GEOTEC® GV – Series High Efficiency Geothermal/Water Source Packaged Step-Capacity Heat Pump — R-410A

Ground Water Application: Water Temp 45° to 75°

Ground Loop Application: Temp Range 25° to 110°

The Bard GEOTEC® Geothermal/Water Source Packaged Heat Pump delivers economical year-round comfort by utilizing nature's most abundant and efficient solar energy collector – the earth. The GV Series heat pumps are designed for low water flow rates and offer cooling efficiencies up to 30.2 EER and heating efficiencies up to 5.35 COP on ground water, and cooling efficiencies up to 26.0 EER and heating efficiencies up to 4.6 COP on ground loop.

All units are shipped prewired for fast, easy installation in residential or commercial buildings. They are available in five popular, vertical, self-contained models. Left hand or right hand option in same cabinet. Unit shipped as right hand and can be field converted to left hand.

TYPICAL INSTALLATION

Unit installs upright and hooks up conveniently to supply water system. Ideal for closet, basement, or utility room installation. Requires very little floor space. Can be installed with or without return air duct.

GV Model Shown with Optional GVDM-26 Desuperheater Pump Module (Field Installed)

Engineered Features

Steel Cabinet:
Galvanized 20 gauge zinc coated steel cabinet with baked-on, textured enamel which allows it to withstand 1000 hours of salt spray exposure.

Multi-Capacity Two-Stage:
Simple thermostatic control seamlessly stages the compressor and indoor airflow rate between full and part load capacity operation without cycling the compressor. This helps to maximize comfort, humidity control, 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 is equipped with discharge muffler.

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 room thermostat. Provides commercial quality protection to the compressor.

High Pressure Switch:
Provides additional protection for the system.

Control Panel:
Mid-level for easy access can be reversed to other side for installation flexibility.

Fluid Flow Switches:
Provided for both source and load coils to assure proper flow for safe operation.

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

High Efficiency Coaxial Water Coil in either Copper or Cupronickel:
Water to refrigerant coil is completely insulated to prevent frost build-up at low temperature operation. **NOTE:** Copper water coils are not warranted for ground water/open loop installations.

Indoor Air Coil:
Grooved copper tubing and enhanced louvered aluminum fin for maximum heat transfer and energy efficiency.

Coil coating is black E-Coat electrostatic coating on complete coil.

Service Access Ports:
Permits service pressure check of discharge and suction pressures.

Filter Rack:
Factory installed with 2" MERV 8 pleated filter (reversible for left or right side access).

Thermostatic Expansion Valve:
For wide range refrigerant control (2-way operation).

Optional Accessories:
Room thermostat - Water accessory kit - Waterflow controls.

Domestic Hot Water Heat Exchanger:
Double wall vented heat exchanger, factory installed on all models - optional GVDM-26 pump kit required for hot water heating.

Water Connections:
All water connections on outside of cabinet with dual side connections. Brass full swivel double o-ring connection with 1" full flow ports.

Electric Heat:
Slide in Electric Heater Package - up to 18KW can be field installed with circuit breakers as standard (reversible for left or right side access).

Variable Speed ECM Blower Motor:
- High Efficiency
- Soft starting - low noise on start up
- Continuous fan - will operate at 50% of rated Stage 2 airflow

Mild Weather Operation:
Part Load Cooling Operation will operate at 20% reduced airflow for the first 5 minutes of operation. This results in 32% increased applied moisture removal during this 5-minute period, and helps humidity control during short-run conditions. This is seamlessly controlled internal of the unit controls with no required user intervention.

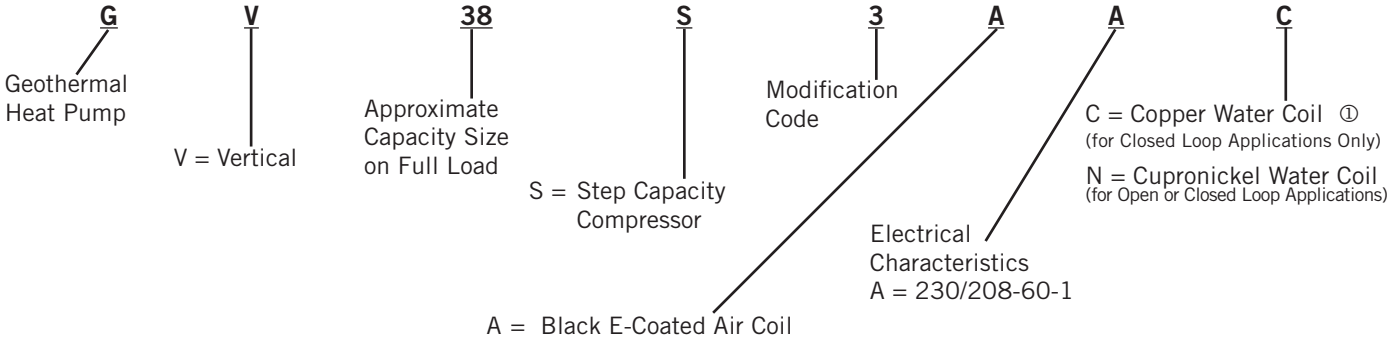
Condensate Drain Connection:
Centered side-to-side under indoor coil with integral trap and 4-installer selectable outlet connection points. Installer connection is 3/4" PVC Glue Fitting. Outlet is elevated for allowing condensate pump installation.

Service Ports:
On the cabinet exterior for easy access.

Geothermal Logic Control:
With diagnostic lights for ease of troubleshooting.

Discharge Muffler:
Installed to reduce compressor pulsations to improve sound level and quality.

GEOTEC® GV-Series Geothermal / Water Source Heat Pump Nomenclature



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

• 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.

Specifications

MODEL	GV27S3AA*	GV38S3AA*	GV51S3AA*	GV61S3AA*	GV71S3AA*
Electrical Rating (Volts/Hertz/Phase)	230/208-1				
Operating Voltage Range	253-197 VAC				
Minimum Circuit Ampacity ①	19	24	32	40	44
+Field Wire Size ①	#12	#10	#8	#6	#6
+ Ground Wire Size	12	10	10	10	8
++Delay Fuse of Circuit Breaker Max. ①	30	40	50	60	70
COMPRESSOR					
Volts	230/208				
Rated Load Amps (230/208)	7.5/8.6	12.0/13.65	15.8/17.6	21.9/24.2	26.3/28.9
Branch Circuit Selection Current	11.7	15.3	21.2	27.2	29.7
Locked Rotor Amps (230/208)	58.3/58.3	83.0/83.0	104.0/104.0	152.9/152.9	179.2/179.2
BLOWER MOTOR AND EVAPORATOR					
Blower Motor - HP/Speed/Type	1/3 / 5 / ECM	1/2 / 5 / ECM	1/2 / 5 / ECM	3/4 / 5 / ECM	3/4 / 5 / ECM
Blower Motor - Amps	1.5 / 1.6	2.5 / 2.95	2.8 / 3.0	3.8 / 4.1	4.1 / 4.2
Face Area Sq. Ft./Row/Fins Per Inch	3.16 / 4 / 11	3.16 / 4 / 11	5.33 / 3 / 11	5.33 / 4 / 11	5.33 / 5 / 10
AIR FILTERS					
2" Pleated MERV 8	2004-040	2004-040	2004-025	2004-025	2004-025
SHIPPING WEIGHT LBS.					
Shipping Weight	340	345	390	440	450

+75°C copper wire ++ HACR type circuit breaker
* C - for copper / N for Cupro-Nickel water coil
① Heat pump only. Optional field-installed heaters are separate circuit.

ISO 13256-1 Performance Data ①

MODEL	SYSTEM CAPACITY MODULATION	FLUID FLOW RATE GPM	AIRFLOW CFM	GROUND LOOP HEAT PUMP Tested & Certified to ISO 13256-1:1998					
				Cooling Brine Full Load 77°F Part Load 68°F			Heating Brine Full Load 32°F Part Load 41°F		
				CAPACITY BTUH	EER BTU/W	Energy Star Rating	CAPACITY BTUH	COP	Energy Star Rating
GV27	Full Load Part Load	7.00 7.00	1000 800	26,600 20,800	18.10 26.00	22.05	20,200 17,100	4.10 4.60	4.35
GV38	Full Load Part Load	9.00 9.00	1300 900	38,500 28,600	17.10 24.90	21.00	31,400 24,200	4.05 4.45	4.25
GV51	Full Load Part Load	12.00 12.00	1500 1150	49,500 38,600	17.10 23.80	20.45	39,500 32,000	3.75 4.15	3.95
GV61	Full Load Part Load	15.00 15.00	1600 1300	60,500 46,500	16.20 21.40	18.80	49,000 37,400	3.50 3.65	3.58
GV71	Full Load Part Load	16.00 16.00	1750 1450	69,500 56,500	15.30 19.80	17.55	57,000 48,450	3.65 4.00	3.83

MODEL	SYSTEM CAPACITY MODULATION	FLUID FLOW RATE GPM	AIRFLOW CFM	GROUND WATER HEAT PUMP Tested & Certified to ISO 13256-1:1998					
				Cooling – 59°F EWT			Heating – 50°F EWT		
				CAPACITY BTUH	EER BTU/W	Energy Star Rating	CAPACITY BTUH	COP	Energy Star Rating
GV27	Full Load Part Load	7.00 7.00	1000 800	26,600 22,200	22.80 30.20	26.50	26,200 19,800	5.00 5.35	5.18
GV38	Full Load Part Load	9.00 9.00	1300 900	41,400 30,200	22.00 29.50	25.75	38,600 27,600	4.70 4.95	4.83
GV51	Full Load Part Load	12.00 12.00	1500 1150	53,500 40,500	21.70 29.10	25.40	49,500 36,000	4.45 4.60	4.53
GV61	Full Load Part Load	15.00 15.00	1600 1300	65,500 49,500	20.50 25.80	23.15	62,500 45,500	4.10 4.30	4.20
GV71	Full Load Part Load	16.00 16.00	1750 1450	75,500 59,000	19.90 23.50	21.70	73,500 56,000	4.20 4.40	4.30

① ISO Standard 13256-1:1998, "Water to Air and Brine to Air Heat Pumps", which includes watt allowance for water pumping.
Cooling capacity based on 80.6°F DB, 66.2°F WB entering air temperature. Heating capacity based on 68°F DB entering air temperature.

GV27S3

Full Load Capacities based upon rated flow of 7 GPM at 1000 CFM airflow.

COOLING FULL LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (KW)	Heat of Rejection (MBtuH)	EER
50°	70° DB 59° WB	29.5	22.9	0.77	1.05	33.1	24.2
60°		27.9	22.2	0.79	1.21	32.0	21.7
70°		26.3	21.5	0.82	1.37	30.8	19.2
80°		24.8	20.8	0.84	1.54	29.6	16.7
90°		23.2	20.0	0.87	1.70	28.5	14.2
100°		21.7	19.3	0.89	1.86	27.3	11.7
110°		20.1	18.6	0.92	2.02	26.1	9.2
50°	75° DB 63° WB	31.6	23.8	0.74	1.07	35.6	25.6
60°		30.0	23.1	0.76	1.23	34.3	23.0
70°		28.3	22.4	0.79	1.39	33.1	20.4
80°		26.7	21.7	0.81	1.55	31.9	17.7
90°		25.0	20.9	0.84	1.71	30.7	15.1
100°		23.4	20.2	0.86	1.87	29.4	12.5
110°		21.7	19.5	0.89	2.03	28.2	9.8
50°	80° DB 67° WB	33.9	24.7	0.71	1.09	38.1	27.1
60°		32.2	23.9	0.74	1.25	36.9	24.4
70°		30.4	23.2	0.76	1.41	35.6	21.6
80°		28.7	22.5	0.79	1.57	34.3	18.8
90°		26.9	21.8	0.81	1.73	33.0	16.1
100°		25.2	21.1	0.84	1.89	31.7	13.3
110°		23.4	20.4	0.86	2.05	30.4	10.5
50°	85° DB 71° WB	36.3	25.5	0.69	1.11	40.8	28.6
60°		34.5	24.7	0.71	1.27	39.5	25.7
70°		32.6	24.0	0.74	1.43	38.1	22.8
80°		30.7	23.3	0.76	1.59	36.8	19.9
90°		28.9	22.6	0.79	1.75	35.4	17.0
100°		27.0	21.9	0.81	1.91	34.0	14.1
110°		25.1	21.2	0.84	2.07	32.7	11.3

HEATING FULL LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Leaving Air Temp. (°F)	Power Input (KW)	Heat of Absorption (MBtuH)	COP
25°	65°	19.3	82.9	1.41	14.9	4.1
30°		21.1	84.5	1.44	16.6	4.3
40°		24.5	87.7	1.51	19.9	4.7
50°		28.0	90.9	1.58	23.2	5.2
60°		32.0	94.6	1.69	26.9	5.5
70°		36.0	98.3	1.79	30.5	5.9
80°		39.9	102.0	1.90	34.2	6.2
25°	70°	18.9	87.5	1.45	14.5	3.9
30°		20.6	89.1	1.48	16.1	4.1
40°		24.0	92.2	1.55	19.3	4.6
50°		27.4	95.4	1.62	22.6	5.0
60°		31.3	99.0	1.73	26.1	5.3
70°		35.2	102.6	1.84	29.7	5.6
80°		39.0	106.2	1.95	33.2	5.9
25°	75°	19.1	92.7	1.62	14.0	3.5
30°		20.8	94.3	1.66	15.6	3.7
40°		24.3	97.5	1.74	18.7	4.1
50°		27.7	100.6	1.82	21.9	4.5
60°		31.6	104.3	1.94	25.3	4.8
70°		35.5	107.9	2.07	28.8	5.0
80°		39.5	111.6	2.19	32.2	5.3

Part Load Capacities based upon rated flow of 7 GPM at 800 CFM airflow.

COOLING PART LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (KW)	Heat of Rejection (MBtuH)	EER
50°	70° DB 59° WB	22.3	17.9	0.79	0.52	24.3	32.0
60°		21.1	17.4	0.82	0.67	23.5	28.2
70°		19.9	16.8	0.85	0.82	22.7	24.3
80°		18.7	16.3	0.88	0.97	21.8	20.5
90°		17.4	15.7	0.90	1.12	21.0	16.7
100°		16.2	15.2	0.93	1.27	20.2	12.8
110°		15.0	14.6	0.96	1.42	19.4	9.0
50°	75° DB 63° WB	23.9	18.6	0.76	0.53	26.1	34.0
60°		22.6	18.0	0.79	0.68	25.2	29.9
70°		21.4	17.5	0.82	0.83	24.4	25.9
80°		20.1	17.0	0.85	0.98	23.5	21.8
90°		18.8	16.4	0.88	1.13	22.6	17.8
100°		17.5	15.9	0.91	1.28	21.8	13.7
110°		16.2	15.3	0.94	1.43	20.9	9.6
50°	80° DB 67° WB	25.7	19.2	0.73	0.54	28.0	35.9
60°		24.3	18.7	0.76	0.69	27.1	31.7
70°		22.9	18.2	0.79	0.84	26.2	27.4
80°		21.6	17.6	0.82	0.99	25.3	23.1
90°		20.2	17.1	0.85	1.14	24.4	18.9
100°		18.9	16.6	0.88	1.29	23.5	14.6
110°		17.5	16.0	0.91	1.44	22.5	10.3
50°	85° DB 71° WB	27.5	19.9	0.71	0.55	29.9	37.9
60°		26.0	19.3	0.74	0.70	29.0	33.4
70°		24.6	18.8	0.76	0.85	28.0	28.9
80°		23.1	18.3	0.79	1.00	27.1	24.5
90°		21.7	17.7	0.82	1.15	26.1	20.0
100°		20.2	17.2	0.85	1.30	25.2	15.5
110°		18.8	16.7	0.88	1.45	24.2	11.1

HEATING PART LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Leaving Air Temp. (°F)	Power Input (KW)	Heat of Absorption (MBtuH)	COP
25°	65°	14.5	81.8	1.07	11.2	4.0
30°		16.0	83.5	1.08	12.6	4.3
40°		18.8	86.7	1.10	15.5	5.0
50°		21.6	90.0	1.12	18.4	5.7
60°		24.2	93.0	1.14	20.9	6.2
70°		26.8	96.0	1.17	23.5	6.7
80°		29.4	99.0	1.19	26.0	7.3
25°	70°	14.2	86.5	1.10	10.9	3.8
30°		15.6	88.1	1.11	12.3	4.1
40°		18.4	91.3	1.13	15.1	4.8
50°		21.1	94.4	1.15	17.9	5.4
60°		23.7	97.4	1.18	20.3	5.9
70°		26.2	100.3	1.20	22.8	6.4
80°		28.8	103.3	1.23	25.3	6.9
25°	75°	14.4	91.6	1.24	10.6	3.4
30°		15.8	93.3	1.25	11.9	3.7
40°		18.6	96.5	1.27	14.6	4.3
50°		21.4	99.7	1.29	17.3	4.8
60°		23.9	102.7	1.32	19.7	5.3
70°		26.5	105.7	1.35	22.1	5.8
80°		29.1	108.6	1.38	24.5	6.2

GV38S3

Full Load Capacities based upon rated flow of 9 GPM at 1300 CFM airflow.

COOLING FULL LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (KW)	Heat of Rejection (MBtuH)	EER
50°	70° DB 59° WB	38.3	29.0	0.75	1.59	43.5	21.1
60°		36.6	28.3	0.77	1.83	42.5	19.0
70°		35.0	27.6	0.79	2.07	41.5	16.9
80°		33.3	27.0	0.81	2.30	40.6	14.9
90°		31.6	26.3	0.84	2.54	39.6	12.8
100°		29.9	25.6	0.86	2.78	38.7	10.8
110°		28.2	25.0	0.88	3.02	37.7	8.7
50°	75° DB 63° WB	41.2	30.1	0.72	1.62	46.7	22.3
60°		39.4	29.4	0.74	1.85	45.7	20.2
70°		37.6	28.8	0.77	2.09	44.7	18.0
80°		35.8	28.1	0.79	2.33	43.7	15.8
90°		34.0	27.5	0.81	2.57	42.7	13.7
100°		32.2	26.8	0.83	2.80	41.7	11.5
110°		30.4	26.2	0.85	3.04	40.7	9.3
50°	80° DB 67° WB	44.2	31.2	0.70	1.65	50.0	23.6
60°		42.3	30.5	0.72	1.88	49.0	21.4
70°		40.4	29.9	0.74	2.12	48.0	19.1
80°		38.5	29.2	0.76	2.36	47.0	16.8
90°		36.6	28.6	0.78	2.59	45.9	14.5
100°		34.7	28.0	0.81	2.83	44.9	12.3
110°		32.8	27.3	0.83	3.07	43.9	10.0
50°	85° DB 71° WB	47.3	32.2	0.67	1.68	53.6	24.9
60°		45.3	31.5	0.69	1.91	52.5	22.5
70°		43.3	30.9	0.71	2.15	51.4	20.1
80°		41.3	30.3	0.74	2.39	50.4	17.8
90°		39.2	29.7	0.76	2.62	49.3	15.4
100°		37.2	29.0	0.78	2.86	48.2	13.0
110°		35.2	28.4	0.80	3.09	47.1	10.7

HEATING FULL LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Leaving Air Temp. (°F)	Power Input (KW)	Heat of Absorption (MBtuH)	COP
25°	65°	26.1	83.6	2.06	19.7	3.7
30°		28.5	85.3	2.11	21.9	4.0
40°		33.1	88.6	2.21	26.3	4.4
50°		37.8	91.9	2.31	30.7	4.8
60°		42.6	95.3	2.45	35.0	5.1
70°		47.3	98.7	2.60	39.4	5.3
80°		52.1	102.1	2.75	43.8	5.6
25°	70°	25.5	88.2	2.11	19.1	3.5
30°		27.8	89.8	2.17	21.2	3.7
40°		32.4	93.1	2.27	25.5	4.2
50°		37.0	96.3	2.37	29.8	4.6
60°		41.6	99.6	2.52	34.0	4.8
70°		46.3	102.9	2.67	38.3	5.1
80°		50.9	106.3	2.82	42.5	5.3
25°	75°	25.8	93.4	2.37	18.5	3.2
30°		28.1	95.0	2.43	20.6	3.4
40°		32.8	98.3	2.55	24.7	3.8
50°		37.4	101.6	2.66	28.9	4.1
60°		42.1	105.0	2.83	33.0	4.3
70°		46.8	108.3	3.00	37.1	4.6
80°		51.5	111.7	3.17	41.2	4.8

Part Load Capacities based upon rated flow of 9 GPM at 900 CFM airflow.

COOLING PART LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (KW)	Heat of Rejection (MBtuH)	EER
50°	70° DB 59° WB	27.8	21.1	0.75	0.71	30.4	29.4
60°		26.4	20.5	0.77	0.91	29.6	26.0
70°		25.1	20.0	0.80	1.11	28.8	22.5
80°		23.7	19.4	0.82	1.31	28.0	19.1
90°		22.4	18.8	0.84	1.52	27.2	15.7
100°		21.0	18.3	0.87	1.72	26.4	12.2
110°		19.7	17.7	0.89	1.92	25.6	8.8
50°	75° DB 63° WB	29.9	21.9	0.72	0.72	32.6	31.2
60°		28.4	21.4	0.75	0.92	31.8	27.5
70°		27.0	20.8	0.77	1.12	30.9	23.9
80°		25.6	20.2	0.79	1.33	30.1	20.3
90°		24.1	19.7	0.82	1.53	29.3	16.7
100°		22.7	19.1	0.84	1.73	28.4	13.1
110°		21.3	18.6	0.87	1.94	27.6	9.5
50°	80° DB 67° WB	32.0	22.7	0.70	0.73	35.0	33.0
60°		30.5	22.1	0.72	0.94	34.1	29.2
70°		29.0	21.6	0.74	1.14	33.2	25.4
80°		27.5	21.0	0.77	1.34	32.3	21.6
90°		25.9	20.5	0.79	1.55	31.5	17.7
100°		24.4	19.9	0.82	1.75	30.6	13.9
110°		22.9	19.4	0.84	1.95	29.7	10.1
50°	85° DB 71° WB	34.3	23.4	0.67	0.75	37.4	34.8
60°		32.7	22.9	0.70	0.95	36.5	30.8
70°		31.1	22.3	0.72	1.16	35.6	26.8
80°		29.4	21.8	0.74	1.36	34.7	22.8
90°		27.8	21.3	0.77	1.56	33.8	18.8
100°		26.2	20.7	0.79	1.77	32.9	14.8
110°		24.6	20.2	0.81	1.97	31.9	10.8

HEATING PART LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Leaving Air Temp. (°F)	Power Input (KW)	Heat of Absorption (MBtuH)	COP
25°	65°	18.2	83.7	1.49	13.7	3.6
30°		19.9	85.5	1.50	15.5	3.9
40°		23.5	89.1	1.53	19.0	4.5
50°		27.0	92.8	1.56	22.5	5.1
60°		30.1	96.0	1.59	25.5	5.5
70°		33.2	99.2	1.62	28.5	6.0
80°		36.3	102.3	1.65	31.5	6.5
25°	70°	17.8	88.3	1.53	13.3	3.4
30°		19.5	90.0	1.54	15.1	3.7
40°		22.9	93.6	1.57	18.5	4.3
50°		26.4	97.1	1.60	21.9	4.8
60°		29.4	100.3	1.63	24.8	5.3
70°		32.5	103.4	1.66	27.7	5.7
80°		35.5	106.5	1.69	30.5	6.1
25°	75°	18.0	93.5	1.72	12.9	3.1
30°		19.7	95.3	1.73	14.6	3.3
40°		23.2	98.9	1.77	17.9	3.8
50°		26.7	102.4	1.80	21.2	4.3
60°		29.7	105.6	1.83	24.0	4.8
70°		32.8	108.8	1.86	26.8	5.2
80°		35.9	111.9	1.90	29.6	5.6

GV51S3

Full Load Capacities based upon rated flow of 12 GPM at 1500 CFM airflow.

COOLING FULL LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (KW)	Heat of Rejection (MBtuH)	EER
50°	70° DB 59° WB	50.9	37.7	0.74	2.14	58.2	28.0
60°		48.8	36.7	0.75	2.44	56.8	24.6
70°		46.7	35.7	0.76	2.75	55.4	21.2
80°		44.6	34.6	0.78	3.05	54.0	17.8
90°		42.5	33.6	0.79	3.36	52.6	14.4
100°		40.4	32.6	0.81	3.66	51.1	11.0
110°		38.3	31.5	0.82	3.97	49.7	7.6
50°	75° DB 63° WB	54.6	39.2	0.71	2.17	62.5	29.7
60°		52.4	38.1	0.73	2.48	61.0	26.1
70°		50.2	37.1	0.74	2.78	59.6	22.5
80°		48.0	36.1	0.75	3.09	58.1	18.9
90°		45.7	35.1	0.77	3.39	56.6	15.4
100°		43.5	34.1	0.78	3.70	55.2	11.8
110°		41.3	33.0	0.80	4.00	53.7	8.2
50°	80° DB 67° WB	58.6	40.5	0.69	2.21	67.0	31.4
60°		56.2	39.5	0.70	2.52	65.5	27.7
70°		53.9	38.5	0.71	2.82	64.0	23.9
80°		51.5	37.5	0.73	3.12	62.4	20.1
90°		49.2	36.5	0.74	3.43	60.9	16.3
100°		46.8	35.5	0.76	3.73	59.4	12.6
110°		44.5	34.5	0.77	4.03	57.8	8.8
50°	85° DB 71° WB	62.7	41.8	0.66	2.26	71.8	33.1
60°		60.2	40.9	0.68	2.56	70.2	29.2
70°		57.8	39.9	0.69	2.86	68.6	25.2
80°		55.3	38.9	0.70	3.16	66.9	21.3
90°		52.8	37.9	0.72	3.47	65.3	17.3
100°		50.3	36.9	0.73	3.77	63.7	13.3
110°		47.8	35.9	0.75	4.07	62.1	9.4

HEATING FULL LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Leaving Air Temp. (°F)	Power Input (KW)	Heat of Absorption (MBtuH)	COP
25°	65°	35.1	86.7	2.87	26.4	3.6
30°		38.0	88.5	2.93	29.0	3.8
40°		43.7	92.0	3.06	34.3	4.2
50°		49.5	95.5	3.19	39.5	4.5
60°		55.9	99.5	3.41	45.3	4.8
70°		62.4	103.5	3.62	51.0	5.0
80°		68.9	107.5	3.84	56.8	5.3
25°	70°	34.3	91.2	2.95	25.6	3.4
30°		37.2	92.9	3.01	28.2	3.6
40°		42.8	96.4	3.15	33.3	4.0
50°		48.4	99.9	3.28	38.3	4.3
60°		54.7	103.8	3.5	43.9	4.6
70°		61.0	107.7	3.72	49.6	4.8
80°		67.3	111.6	3.94	55.2	5.1
25°	75°	34.7	96.4	3.31	24.9	3.1
30°		37.6	98.2	3.38	27.3	3.3
40°		43.2	101.7	3.53	32.3	3.6
50°		48.9	105.2	3.68	37.2	3.9
60°		55.3	109.1	3.93	42.6	4.1
70°		61.7	113.1	4.18	48.1	4.3
80°		68.1	117.0	4.42	53.5	4.5

Part Load Capacities based upon rated flow of 12 GPM at 1150 CFM airflow.

COOLING PART LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (KW)	Heat of Rejection (MBtuH)	EER
50°	70° DB 59° WB	37.6	28.1	0.74	1.17	41.6	26.0
60°		35.9	27.4	0.76	1.43	40.6	23.2
70°		34.3	26.7	0.78	1.69	39.6	20.4
80°		32.6	26.0	0.80	1.95	38.5	17.5
90°		30.9	25.3	0.82	2.21	37.5	14.7
100°		29.3	24.6	0.84	2.47	36.5	11.9
110°		27.6	23.9	0.86	2.73	35.5	9.1
50°	75° DB 63° WB	40.4	29.2	0.71	1.19	44.7	27.6
60°		38.6	28.5	0.73	1.45	43.6	24.6
70°		36.9	27.8	0.75	1.71	42.5	21.6
80°		35.1	27.1	0.77	1.97	41.5	18.7
90°		33.3	26.4	0.79	2.23	40.4	15.7
100°		31.5	25.7	0.81	2.49	39.3	12.7
110°		29.8	25.0	0.84	2.75	38.3	9.7
50°	80° DB 67° WB	43.3	30.2	0.69	1.21	47.9	29.2
60°		41.5	29.5	0.71	1.47	46.8	26.1
70°		39.6	28.9	0.73	1.73	45.7	22.9
80°		37.7	28.2	0.75	1.99	44.6	19.8
90°		35.8	27.5	0.77	2.25	43.5	16.7
100°		34.0	26.8	0.79	2.51	42.3	13.5
110°		32.1	26.1	0.81	2.77	41.2	10.4
50°	85° DB 71° WB	46.4	31.2	0.66	1.23	51.3	30.8
60°		44.4	30.5	0.68	1.49	50.1	27.5
70°		42.4	29.9	0.70	1.75	49.0	24.2
80°		40.4	29.2	0.72	2.02	47.8	20.9
90°		38.4	28.5	0.74	2.28	46.6	17.7
100°		36.5	27.9	0.76	2.54	45.5	14.4
110°		34.5	27.2	0.78	2.80	44.3	11.1

HEATING PART LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Leaving Air Temp. (°F)	Power Input (KW)	Heat of Absorption (MBtuH)	COP
25°	65°	24.7	84.9	2.10	18.2	3.5
30°		26.9	86.7	2.13	20.4	3.7
40°		31.4	90.3	2.18	24.8	4.2
50°		35.9	93.9	2.23	29.1	4.7
60°		40.6	97.7	2.31	33.7	5.1
70°		45.3	101.5	2.39	38.2	5.6
80°		50.0	105.3	2.46	42.8	6.0
25°	70°	24.1	89.4	2.16	17.7	3.3
30°		26.3	91.2	2.18	19.8	3.5
40°		30.7	94.7	2.24	24.0	4.0
50°		35.1	98.2	2.29	28.3	4.4
60°		39.7	101.9	2.37	32.7	4.9
70°		44.3	105.7	2.45	37.1	5.3
80°		48.9	109.4	2.53	41.5	5.7
25°	75°	24.4	94.6	2.42	17.1	3.0
30°		26.6	96.4	2.45	19.2	3.2
40°		31.0	100.0	2.51	23.3	3.6
50°		35.4	103.5	2.58	27.4	4.0
60°		40.1	107.3	2.66	31.7	4.4
70°		44.8	111.1	2.75	36.0	4.8
80°		49.4	114.8	2.84	40.3	5.1

GV61S3

Full Load Capacities based upon rated flow of 15 GPM at 1600 CFM airflow.

COOLING FULL LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (KW)	Heat of Rejection (MBtuH)	EER
50°	70° DB 59° WB	63.4	44.3	0.69	2.67	71.9	20.8
60°		60.5	42.9	0.71	3.06	70.0	18.7
70°		57.6	41.5	0.72	3.44	68.2	16.7
80°		54.7	40.1	0.73	3.83	66.3	14.7
90°		51.8	38.7	0.75	4.22	64.4	12.6
100°		48.9	37.2	0.76	4.61	62.5	10.6
110°		46.0	35.8	0.78	4.99	60.7	8.6
50°	75° DB 63° WB	68.1	46.0	0.67	2.71	77.2	22.0
60°		65.0	44.6	0.68	3.10	75.3	19.9
70°		61.9	43.2	0.70	3.49	73.3	17.8
80°		58.9	41.8	0.71	3.87	71.4	15.6
90°		55.8	40.4	0.73	4.26	69.4	13.5
100°		52.7	39.0	0.74	4.65	67.4	11.4
110°		49.7	37.6	0.75	5.03	65.5	9.2
50°	80° DB 67° WB	73.0	47.6	0.65	2.76	82.8	23.3
60°		69.7	46.2	0.66	3.15	80.8	21.1
70°		66.5	44.8	0.67	3.53	78.7	18.8
80°		63.2	43.4	0.69	3.92	76.7	16.6
90°		60.0	42.0	0.70	4.30	74.6	14.3
100°		56.7	40.6	0.72	4.68	72.6	12.1
110°		53.5	39.2	0.73	5.07	70.5	9.9
50°	85° DB 71° WB	78.1	49.2	0.62	2.82	88.7	24.5
60°		74.7	47.8	0.64	3.20	86.5	22.2
70°		71.3	46.4	0.65	3.58	84.4	19.9
80°		67.8	45.0	0.66	3.97	82.2	17.5
90°		64.4	43.6	0.68	4.35	80.1	15.2
100°		60.9	42.2	0.69	4.74	77.9	12.9
110°		57.5	40.8	0.71	5.12	75.8	10.5

HEATING FULL LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Leaving Air Temp. (°F)	Power Input (KW)	Heat of Absorption (MBtuH)	COP
25°	65°	44.4	90.7	3.62	33.0	3.6
30°		48.0	92.8	3.73	36.3	3.8
40°		55.2	97.0	3.96	43.0	4.1
50°		62.5	101.1	4.19	49.6	4.4
60°		70.0	105.5	4.48	56.1	4.6
70°		77.5	109.9	4.78	62.6	4.8
80°		85.0	114.2	5.07	69.1	4.9
25°	70°	43.4	95.1	3.71	32.0	3.5
30°		47.0	97.2	3.83	35.3	3.6
40°		54.0	101.3	4.06	41.7	3.9
50°		61.0	105.3	4.30	48.2	4.2
60°		68.4	109.6	4.60	54.5	4.3
70°		75.8	113.8	4.90	60.7	4.5
80°		83.1	118.1	5.21	67.0	4.7
25°	75°	43.9	100.4	4.17	31.1	3.1
30°		47.5	102.5	4.30	34.2	3.2
40°		54.6	106.6	4.56	40.5	3.5
50°		61.7	110.7	4.83	46.7	3.7
60°		69.2	115.0	5.17	52.8	3.9
70°		76.6	119.3	5.51	58.9	4.1
80°		84.0	123.6	5.85	65.0	4.2

Part Load Capacities based upon rated flow of 15 GPM at 1300 CFM airflow.

COOLING PART LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (KW)	Heat of Rejection (MBtuH)	EER
50°	70° DB 59° WB	46.8	33.6	0.71	1.46	51.3	25.3
60°		44.5	32.5	0.73	1.80	50.0	22.5
70°		42.2	31.5	0.75	2.15	48.7	19.7
80°		39.9	30.5	0.76	2.49	47.4	16.8
90°		37.6	29.4	0.78	2.83	46.1	14.0
100°		35.4	28.4	0.80	3.17	44.8	11.2
110°		33.1	27.3	0.82	3.51	43.5	8.3
50°	75° DB 63° WB	50.2	34.9	0.69	1.49	55.1	26.8
60°		47.8	33.8	0.70	1.83	53.7	23.9
70°		45.4	32.8	0.72	2.17	52.4	20.9
80°		43.0	31.8	0.74	2.51	51.0	17.9
90°		40.5	30.7	0.76	2.86	49.6	14.9
100°		38.1	29.7	0.78	3.20	48.3	11.9
110°		35.7	28.6	0.80	3.54	46.9	8.9
50°	80° DB 67° WB	53.9	36.1	0.66	1.52	59.1	28.4
60°		51.3	35.1	0.68	1.86	57.6	25.3
70°		48.7	34.0	0.70	2.20	56.2	22.1
80°		46.2	33.0	0.72	2.54	54.8	19.0
90°		43.6	32.0	0.74	2.89	53.4	15.9
100°		41.0	30.9	0.75	3.22	52.0	12.7
110°		38.5	29.9	0.77	3.57	50.5	9.6
50°	85° DB 71° WB	57.7	37.3	0.64	1.55	63.2	29.9
60°		55.0	36.3	0.66	1.89	61.7	26.7
70°		52.2	35.2	0.67	2.23	60.2	23.4
80°		49.5	34.2	0.69	2.58	58.8	20.1
90°		46.8	33.2	0.71	2.92	57.3	16.8
100°		44.1	32.1	0.73	3.26	55.8	13.5
110°		41.3	31.1	0.75	3.60	54.3	10.2

HEATING PART LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Leaving Air Temp. (°F)	Power Input (KW)	Heat of Absorption (MBtuH)	COP
25°	65°	32.5	88.1	2.77	24.0	3.4
30°		35.1	90.0	2.80	26.6	3.7
40°		40.4	93.8	2.87	31.8	4.1
50°		45.7	97.5	2.93	36.9	4.6
60°		50.8	101.2	3.01	41.8	4.9
70°		56.0	104.9	3.10	46.7	5.3
80°		61.1	108.5	3.19	51.6	5.6
25°	70°	31.7	92.6	2.85	23.3	3.3
30°		34.3	94.4	2.88	25.8	3.5
40°		39.5	98.1	2.94	30.8	3.9
50°		44.6	101.8	3.01	35.8	4.4
60°		49.7	105.4	3.10	40.6	4.7
70°		54.7	109.0	3.19	45.3	5.0
80°		59.7	112.5	3.28	50.1	5.4
25°	75°	32.1	97.9	3.20	22.6	3.0
30°		34.7	99.7	3.23	25.1	3.1
40°		39.9	103.4	3.30	29.9	3.5
50°		45.1	107.1	3.37	34.7	3.9
60°		50.2	110.8	3.48	39.3	4.2
70°		55.3	114.4	3.58	44.0	4.5
80°		60.4	118.0	3.68	48.6	4.8

GV71S3

Full Load Capacities based upon rated flow of 16 GPM at 1750 CFM airflow.

COOLING FULL LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (KW)	Heat of Rejection (MBtuH)	EER
50°	70° DB 59° WB	68.7	49.0	0.71	3.27	76.2	18.8
60°		65.3	47.2	0.72	3.68	74.4	17.0
70°		62.0	45.4	0.73	4.09	72.5	15.2
80°		58.6	43.6	0.75	4.50	70.7	13.4
90°		55.2	41.8	0.76	4.91	68.8	11.5
100°		51.8	40.0	0.77	5.32	67.0	9.7
110°		48.4	38.2	0.78	5.73	65.1	7.9
50°	75° DB 63° WB	73.8	50.9	0.68	3.32	81.9	19.9
60°		70.2	49.1	0.70	3.73	79.9	18.0
70°		66.6	47.3	0.71	4.14	78.0	16.1
80°		63.1	45.5	0.72	4.55	76.1	14.2
90°		59.5	43.6	0.74	4.96	74.1	12.3
100°		55.9	41.8	0.75	5.36	72.2	10.4
110°		52.3	40.0	0.76	5.77	70.3	8.5
50°	80° DB 67° WB	79.2	52.7	0.66	3.38	87.8	21.0
60°		75.4	50.9	0.67	3.79	85.8	19.0
70°		71.6	49.1	0.69	4.19	83.7	17.1
80°		67.8	47.2	0.70	4.60	81.7	15.1
90°		63.9	45.4	0.71	5.01	79.7	13.1
100°		60.1	43.6	0.72	5.41	77.7	11.1
110°		56.3	41.8	0.74	5.82	75.7	9.1
50°	85° DB 71° WB	84.8	54.4	0.64	3.45	94.0	22.2
60°		80.7	52.6	0.65	3.85	91.9	20.1
70°		76.7	50.8	0.66	4.25	89.8	18.0
80°		72.7	49.0	0.68	4.66	87.7	15.9
90°		68.6	47.1	0.69	5.06	85.6	13.9
100°		64.6	45.3	0.70	5.47	83.5	11.8
110°		60.5	43.5	0.71	5.87	81.3	9.7

HEATING FULL LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Leaving Air Temp. (°F)	Power Input (KW)	Heat of Absorption (MBtuH)	COP
25°	65°	50.4	91.7	4.10	37.7	3.6
30°		54.3	93.7	4.21	41.2	3.8
40°		62.0	97.8	4.44	48.1	4.1
50°		69.8	101.9	4.66	55.0	4.4
60°		79.0	106.8	4.96	63.2	4.6
70°		88.2	111.7	5.26	71.5	4.9
80°		97.4	116.5	5.56	79.8	5.2
25°	70°	49.3	96.1	4.21	36.6	3.4
30°		53.1	98.1	4.33	40.0	3.6
40°		60.7	102.1	4.56	46.7	3.9
50°		68.2	106.1	4.79	53.4	4.2
60°		77.2	110.8	5.09	61.4	4.4
70°		86.2	115.6	5.40	69.4	4.7
80°		95.2	120.4	5.71	77.5	4.9
25°	75°	49.8	101.4	4.73	35.5	3.1
30°		53.7	103.4	4.86	38.8	3.2
40°		61.3	107.4	5.12	45.3	3.5
50°		69.0	111.5	5.37	51.8	3.8
60°		78.1	116.3	5.72	59.6	4.0
70°		87.1	121.1	6.07	67.4	4.2
80°		96.2	125.9	6.41	75.2	4.4

Part Load Capacities based upon rated flow of 16 GPM at 1450 CFM airflow.

COOLING PART LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (KW)	Heat of Rejection (MBtuH)	EER
50°	70° DB 59° WB	53.9	38.5	0.70	1.95	59.4	22.8
60°		51.4	37.4	0.72	2.34	57.9	20.4
70°		48.8	36.2	0.74	2.72	56.4	18.0
80°		46.3	35.1	0.76	3.10	54.9	15.5
90°		43.7	34.0	0.78	3.48	53.4	13.1
100°		41.1	32.9	0.80	3.87	51.8	10.6
110°		38.6	31.8	0.82	4.25	50.3	8.2
50°	75° DB 63° WB	57.9	39.9	0.68	1.99	63.8	24.2
60°		55.2	38.8	0.70	2.37	62.2	21.6
70°		52.5	37.7	0.72	2.75	60.7	19.1
80°		49.8	36.6	0.74	3.14	59.1	16.5
90°		47.1	35.5	0.76	3.52	57.5	13.9
100°		44.4	34.4	0.78	3.90	55.9	11.4
110°		41.7	33.3	0.79	4.28	54.3	8.8
50°	80° DB 67° WB	62.1	41.3	0.66	2.03	68.4	25.6
60°		59.3	40.2	0.68	2.41	66.8	22.9
70°		56.4	39.2	0.69	2.79	65.1	20.2
80°		53.5	38.1	0.71	3.17	63.5	17.5
90°		50.6	37.0	0.73	3.55	61.8	14.8
100°		47.8	35.9	0.75	3.94	60.2	12.1
110°		44.9	34.8	0.77	4.32	58.5	9.4
50°	85° DB 71° WB	66.5	42.7	0.63	2.07	73.3	27.0
60°		63.5	41.6	0.65	2.45	71.5	24.2
70°		60.4	40.5	0.67	2.83	69.8	21.3
80°		57.4	39.5	0.69	3.21	68.1	18.5
90°		54.3	38.4	0.71	3.59	66.3	15.7
100°		51.3	37.3	0.73	3.98	64.6	12.9
110°		48.2	36.2	0.75	4.36	62.9	10.1

HEATING PART LOAD

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Leaving Air Temp. (°F)	Power Input (KW)	Heat of Absorption (MBtuH)	COP
25°	65°	38.5	89.6	3.19	28.5	3.5
30°		41.8	91.7	3.25	31.6	3.8
40°		48.3	95.8	3.35	37.8	4.2
50°		54.8	100.0	3.45	44.0	4.7
60°		61.5	104.3	3.58	50.4	5.0
70°		68.2	108.5	3.72	56.8	5.4
80°		74.9	112.8	3.86	63.1	5.7
25°	70°	37.6	94.0	3.28	27.7	3.4
30°		40.8	96.1	3.33	30.7	3.6
40°		47.2	100.2	3.44	36.7	4.0
50°		53.6	104.2	3.54	42.7	4.4
60°		60.1	108.4	3.68	48.9	4.8
70°		66.7	112.6	3.82	55.1	5.1
80°		73.2	116.7	3.96	61.3	5.5
25°	75°	38.1	99.3	3.68	26.8	3.0
30°		41.3	101.4	3.74	29.8	3.2
40°		47.7	105.5	3.86	35.6	3.6
50°		54.2	109.6	3.98	41.4	4.0
60°		60.8	113.8	4.13	47.4	4.3
70°		67.4	118.0	4.29	53.5	4.6
80°		74.0	122.3	4.45	59.5	4.9

Indoor Blower Performance (CFM) ①

MODEL	MOTOR HP	② RATED ESP	③ MAX ESP	Speed #1	Speed #2	Speed #3	Speed #4	Speed #5
				④ Continuous Airflow	⑤ Mild Weather Operation in 1st Stage Cooling Mode (5-Min.)	⑥ Part Load Operation Airflow	⑦ -10% Full Load Airflow (Optional)	⑧ Full Load Airflow and Electric Heat Mode
GV27S3	1/3	0.15	0.50	500	650	800	900	1000
GV38S3	1/2	0.15	0.50	650	725	900	1175	1300
GV51S3	1/2	0.20	0.50	750	925	1150	1350	1500
GV61S3	3/4	0.20	0.50	800	1050	1300	1450	1600
GV71S3	3/4	0.25	0.50	875	1150	1450	1575	1750

① Motor will automatically step through the various airflows with thermostatic control
② ESP = External Static Pressure (inches of water)
③ Maximum allowable duct static
④ Continuous airflow is the CFM being circulated with manual fan operation without any additional function occurring.
⑤ Will occur automatically for first 5 minutes of Part Load Cooling Operation.
⑥ Will occur automatically after five minutes of Part Load Cooling Operation.
⑦ This is a field option for noisy installations to de-rate Full Load airflow (requires change in control panel).
⑧ Will occur automatically with control signal input (will not be defeated for electric heat operation).

Airflow Corrections

% of Rated Airflow	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Power Input (KW)	Heat of Rejection (MBtuH)	Total Capacity (MBtuH)	Power Input (KW)	Heat of Absorption (MBtuH)
88%	0.982	0.782	0.973	0.979	0.985	1.037	0.973
90%	0.985	0.844	0.978	0.983	0.988	1.030	0.978
92%	0.989	0.905	0.982	0.987	0.990	1.023	0.983
94%	0.992	0.967	0.987	0.991	0.993	1.016	0.988
96%	0.995	0.978	0.991	0.994	0.995	1.011	0.992
98%	0.997	0.989	0.996	0.997	0.998	1.005	0.996
RATED	1.000	1.000	1.000	1.000	1.000	1.000	1.000
102%	1.002	1.011	1.005	1.003	1.002	0.997	1.004
104%	1.005	1.023	1.011	1.006	1.005	0.993	1.007
106%	1.007	1.034	1.016	1.009	1.007	0.99	1.011
108%	1.009	1.042	1.020	1.011	1.009	0.989	1.013
110%	1.010	1.050	1.025	1.013	1.010	0.988	1.015
112%	1.012	1.057	1.029	1.015	1.012	0.986	1.017

Correction Factors @ Increased Water Flows

Rated Flow Plus	Cooling		Heating	
	BtuH	Watts	BtuH	Watts
2 GPM	1.005	0.988	1.006	1.002
3 GPM	1.007	0.984	1.009	1.003
4 GPM	1.008	0.979	1.011	1.003

Water Coil Pressure Drop (Fresh Water)

MODEL	GV27S3		GV38S3 / GV51S3		GV61S3		GV71S3	
GPM	PSID	Ft. Hd.	PSID	Ft. Hd.	PSID	Ft. Hd.	PSID	Ft. Hd.
3	0.1	0.23						
4	0.5	1.15	0.9	2.08				
5	1.2	2.77	1.4	3.23				
6	1.7	3.92	2.3	5.31				
7	2.3	5.31	3.2	7.38	2	4.61		
8	3.1	7.15	4.1	9.46	2.5	5.77	2	4.61
9	4.1	9.46	5.1	11.77	3.2	7.38	2.4	5.54
10			6.1	14.07	3.9	9.00	2.8	6.46
11			7.1	16.38	4.7	10.84	3.4	7.84
12			8.2	18.92	5.5	12.69	3.9	9.00
13			9.4	21.69	6.4	14.76	4.5	10.38
14			10.6	24.45	7.3	16.84	5.2	12.00
15					8.1	18.69	5.9	13.61
16					9	20.76	6.7	15.46
17					9.9	22.84	7.4	17.07
18							8.4	19.38

Loop Pump Modules and Pump Outputs for Ground Loop Installations ①

Pump Models	No. of Pumps	WATER FLOW RATE REQUIRED IN GPM				
		7	9	12	15	16
DORFC-1	1	28.5	27.5	25	22.5	22
DORFC-2	2	57	55	50	45	44

① Pump output (feet of head) @ GPM at top of column.

Minimum Required Flow Rates for Ground Water Installations

	GV27S3	GV38S3	GV51S3	GV61S3	GV71S3
Flow rate required GPM fresh water (Rated)	5 (7)	6 (9)	7 (12)	9 (15)	10 (16)

Required Flow Rates for Ground Loop Installations

	GV27S3	GV38S3	GV51S3	GV61S3	GV71S3
Flow rate required GPM Propylene Glycol, Methanol or Ethanol ①	7	9	12	15	16

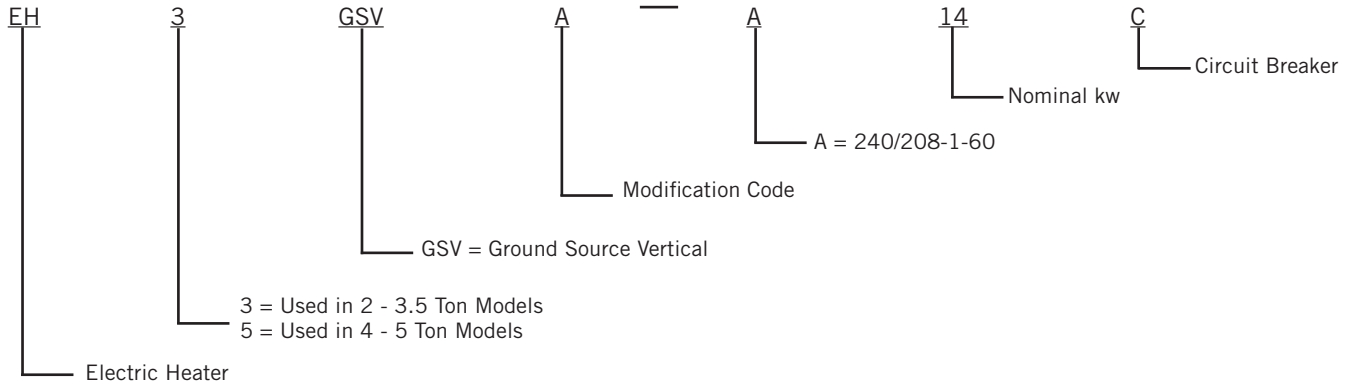
① See Antifreeze table below.

Antifreeze Percentages by Volume for Ground Loop Installations ①

Type	Minimum Temperature for Freeze Protection			
	10°F (-12.2°C)	15°F (-9.4°C)	20°F (-6.7°C)	25°F (-3.9°C)
Methanol	25%	21%	16%	10%
Ethanol ②	29%	25%	20%	14%
100% USP Food Grade Propylene Glycol	27%	24%	20%	13%

① Loop antifreeze protection must be determined based on loop design and geographic location.
② Must not be denatured with any petroleum based product.

Heater Package Nomenclature Explanation



Electrical Specifications - Optional Field-Installed Heater Packages (GV27S3 - GV38S3 Only)

For Use with Models	Heater Package Model No.	Heater Package Volts/Phase 60HZ	Heater Amps, KW And Capacity @ 240 Volts			Heater Amps, KW And Capacity @ 208 Volts			Minimum Circuit Ampacity	Maximum HACR Circuit Breaker	Field Wire Size+	Ground Wire Size+
			AMPS	KW	BTU	AMPS	KW	BTU				
GV27S3 GV38S3	EH3GSVA-A05C	240/208-1	18.8	4.5	15345	16.3	3.38	11525	23.5	25	10	10
	EH3GSVA-A09C	240/208-1	37.5	9.0	30690	32.5	6.75	23018	46.9	50	8	10
	EH3GSVA-A14C	240/208-1	56.3	13.5	46035	48.7	10.13	34543	70.4	80	4	8

Electrical Specifications - Optional Field-Installed Heater Packages (GV51S3 - GV71S3 Only)

For Use with Models	Heater Package Model No.	Heater Package Volts/Phase 60HZ	Heater Amps, KW And Capacity @ 240 Volts			Heater Amps, KW And Capacity @ 208 Volts			Minimum Circuit Ampacity	Maxi-mum HACR Circuit Breaker	Field Wire Size+	Ground Wire Size+
			AMPS	KW	BTU	AMPS	KW	BTU				
GV51S3 GV61S3 GV71S3	EH5GSVA-A09C	240/208-1	37.5	9.0	30690	32.5	6.75	23018	46.9	50	8	10
	EH5GSVA-A14C	240/208-1	56.3	13.5	46035	48.7	10.13	34543	70.4	80	4	8
	EH5GSVA-A18C	240/208-1	75.0	18.0	61380	64.9	13.5	46035	93.8	100	3	8

+ Based on 75F copper wire. All wiring must conform to National Electrical Code (latest edition) and all local codes.

Optional Field-Installed Hard Start Kits for 1-Phase Models ①

Unit Models	Field Installed Part Number
GV27S3AA	SK111
GV38S3AA	SK111
GV51S3AA	SK118
GV61S3AA	SK118
GV71S3AA	SK120

① Start capacitor and potential relay start kit can be used with all -A single phase models only. Increases starting torque 9x.

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-speed pumps, 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
Additional accessory items available:			
	HK1-25	Each	(1) 25' section of 1" ID 150 PSI hose

* 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	(1) 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

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			
GV27	CFV-5	1	Constant flow valve, 5 GPM, 3/4" FPT
GV38	CFV-6	1	Constant flow valve, 6 GPM, 3/4" FPT
GV51	CFV-7	1	Constant flow valve, 7 GPM, 3/4" FPT
GV61	CFV-9	1	Constant flow valve, 9 GPM, 3/4" FPT
GV71	CFV-10	1	Constant flow valve, 10 GPM, 3/4" FPT
	CFV-12	1	Constant flow valve, 12 GPM, 3/4" FPT
	CFV-15	1	Constant flow valve, 15 GPM, 3/4" FPT
	CFV-16	1	Constant flow valve, 16 GPM, 3/4" FPT

Elbow, 1" MPT X Double O-ring wtih 1/4" Port & 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
Freeze Stat Accessory Kit		
8620-241	Each	GV Freeze Stat Accessory Kit

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 MPT
All	8603-041	Each	Flow Meter, 2 - 20 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

8603-012

8603-026

8603-027

8603-028

8603-029

GV-Series Optional Domestic Water Heating Pump Module

Domestic Hot Water Desuperheater Pump Module (For Either Ground Loop or Ground Water Applications)			
All	GVDM-26		Hot water desuperheater pump module with ECM motor, 115V-60Hz-1Ph, 6' cord w/115V grounded plug, 5/8" OD copper water line connections, designed to be mounted on GV heat pump cabinet or can be mounted on adjacent wall

GV Unit with optional GVDM-26 Domestic Hot Water Desuperheater Pump Module (Field-Installed)

Hot Water Heating Operating Cost Savings: The amount of annual operating cost savings depends on the amount of hot water consumed. The more used, the greater the savings. In the summer months when the heat pump is operating in the cooling mode, the heat recovery system can supply most of the your hot water needs for free, offering a 100% energy savings over conventional electric water heaters. During the winter months when the heat pump is operating in the heating mode, less hot water is available, but at the same time, the electric water heater will consume less electricity.

Hot Water Heating Performance: The actual amount of hot water (gallons of hot water per day) generated can vary greatly because of several factors: heat pump system size, hours per day of operation of the heat pump, mode of operation (cooling vs. heating), hot water usage patterns, heat pump water supply system (ground water, ground or pond loop, etc.), and climatic conditions. The gallons of hot water per day are dependent upon the above variables, and in general can range up to 125 gallons per day for a nominal 24,000 BTU heat pump system, and up to 375 gallons per day for a nominal 60,000 BTU heat pump system.

Access panel removed for compressor and control panel section. Blower compartment still sealed for normal operation of unit.

Both upper and lower section access panels removed for easy access to all components.

Full length access panel removed on side opposite control panel location.

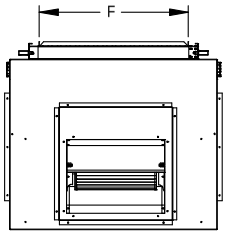
NOTE: *For field installation of electric heater package, the blower assembly slides out, heater package installs inside cabinet and blower package slides back in. Heater package can be installed from either side for installation flexibility.*

NOTE: *Main control panel can be easily reversed to this side without disconnecting any factory wiring.*

Dimensions

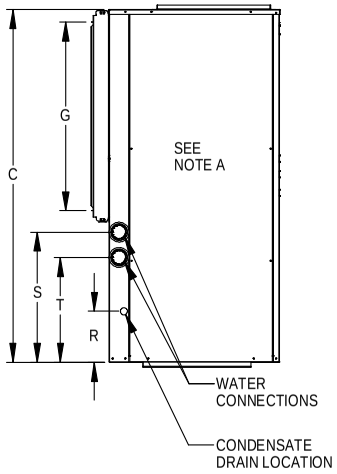
MODEL	WIDTH (W)	DEPTH (D)	HEIGHT (H)	SUPPLY		RETURN																				
				Duct	Flange	Width	Height																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
GV27 - 38S3	27-5/8	26	48	13-7/8	13-7/8	18	22-3/4	6-7/8	2-7/16	1-1/2	45-1/4	31-5/8	1-5/8	2-1/4	3-1/4	29-1/16	25-13/16	8-3/16	19-1/2	15-1/2	2-1/16	7-3/8	23-1/8	25-7/16	1-1/4
GV51 - 71S3	32-5/8	27	55-5/8	17-7/8	17-7/8	23-1/2	29-7/8	7	2-7/16	1-1/2	52-7/8	32-1/4	1-5/8	2-1/2	3-1/2	29-3/4	26-13/16	8-1/16	19-5/16	15-5/16	2-1/16	9-7/8	25-5/8	30-7/16	1-5/16

AIR FILTERS (Factory Supplied)			
Units	Size	Quantity	Efficiency Rating
GV27 - 38	20 x 25 x 2	1	**MERV 6**
GV51 - 71	16 x 25 x 2	2	**MERV 6**

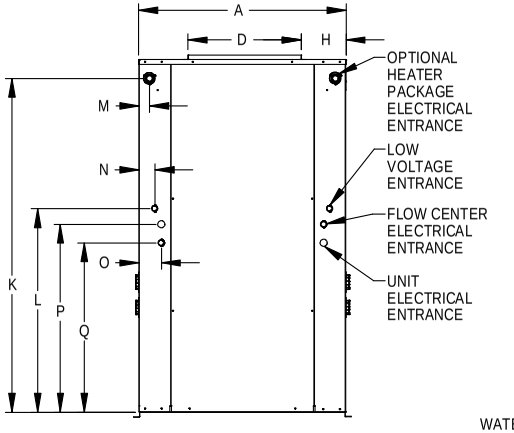


TOP VIEW

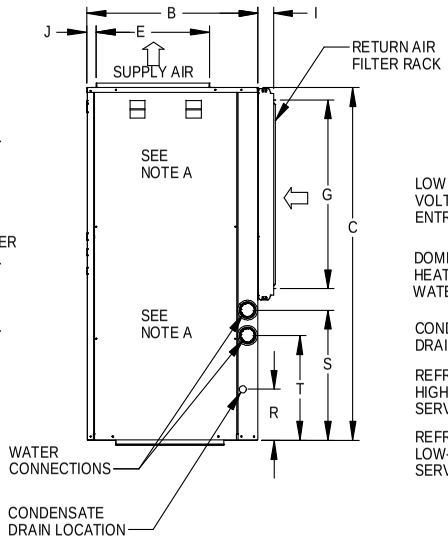
LEFT SIDE VIEW



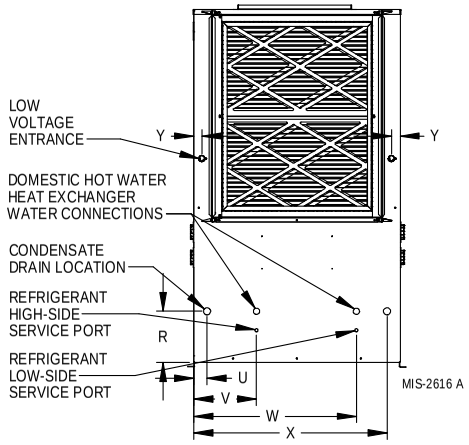
FRONT VIEW



RIGHT SIDE VIEW



BACK VIEW



NOTE A: PANELS ARE REVERSIBLE ALONG WITH CONTROL PANELS FOR HEAT PUMP AND ELECTRIC HEATER PACKAGE FOR BEST INSTALLATION POSITION.

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