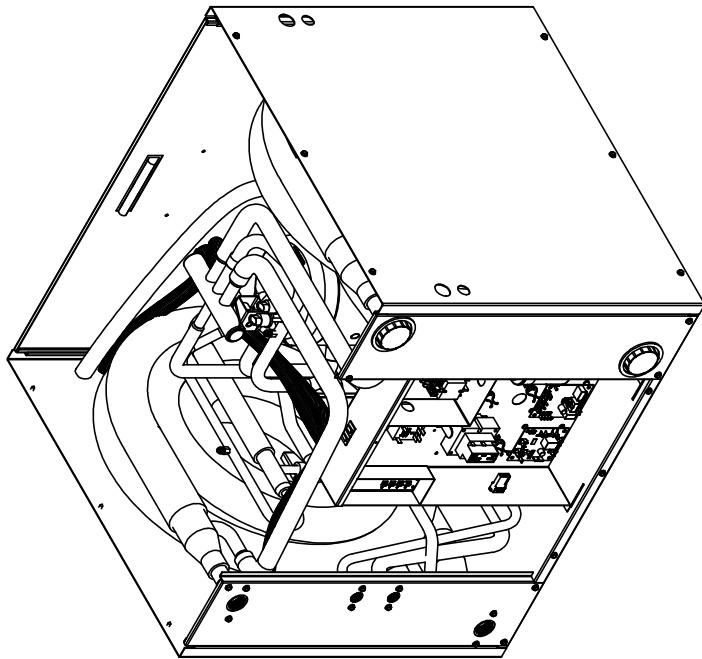


UNIT	A	B	C	D	E	F
GW036	19 1/2"	3 1/2"	5 3/8"	5 1/2"	19 7/16"	3 1/2"
GW048	20 5/16"	3 1/2"	5 5/16"	5 7/16"	20 5/16"	3 11/16"
GW060	21 3/8"	2 3/4"	5 1/4"	5 1/8"	21 3/8"	3"
GW070	24 1/8"	2 3/4"	5 1/8"	5"	24 1/16"	2 5/8"

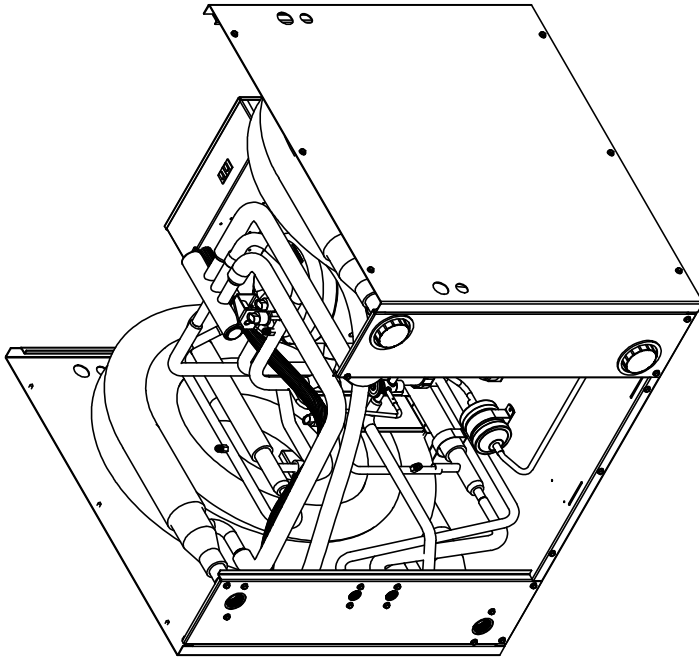


SIDE

CONTROL PANEL LOCATIONS

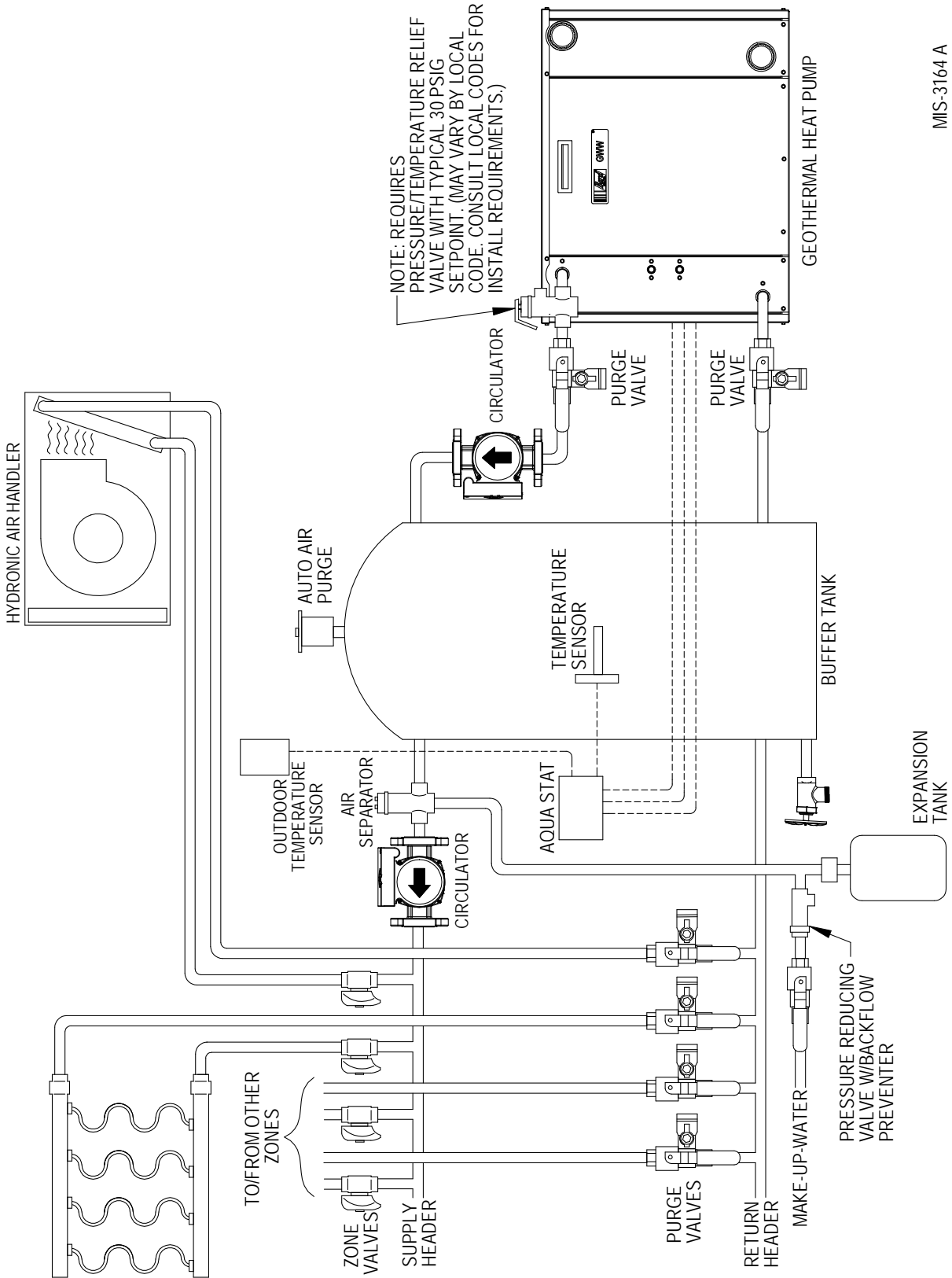


FRONT - AS SHIPPED LOCATION



OPTIONAL REAR LOCATION

NOTES



MIS-3164 A



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Due to our continuous product improvement policy,
 all specifications subject to change without notice.

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