Installation, Operation, and Maintenance

Water Source Heat Pump Axiom™ Horizontal GELK – Low-Profile

0.75 and 1 Ton, 60 Hz

Model Number:
GELK009 – 60 Hz
GELK012 – 60 Hz

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

September 2026 **WSHP-SVX029A-EN**

Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

⚠ 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, could result in minor or moderate injury. It could also be used to alert against unsafe practices.
NOTICE	Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury.

Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- **Before installing/servicing this unit, technicians MUST put on all PPE required for the work being undertaken (Examples; cut resistant gloves/ sleeves, butyl gloves, safety glasses, hard hat/ bump cap, fall protection, electrical PPE and arc flash clothing). ALWAYS refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.**
- **When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.**
- **If there is a risk of energized electrical contact, arc, or flash, technicians MUST put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, PRIOR to servicing the unit. NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

⚠ WARNING

Follow EHS Policies!

Failure to follow instructions below could result in death or serious injury.

- **All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.**
- **Non-Trane personnel should always follow local regulations.**

⚠ WARNING

R-454B Flammable A2L Refrigerant!

Failure to use proper equipment or components as described below could result in equipment failure, and possibly fire, which could result in death, serious injury, or equipment damage.

The equipment described in this manual uses R-454B refrigerant which is flammable (A2L). Use ONLY R-454B rated service equipment and components. For specific handling concerns with R-454B, contact your local representative.

⚠ WARNING

Cancer and Reproductive Harm!

This product can expose you to chemicals including lead and bisphenol A (BPA), which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

⚠ WARNING

Electrical Shock Hazard!

Failure to follow instructions below could result in death or serious injury.

Properly connect the system's oversized protective earthing (grounding) terminal(s).

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Trademarks

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Product Safety Information

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

Maximum altitude of use 3000 meters.

This appliance incorporates an earth connection for functional purposes only.

Revision History

- A new literature number, WSHP-SVX029A-EN, replaced ETO-SVX005A-EN.
- Updated document to reflect GELK - 0.75 ton and 1 ton models.

Table of Contents

Model Number Description

GELK009, 012 Model

Digits 1–3 — Unit Configuration

GEL = Standard Efficiency Low Profile

Digit 4 — Development Sequence

K = R-454B

Digits 5–7 — Nominal Size (MBh)

009 = 9.0 MBh
012 = 12.0 MBh

Digit 8 — Voltage (Volts/Hz/Phase)

A = 208-230/60/1

Digit 9 — Heat Exchanger

1 = Copper-Water Coil

Digit 10 — Design Sequence

A First Design Sequence

Digit 11 — Refrigeration Circuit

0 = Heating and Cooling Circuit

Digit 12 — Blower Configuration

K = Variable ECM Motor, Constant Torque

Digit 13 — Freeze Protection

A = 20°F Freezestat (For glycol loop)
B = 35°F Freezestat (for water loop)

Digit 14 — Design Special

O = Open Digit
S = Design Special

Digit 15 — Supply-Air Arrangement

B = Back Supply-Air Arrangement

Digit 16 — Return-Air Arrangement

L = Left Return-Air Arrangement
R = Right Return-Air Arrangement

Digit 17 — Control Types

D = Deluxe 24V Controls

Digit 18 — Tstat/Sensor Location

0 = Wall Mounted Location

Digit 19 — Fault Sensors

1 = Condensate Overflow Sensor

Digit 20 — Temperature Sensor

0 = No Additional Temperature Sensor

Digit 21 — Insulation

1 = Matte Faced Insulation

Digit 22 — Electric Heat Option

0 = No Electric Heat

Digit 23 — Unit Mounted Disconnect

2 = Unit Mounted Disconnect

Digit 24 — Filter Type

1 = 1-inch Throwaway Filter
4 = 2-inch MERV 8

Digit 25 — Acoustic Arrangement

1 = Standard Sound Attenuation

Digits 26–36 — Does Not Apply

00000000000 = Digits 26-36 are not applicable to the GELK products

Digit 37 — Ducted Filter Rack

0 = Non-Ducted Filter Rack
C = Ducted Filter Rack (Bottom Access)

Digit 38 — Isolation Valve

0 = No Isolation Valve

Digit 39 — Power Connection

1 = Single Point

Digit 40 — Drain Pan

B = Stainless Steel Drain Pan

Overview of Manual

Note: *One copy of this document ships inside the control panel of each unit and is customer property. It must be retained by the unit's maintenance personnel.*

This booklet describes proper installation, operation, and maintenance procedures for air cooled systems.

By carefully reviewing the information within this manual and following the instructions, the risk of improper operation and/or component damage will be minimized.

It is important that periodic maintenance be performed to help assure trouble free operation. A maintenance schedule is provided at the end of this manual.

Should equipment failure occur, contact a qualified service organization with qualified, experienced technicians to properly diagnose and repair this equipment.

Unit Nameplate

The unit nameplate is located on the outside of the control box access panel at the front of the unit. It includes the unit model number, serial number, electrical characteristics, refrigerant charge, and other pertinent unit data.

Compressor Nameplate

The nameplate for the compressors are located on the compressor shell.

Model Number Description

All products are identified by a multiple-character model number that precisely identifies a particular type of unit. Its use will enable the owner/operator, installing contractors, and service engineers to define the operation, specific components, and other options for any specific unit.

When ordering replacement parts or requesting service, be sure to refer to the specific model number and serial number printed on the unit nameplate.

General Information

Unit Description

Before shipment, each unit is leak tested, dehydrated, charged with refrigerant, and run tested for proper control operation.

Air-to-Refrigerant Coil

The air-to-refrigerant coil is aluminum fin, mechanically bonded to the copper tubing.

Water-to-Refrigerant Coil

The water-to-refrigerant coil is a copper and steel tube (tube-within-a-tube) design, leak tested to confirm there is no cross leakage between the water tube (copper) and refrigerant gas (steel tube).

Table 1. High/low pressure switch

	Trip	Recover	Unit
LP	40 +/-4	56 +/-4	psig
HP	600 +/-10	550 +/-10	psig

Additives like glycol can be added to reduce the freezing point of the water. Units are not intended to be connected to sanitary water.

- Entering fluid temperatures range from 25°F to 120°F.
- Leaving fluid temperature deltas range from 10°F to 15° F.
- Maximum water pressure allowed in system is 400 psi.

Controls

The available control type is a Deluxe 24V option.

All power wiring to the equipment is made at the optional disconnect switch for GELK.

System Input Devices and Functions

A thermostat, or building automation system is required to operate the water-source heat pump. The flexibility of having several mode capabilities depends upon the type of sensor and/or remote panel selected.

Troubleshooting and connection diagrams for the 24V control systems may be located in the back of this manual.

Deluxe 24V Controls

Units containing the Deluxe 24V control design will incorporate a microprocessor-based control board. The Trane microprocessor board is factory wired to a terminal strip or terminal plug to provide all necessary terminals for field connection. The deluxe board is equipped with a random start relay, anti-short cycle timer, brown out protection, compressor disable, condensate overflow, unit safety control, diagnostics, and a generic relay (which may be available for field use).

Operating Limits

Table 2. Operating limits

Operating Limits	Cooling	Heating
Air Limits		
Min. ambient air DB	45°F (7°C)	
Max. ambient air DB	130°F (54.4°C)	
Min. EAT DB/WB	70.0/50.0°F (21.1/10.0°C)	55.0°F/- (12.8°C/-)
Max. EAT DB/WB	85.0/78.0°F (29.4/25.6°C)	80.0°F/- (26.6°C/-)
Airflow range	285 to 450 CFM/ton[a]	
Water Limits		
Min. entering water temperature	45°F (7°C)	25°F (-4°C)
Max. entering water temperature	120°F (49°C)	86°F (30°C)
Max. water pressure	400 PSIG (2758 kPa)	
Water flow range	1.55 to 3.50 GPM/ton[a]	

[a] This value is an average and varies per model. See performance tables for each model number's rated values.

General Data

Table 3. Model GELK009, 012

Model GELK	009	012
Unit Size width x depth x height (in.)	26.5 x 53 x 9	26.5 x 53 x 9
Compressor type	Rotary	Rotary
Net weight (lbs.)	172	178
Ship weight (lbs.)	262	268
Filter size nominal (in.)	7.5 x 25	7.5 x 25
Water in/out size (FPT)	0.5	0.5
Condensate size (NPTI)	0.75	0.75
Blower wheel Size (in.)	9 x 3	9 x 3

Table 4. Model GELK009, 012 air-to-refrigerant coil

Model GEL	009	012
Working Pressure (psig)	600	600
Tubes High	8	8
Tubes Deep	3	3
No. of Circuits	1	1
Finned vol. (h,w,d)	8 x 24 x 2.6	8 x 24 x 2.6
Coil Surface Area (Sq. Ft.)	1.33	1.33
Fins per Inch	14	14
Tube Material	Copper	Copper
Tube OD (in.)	0.375	0.375
Wall Thickness	0.014	0.014
Return Bends	Copper	Copper

Performance Data

Cooling and Heating Capacities

Table 5. ANSI/AHRI/ASHRAE/ISO13256-1 WLHP, GWHP and GLHP performance – 0.75 to 1 Ton

Model	Rated GPM	Rated CFM	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
			Cooling 86°F		Heating 68°F		Cooling 59°F		Heating 50°F		Full Cool 77°F		Full Heat 32°F	
			Capacity Btuh	EER	Capacity Btuh	COP	Capacity Btuh	EER	Capacity Btuh	COP	Capacity Btuh	EER	Capacity Btuh	COP
GELK009	2.25	325	8774	17.35	10658	5.61	9931	28.05	8926	4.83	9195	20.54	6765	3.79
GELK012	3.0	400	12175	15.76	15869	5.13	13062	22.56	13158	4.53	12722	18.18	10074	3.68

Note: Rated in accordance with ANSI/AHRI/ASHRAE/ISO13256-1. Certified conditions are 80.6°F DB/66.2°F WB EAT in cooling and 68°F DB/59°F WB EAT in heating.

Table 6. Cooling capacities (net) – GELK009

EWT	GPM	Total Mbtuh	Sen Mbtuh	SHR	Comp Pwr kW	Reject Mbtuh	LWT	Feet Head
45	1.5	10.9	9.0	0.83	0.25	11.7	61.1	4.6
45	1.8	10.9	9.1	0.83	0.23	11.7	58.0	6.8
45	2	11.0	9.1	0.83	0.22	11.7	56.6	8.4
45	2.3	11.0	9.1	0.83	0.21	11.7	55.4	10.1
45	2.4	11.0	9.1	0.83	0.21	11.7	54.8	11.3
45	2.5	11.0	9.1	0.83	0.20	11.7	54.5	12.0
45	2.7	11.0	9.1	0.83	0.20	11.7	53.7	14.0
55	1.5	10.5	8.9	0.84	0.32	11.6	70.8	4.5
55	1.8	10.6	8.9	0.84	0.30	11.6	67.8	6.6
55	2	10.6	8.9	0.84	0.29	11.6	66.4	8.1
55	2.3	10.6	8.9	0.84	0.29	11.6	65.2	9.7
55	2.4	10.6	8.9	0.84	0.28	11.6	64.6	10.9
55	2.5	10.6	8.9	0.84	0.28	11.6	64.3	11.5
55	2.7	10.6	8.9	0.84	0.28	11.6	63.5	13.4
68	1.5	9.9	8.6	0.87	0.39	11.3	83.1	4.3
68	1.8	10.0	8.7	0.86	0.38	11.3	80.3	6.3
68	2	10.1	8.7	0.86	0.37	11.3	78.9	7.7
68	2.3	10.1	8.7	0.86	0.37	11.3	77.9	9.3
68	2.4	10.1	8.7	0.86	0.36	11.3	77.3	10.4
68	2.5	10.1	8.7	0.86	0.36	11.4	77.0	11.0
68	2.7	10.1	8.7	0.86	0.36	11.4	76.2	12.8
75	1.5	9.7	8.5	0.87	0.42	11.2	90.0	4.0
75	1.8	9.8	8.5	0.87	0.41	11.2	87.2	5.9
75	2	9.9	8.5	0.86	0.40	11.2	85.8	7.2
75	2.3	9.9	8.5	0.86	0.40	11.3	84.8	8.7
75	2.4	9.9	8.6	0.86	0.39	11.3	84.2	9.8
75	2.5	9.9	8.6	0.86	0.39	11.3	83.9	10.3
75	2.7	10.0	8.6	0.86	0.39	11.3	83.2	12.0
86	1.5	9.2	8.2	0.89	0.49	10.9	100.6	3.9
86	1.8	9.4	8.3	0.88	0.48	11.0	97.8	5.7
86	2	9.4	8.3	0.88	0.47	11.0	96.5	7.0

Table 6. Cooling capacities (net) – GELK009 (continued)

EWT	GPM	Total Mbtuh	Sen Mbtuh	SHR	Comp Pwr kW	Reject Mbtuh	LWT	Feet Head
86	2.3	9.4	8.3	0.88	0.46	11.0	95.5	8.5
86	2.4	9.5	8.3	0.88	0.46	11.0	94.9	9.5
86	2.5	9.5	8.3	0.88	0.46	11.0	94.7	10.0
86	2.7	9.5	8.3	0.88	0.46	11.1	94.0	11.7
95	1.5	8.6	7.9	0.92	0.54	10.5	108.9	3.8
95	1.8	8.7	8.0	0.91	0.53	10.5	106.3	5.6
95	2	8.8	8.0	0.91	0.52	10.6	105.1	6.8
95	2.3	8.9	8.0	0.91	0.52	10.6	104.1	8.2
95	2.4	8.9	8.1	0.91	0.51	10.6	103.6	9.2
95	2.5	8.9	8.1	0.90	0.51	10.7	103.3	9.8
95	2.7	8.9	8.1	0.90	0.51	10.7	102.6	11.4
105	1.5	8.0	7.6	0.95	0.60	10.0	118.2	3.7
105	1.8	8.1	7.7	0.95	0.59	10.1	115.7	5.4
105	2	8.2	7.7	0.94	0.58	10.2	114.6	6.7
105	2.3	8.2	7.7	0.94	0.58	10.2	113.7	8.0
105	2.4	8.2	7.7	0.94	0.58	10.2	113.1	9.0
105	2.5	8.3	7.7	0.94	0.58	10.2	112.9	9.5
105	2.7	8.3	7.7	0.94	0.58	10.2	112.9	11.1
115	1.5	7.1	7.1	1.00	0.66	9.3	127.1	3.6
115	1.8	7.3	7.3	1.00	0.65	9.5	125.0	5.3
115	2	7.4	7.3	0.99	0.65	9.6	123.9	6.5
115	2.3	7.4	7.4	0.99	0.64	9.6	123.1	7.8
115	2.4	7.5	7.4	0.99	0.64	9.6	122.6	8.8
115	2.5	7.5	7.4	0.99	0.64	9.7	122.4	9.2
115	2.7	7.5	7.4	0.98	0.64	9.7	121.8	10.8

Note: Cooling performance data is tabulated at 80.6°F DB/66.2°F WB entering air at ANSI/AHRI/ASHRAE/ISO13256-1 rated cfm. For ANSI/AHRI/ASHRAE/ISO13256-1 certified ratings, refer to the ANSI/AHRI/ASHRAE/ISO13256-1 WLHP, GWHP and GLHP performance table. See performance correction tables to correct performance at conditions other than those tabulated. Data shown is for unit performance only. Interpolation of data is permissible; extrapolation is not. Rated GPM: 2.3 Minimum cfm 259; Rated cfm 325; Maximum cfm 390.

Table 7. Cooling capacities (net) – GELK012

EWT	GPM	Total Mbtuh	Sen Mbtuh	SHR	Comp Pwr kW	Reject Mbtuh	LWT	Feet Head
45	2	14.3	11.5	0.80	0.4	15.6	60.5	2.1
45	2.4	14.4	11.5	0.80	0.4	15.6	57.9	2.9
45	2.7	14.4	11.5	0.80	0.4	15.6	56.5	3.5
45	3	14.4	11.5	0.80	0.4	15.6	55.3	4.3
45	3.2	14.4	11.5	0.80	0.3	15.6	54.7	4.8
45	3.3	14.4	11.5	0.80	0.3	15.6	54.4	5.1
45	3.6	14.4	11.6	0.80	0.3	15.6	53.6	5.9
55	2	13.8	11.3	0.82	0.5	15.5	70.3	2.0
55	2.4	13.9	11.3	0.82	0.5	15.5	67.8	2.8
55	2.7	13.9	11.3	0.81	0.5	15.5	66.4	3.4
55	3	13.9	11.3	0.81	0.4	15.5	65.2	4.1

Table 7. Cooling capacities (net) – GELK012 (continued)

EWT	GPM	Total Mbtuh	Sen Mbtuh	SHR	Comp Pwr kW	Reject Mbtuh	LWT	Feet Head
55	3.2	13.9	11.3	0.81	0.4	15.5	64.6	4.6
55	3.3	13.9	11.3	0.81	0.4	15.5	64.3	4.9
55	3.6	14.0	11.4	0.81	0.4	15.4	63.5	5.7
68	2	13.2	11.0	0.83	0.6	15.2	83.0	1.9
68	2.4	13.2	11.0	0.83	0.6	15.2	80.5	2.6
68	2.7	13.2	11.1	0.83	0.6	15.2	79.1	3.3
68	3	13.3	11.1	0.83	0.6	15.2	78.0	3.9
68	3.2	13.3	11.1	0.83	0.6	15.2	77.4	4.4
68	3.3	13.3	11.1	0.83	0.6	15.2	77.1	4.6
68	3.6	13.3	11.1	0.83	0.5	15.2	76.3	5.4
75	2	13.4	11.0	0.83	0.6	15.6	90.3	1.8
75	2.4	13.5	11.1	0.82	0.6	15.6	87.8	2.5
75	2.7	13.5	11.1	0.82	0.6	15.6	86.4	3.1
75	3	13.5	11.1	0.82	0.6	15.6	85.3	3.7
75	3.2	13.5	11.1	0.82	0.6	15.6	84.6	4.1
75	3.3	13.5	11.1	0.82	0.6	15.6	84.3	4.4
75	3.6	13.6	11.1	0.82	0.6	15.6	83.6	5.1
86	2	12.8	10.8	0.85	0.7	15.2	101.0	1.7
86	2.4	12.8	10.8	0.84	0.7	15.2	98.5	2.4
86	2.7	12.9	10.8	0.84	0.7	15.2	97.1	2.9
86	3	12.9	10.9	0.84	0.7	15.2	96.0	3.5
86	3.2	12.9	10.9	0.84	0.7	15.2	95.4	4.0
86	3.3	12.9	10.9	0.84	0.7	15.2	95.1	4.2
86	3.6	13.0	10.9	0.84	0.7	15.2	94.4	4.9
95	2	12.1	10.5	0.87	0.8	14.8	109.5	1.7
95	2.4	12.2	10.6	0.86	0.8	14.9	107.1	2.3
95	2.7	12.3	10.6	0.86	0.8	14.9	105.8	2.9
95	3	12.3	10.6	0.86	0.8	14.9	104.8	3.4
95	3.2	12.3	10.6	0.86	0.8	14.9	104.2	3.9
95	3.3	12.3	10.6	0.86	0.7	14.9	103.9	4.1
95	3.6	12.4	10.6	0.86	0.7	14.9	103.1	4.8
105	2	11.3	10.1	0.90	0.9	14.2	118.8	1.6
105	2.4	11.4	10.2	0.89	0.9	14.3	116.6	2.3
105	2.7	11.5	10.2	0.89	0.8	14.4	115.4	2.8
105	3	11.5	10.3	0.89	0.8	14.4	114.4	3.4
105	3.2	11.6	10.3	0.89	0.8	14.4	113.8	3.8
105	3.3	11.6	10.3	0.89	0.8	14.4	113.5	4.0
105	3.6	11.6	10.3	0.89	0.8	14.4	113.5	4.6
115	2	10.4	9.8	0.94	1.0	13.6	128.2	1.6
115	2.4	10.5	9.8	0.93	0.9	13.7	126.1	2.2
115	2.7	10.6	9.9	0.93	0.9	13.8	124.9	2.7

Table 7. Cooling capacities (net) – GELK012 (continued)

EWT	GPM	Total Mbtuh	Sen Mbtuh	SHR	Comp Pwr kW	Reject Mbtuh	LWT	Feet Head
115	3	10.7	9.9	0.93	0.9	13.8	123.9	3.3
115	3.2	10.7	9.9	0.93	0.9	13.8	123.4	3.7
115	3.3	10.7	9.9	0.93	0.9	13.9	123.1	3.9
115	3.6	10.7	9.9	0.92	0.9	13.9	122.5	4.5

Note: Cooling performance data is tabulated at 80.6°F DB/66.2°F WB entering air at ANSI/AHRI/ASHRAE/ISO13256-1 rated cfm. For ANSI/AHRI/ASHRAE/ISO13256-1 certified ratings, refer to the ANSI/AHRI/ASHRAE/ISO13256-1 WLHP, GWHP and GLHP performance table. See performance correction tables to correct performance at conditions other than those tabulated. Data shown is for unit performance only. Interpolation of data is permissible; extrapolation is not. Rated GPM:3.0 Minimum cfm 320; Rated cfm 400; Maximum cfm 480.

Table 8. Heating capacities (net) – GELK009

EWT	GPM	Htg Cap Mbtuh	Absorb Mbtuh	Comp Pwr kW	LWT	Feet Head
25	1.45	5.5	3.9	0.45	18.4	6.7
25	1.80	5.6	4.0	0.45	19.5	9.8
25	2.03	5.6	4.1	0.45	20.1	12.0
25	2.25	5.7	4.1	0.46	20.5	14.4
25	2.40	5.7	4.1	0.46	20.8	16.1
25	2.48	5.7	4.2	0.46	20.9	17.0
25	2.70	5.7	4.2	0.46	21.2	19.8
32	1.45	6.1	4.5	0.46	24.5	6.5
32	1.80	6.2	4.7	0.47	25.8	9.5
32	2.03	6.3	4.7	0.47	26.4	11.6
32	2.25	6.4	4.8	0.47	26.9	14.0
32	2.40	6.4	4.8	0.47	27.2	15.6
32	2.48	6.4	4.8	0.47	27.4	16.5
32	2.70	6.5	4.9	0.47	27.7	19.2
45	1.45	7.9	6.2	0.48	35.9	5.3
45	1.80	8.0	6.4	0.48	37.5	7.7
45	2.03	8.1	6.5	0.49	38.2	9.4
45	2.25	8.2	6.5	0.49	38.9	11.3
45	2.40	8.3	6.6	0.49	39.2	12.6
45	2.48	8.3	6.6	0.49	39.4	13.3
45	2.70	8.3	6.7	0.49	39.8	15.5
55	1.45	8.9	7.3	0.49	44.4	5.1
55	1.80	9.1	7.4	0.49	46.3	7.4
55	2.03	9.2	7.5	0.49	47.2	9.0
55	2.25	9.3	7.6	0.50	47.9	10.9
55	2.40	9.4	7.7	0.50	48.3	12.2
55	2.48	9.4	7.7	0.50	48.5	12.8
55	2.70	9.4	7.7	0.50	49.0	14.9
68	1.45	10.1	8.4	0.50	55.8	4.9
68	1.80	10.4	8.7	0.50	57.9	7.1
68	2.03	10.5	8.8	0.50	58.9	8.7
68	2.25	10.6	8.9	0.50	59.7	10.4

Table 8. Heating capacities (net) – GELK009 (continued)

EWT	GPM	Htg Cap Mbtuh	Absorb Mbtuh	Comp Pwr kW	LWT	Feet Head
68	2.40	10.7	8.9	0.50	60.1	11.7
68	2.48	10.7	9.0	0.50	60.4	12.3
68	2.70	10.8	9.0	0.50	60.9	14.3
75	1.45	10.9	9.1	0.50	61.7	4.8
75	1.80	11.1	9.4	0.50	63.9	6.9
75	2.03	11.3	9.6	0.50	65.0	8.5
75	2.25	11.4	9.7	0.50	65.9	10.2
75	2.40	11.4	9.7	0.50	66.4	11.4
75	2.48	11.5	9.8	0.50	66.7	12.0
75	2.70	11.5	9.8	0.50	67.3	14.0
86	1.45	12.0	10.3	0.50	71.0	4.6
86	1.80	12.2	10.5	0.50	73.6	6.7
86	2.03	12.3	10.6	0.49	74.8	8.2
86	2.25	12.4	10.7	0.49	75.9	9.8
86	2.40	12.4	10.7	0.49	76.4	11.0
86	2.48	12.4	10.7	0.49	76.7	11.6
86	2.70	12.5	10.8	0.49	77.4	13.5

Note: Heating performance data is tabulated at 68°F DB entering air at ANSI/AHRI/ASHRAE/ISO13256-1 rated cfm. For ANSI/AHRI/ASHRAE/ISO13256-1 certified ratings, refer to the ANSI/AHRI/ASHRAE/ISO13256-1 WLHP, GWHP and GLHP performance table. See performance correction tables to correct performance at conditions other than those tabulated. Data shown is for unit performance only. Interpolation of data is permissible; extrapolation is not. Rated GPM: 2.3 Minimum cfm 259; Rated cfm 325; Maximum cfm 390.

Table 9. Heating capacities (net) – GELK012

EWT	GPM	Htg Cap Mbtuh	Absorb Mbtuh	Comp Pwr kW	LWT	Feet Head
25	2.0	7.9	5.6	0.67	18.1	3.5
25	2.4	8.1	5.8	0.68	19.1	4.8
25	2.7	8.2	5.9	0.68	19.7	5.9
25	3.0	8.3	5.9	0.68	20.2	7.1
25	3.2	8.3	6.0	0.68	20.5	8.0
25	3.3	8.3	6.0	0.68	20.6	8.4
25	3.6	8.4	6.1	0.68	20.9	9.8
32	2.0	8.9	6.5	0.70	24.2	3.4
32	2.4	9.1	6.7	0.70	25.4	4.7
32	2.7	9.2	6.8	0.70	26.0	5.7
32	3.0	9.3	6.9	0.71	26.6	6.9
32	3.2	9.3	6.9	0.71	26.9	7.7
32	3.3	9.3	6.9	0.71	27.0	8.1
32	3.6	9.4	7.0	0.71	27.4	9.5
45	2.0	11.2	8.7	0.75	35.8	2.3
45	2.4	11.4	8.9	0.75	37.1	3.2
45	2.7	11.6	9.0	0.75	37.9	3.9
45	3.0	11.7	9.1	0.76	38.5	4.7
45	3.2	11.8	9.2	0.76	38.9	5.3

Table 9. Heating capacities (net) – GELK012 (continued)

EWT	GPM	Htg Cap Mbtuh	Absorb Mbtuh	Comp Pwr kW	LWT	Feet Head
45	3.3	11.8	9.2	0.76	39.1	5.6
45	3.6	11.9	9.3	0.76	39.5	6.5
55	2.0	12.7	10.1	0.78	44.3	2.3
55	2.4	13.0	10.3	0.78	45.9	3.1
55	2.7	13.2	10.5	0.78	46.8	3.8
55	3.0	13.3	10.6	0.79	47.5	4.6
55	3.2	13.4	10.7	0.79	47.9	5.1
55	3.3	13.4	10.7	0.79	48.1	5.4
55	3.6	13.5	10.8	0.79	48.7	6.3
68	2.0	14.6	11.8	0.81	55.6	2.1
68	2.4	14.9	12.1	0.82	57.4	2.8
68	2.7	15.1	12.3	0.82	58.4	3.5
68	3.0	15.3	12.4	0.82	59.3	4.2
68	3.2	15.3	12.5	0.83	59.7	4.7
68	3.3	15.4	12.6	0.83	60.0	4.9
68	3.6	15.5	12.7	0.83	60.6	5.7
75	2.0	15.7	12.8	0.83	61.4	2.0
75	2.4	16.0	13.2	0.84	63.4	2.8
75	2.7	16.2	13.4	0.84	64.5	3.4
75	3.0	16.4	13.5	0.84	65.4	4.1
75	3.2	16.5	13.6	0.84	66.0	4.6
75	3.3	16.6	13.7	0.84	66.2	4.8
75	3.6	16.7	13.8	0.84	66.9	5.6
86	2.0	17.4	14.5	0.85	70.6	1.9
86	2.4	17.8	14.8	0.86	72.8	2.7
86	2.7	18.0	15.0	0.86	74.1	3.3
86	3.0	18.1	15.2	0.86	75.2	3.9
86	3.2	18.2	15.3	0.86	75.8	4.4
86	3.3	18.3	15.3	0.86	76.1	4.6
86	3.6	18.4	15.5	0.86	76.8	5.4

Note: Heating performance data is tabulated at 68°F DB entering air at ANSI/AHRI/ASHRAE/ISO13256-1 rated cfm. For ANSI/AHRI/ASHRAE/ISO13256-1 certified ratings, refer to the ANSI/AHRI/ASHRAE/ISO13256-1 WLHP, GWHP and GLHP performance table. See performance correction tables to correct performance at conditions other than those tabulated. Data shown is for unit performance only. Interpolation of data is permissible; extrapolation is not. Rated GPM:3.0 Minimum cfm 320; Rated cfm 400; Maximum cfm 480.

Table 10. Fan correction factors – GELK009

Entering cfm	Cooling Capacity	Sensible Capacity	Cooling Input Watts	Heating Capacity	Heating Input Watts
260	0.96	0.87	1.01	0.98	1.08
276	0.97	0.90	1.01	0.98	1.08
293	0.98	0.94	1.00	0.98	1.07
309	0.99	0.97	1.00	0.98	1.07
325	1.00	1.00	1.00	0.98	1.06
358	1.01	1.06	1.00	0.98	1.06

Table 10. Fan correction factors – GELK009 (continued)

Entering cfm	Cooling Capacity	Sensible Capacity	Cooling Input Watts	Heating Capacity	Heating Input Watts
374	1.02	1.10	0.99	0.99	1.05
390	1.03	1.13	0.99	0.99	1.05

Table 11. Fan correction factors – GELK012

Entering cfm	Cooling Capacity	Sensible Capacity	Cooling Input Watts	Heating Capacity	Heating Input Watts
320	0.96	0.88	1.01	0.97	1.07
340	0.97	0.91	1.00	0.98	1.05
360	0.98	0.94	1.00	0.99	1.03
380	0.99	0.97	1.00	0.99	1.02
400	1.00	1.00	1.00	1.00	1.00
440	1.02	1.06	1.00	1.01	0.97
460	1.02	1.09	1.00	1.01	0.96
480	1.03	1.12	0.99	1.02	0.95

Table 12. Correction factors for variation in entering air temperature – GELK009

Cooling Entering Air WB °F	Cooling Capacity	Cooling Input Watts	Sensible vs. Entering Dry Bulb Multipliers					Heating Entering Air DB °F	Heating Capacity	Heating Input Watts
			65.6	70.6	75.6	80.6	85.6			
49.4	0.949	1.013	0.885	0.949	1.014	1.080	1.148	48.0	1.055	0.764
56.3	0.951	1.012	0.782	0.950	1.015	1.081	1.148	53.0	1.043	0.824
60.3	0.952	1.012	0.612	0.826	1.016	1.082	1.149	58.0	1.030	0.884
63.2	0.952	1.012	0.487	0.702	0.917	1.083	1.150	63.0	1.015	0.942
66.2	1.000	1.000	0.355	0.571	0.786	1.000	1.151	68.0	1.000	1.000
72.1	1.108	0.967	—	—	0.524	0.741	0.957	73.0	0.984	1.057
77.1	1.202	0.930	—	—	—	0.513	0.731	78.0	0.967	1.114

Note: * = Sensible equals total capacity

Table 13. Correction factors for variation in entering air temperature – GELK012

Cooling Entering Air WB °F	Cooling Capacity	Cooling Input Watts	Sensible vs. Entering Dry Bulb Multipliers					Heating Entering Air DB °F	Heating Capacity	Heating Input Watts
			65.6	70.6	75.6	80.6	85.6			
49.4	0.943	1.009	0.927	0.990	1.056	1.122	1.191	48.0	1.058	0.808
56.3	0.944	1.008	0.793	0.998	1.057	1.124	1.191	53.0	1.045	0.858
60.3	0.945	1.008	0.634	0.835	1.039	1.125	1.192	58.0	1.032	0.907
63.2	0.957	1.007	0.516	0.718	0.920	1.124	1.193	63.0	1.018	0.956
66.2	1.000	1.000	0.392	0.595	0.798	1.000	1.205	68.0	1.000	1.000
72.1	1.108	0.979	—	—	0.552	0.756	0.959	73.0	0.980	1.043
77.1	1.203	0.950	—	—	—	0.542	0.747	78.0	0.960	1.086

Fan Performance

Table 14. Fan performance GELK009

CFM	External Static Pressure											
	0		0.05		0.10		0.15		0.20		0.25	
	kW	RPM	kW	RPM	kW	RPM	kW	RPM	kW	RPM	kW	RPM
211	0.031	738	0.033	769	0.036	801	0.038	835	0.041	869	0.044	904
228	0.036	789	0.039	817	0.042	847	0.045	878	0.048	910	0.051	943
244	0.043	839	0.046	866	0.049	894	0.052	923	0.055	952	0.058	982
260	0.051	889	0.054	915	0.057	941	0.060	968	0.063	995	0.067	1023
276	0.060	940	0.063	964	0.066	988	0.069	1014	0.073	1039	0.076	1066
293	0.069	990	0.073	1013	0.076	1036	0.080	1060	0.083	1084	0.087	1109
309	0.080	1041	0.084	1062	0.087	1084	0.091	1107	0.094	1129	0.098	1153
325	0.093	1091	0.096	1112	0.100	1132	0.103	1154	0.107	1175	0.110	1197
341	0.106	1141	0.109	1161	0.113	1181	0.116	1201	0.120	1222	0.124	1242
358	0.120	1192	0.124	1210	0.127	1229	0.131	1249	0.134	1268	0.137	1288
371	0.135	1242	0.139	1260	0.142	1278	0.145	1296	0.149	1315	0.152	1334
390	0.155	1305	0.158	1322	0.161	1339	0.164	1357	0.167	1375	0.169	1392
CFM	**External Static Pressure**									
	0.30		**0.35**		**0.40**		**0.45**		**0.50**	
	kW	**RPM**	**kW**	**RPM**	**kW**	**RPM**	**kW**	**RPM**	**kW**	**RPM**
211	0.047	940	0.050	976	0.052	1012	0.055	1047	0.057	1082
228	0.054	976	0.057	1009	0.059	1042	0.062	1076	0.065	1109
244	0.061	1013	0.064	1044	0.068	1075	0.070	1107	0.073	1138
260	0.070	1052	0.073	1081	0.076	1110	0.079	1140	0.082	1169
276	0.080	1092	0.083	1119	0.086	1147	0.089	1175	0.092	1202
293	0.090	1134	0.093	1159	0.097	1185	0.100	1211	0.103	1237
309	0.102	1176	0.105	1200	0.108	1225	0.111	1249	0.114	1274
325	0.114	1220	0.117	1242	0.120	1265	0.123	1288	0.126	1312
341	0.127	1264	0.130	1285	0.133	1307	0.136	1329	0.139	1351
358	0.141	1308	0.144	1328	0.147	1349	0.149	1370	0.152	1391
371	0.155	1353	0.157	1373	0.160	1392	0.162	1412	0.164	1432
390	0.172	1410	0.174	1429	0.176	1447	0.178	1466	0.179	1485

Table 15. Fan performance GELK012

CFM	External Static Pressure											
	0.00		0.05		0.10		0.15		0.20		0.25	
	kW	RPM	kW	RPM	kW	RPM	kW	RPM	kW	RPM	kW	RPM
268	0.037	747	0.04	779	0.044	812	0.048	847	0.051	882	0.055	917
287	0.044	798	0.048	828	0.051	859	0.055	891	0.059	923	0.063	956
306	0.052	849	0.056	877	0.06	906	0.064	936	0.068	966	0.072	997
325	0.061	900	0.065	926	0.069	953	0.073	981	0.077	1009	0.081	1038
344	0.071	951	0.075	976	0.079	1001	0.083	1027	0.087	1054	0.091	1081
362	0.082	1002	0.085	1025	0.09	1049	0.094	1074	0.098	1099	0.103	1124
381	0.093	1053	0.097	1075	0.101	1098	0.106	1121	0.11	1145	0.115	1169
400	0.106	1104	0.11	1125	0.114	1147	0.118	1169	0.123	1191	0.127	1214
419	0.119	1155	0.123	1175	0.128	1195	0.132	1216	0.137	1238	0.141	1259
438	0.133	1205	0.138	1225	0.142	1244	0.147	1264	0.151	1285	0.156	1305

Table 15. Fan performance GELK012 (continued)

CFM	External Static Pressure											
	0.00		0.05		0.10		0.15		0.20		0.25	
	kW	RPM	kW	RPM	kW	RPM	kW	RPM	kW	RPM	kW	RPM
456	0.149	1256	0.153	1275	0.158	1294	0.162	1313	0.167	1332	0.172	1351
480	0.17	1320	0.174	1338	0.179	1355	0.183	1374	0.188	1392	0.193	1410

CFM	External Static Pressure									
	0.30		0.35		0.40		0.45		0.50	
	kW	RPM	kW	RPM	kW	RPM	kW	RPM	kW	RPM
268	0.059	953	0.064	989	0.068	1025	0.072	1060	0.076	1095
287	0.067	990	0.072	1023	0.076	1056	0.08	1090	0.085	1123
306	0.076	1028	0.08	1059	0.085	1090	0.089	1122	0.094	1153
325	0.086	1067	0.09	1097	0.095	1126	0.099	1156	0.104	1185
344	0.096	1108	0.1	1136	0.105	1163	0.11	1191	0.114	1219
362	0.107	1150	0.112	1176	0.116	1202	0.121	1228	0.126	1255
381	0.119	1193	0.124	1217	0.129	1242	0.133	1267	0.138	1292
400	0.132	1236	0.137	1260	0.142	1283	0.147	1307	0.151	1330
419	0.146	1281	0.151	1303	0.156	1325	0.161	1347	0.165	1370
438	0.161	1326	0.166	1347	0.171	1368	0.175	1389	0.18	1411
456	0.177	1371	0.181	1391	0.186	1411	0.191	1432	0.196	1452
480	0.198	1429	0.203	1448	0.208	1467	0.213	1486	0.218	1505

Electrical Data

Table 16. Electrical data single speed blower motor – GELK009, 012

Model No.	Volts	Total Unit FLA	Comp RLA (ea)	Comp LRA (ea)	No. of Comp.	Blower Motor FLA	Blower Motor hp	Fan Motor Num	Minimum Circuit Ampacity	Maximum Overcurrent Protective Device
GELK009	208-230/60/1	8.3	3.3	20.0	1	5.00	1/2	1	9.2	15
GELK012	208-230/60/1	9.7	4.7	27.0	1	5.00	1/2	1	10.9	15

Pre-Installation

⚠ WARNING

Fiberglass Wool!

Exposure to glass wool fibers without all necessary PPE equipment could result in cancer, respiratory, skin or eye irritation, which could result in death or serious injury. Disturbing the insulation in this product during installation, maintenance or repair will expose you to airborne particles of glass wool fibers and ceramic fibers known to the state of California to cause cancer through inhalation.

You MUST wear all necessary Personal Protective Equipment (PPE) including gloves, eye protection, a NIOSH approved dust/mist respirator, long sleeves and pants when working with products containing fiberglass wool.

Precautionary Measures:

- **Avoid breathing fiberglass dust.**
- **Use a NIOSH approved dust/mist respirator.**
- **Avoid contact with the skin or eyes. Wear long-sleeved, loose-fitting clothing, gloves, and eye protection.**
- **Wash clothes separately from other clothing; rinse washer thoroughly.**
- **Operations such as sawing, blowing, tear-out, and spraying may generate fiber concentrations requiring additional respiratory protection. Use the appropriate NIOSH approved respirator.**

First Aid Measures:

- **Eye Contact - Flush eyes with water to remove dust. If symptoms persist, seek medical attention.**
- **Skin Contact - Wash affected areas gently with soap and warm water after handling.**

Unit Inspection Checklist

Note: *The packaging for these units are tested per, and compliant with, the requirements of NMFC Item 180 Certified Packaged Products.*

- Unpack all components of the kit.
- Check carefully for any shipping damage. If any damage is found it must be reported immediately and a claim made against the transportation company.

  Important: *Equipment is shipped FOB (Free on Board) at the manufacturer. Therefore, freight claims for damages against the carrier must be initiated by the receiver.*

- Visually inspect the components for shipping damage as soon as possible after delivery, before it is stored. Concealed damage must be reported within 15 days.
- If concealed damage is discovered, stop unpacking the shipment.
- Do not remove damaged material from the receiving location. Take photos of the damage, if possible. The owner must provide reasonable evidence that the damage did not occur after delivery.
- Notify the carrier's terminal of damage immediately by phone and by mail. Request an immediate joint inspection of the damage by the carrier and the consignee.
- Do not attempt to repair any damaged parts until the parts are inspected by the carrier's representative.

Jobsite Inspection Checklist

Always perform the following checks before accepting a unit:

- Verify that the nameplate data matches the data on the sales order and bill of lading (including electrical data).
- Verify that the power supply complies with the unit nameplate specifications.
- Visually inspect the exterior of the unit, for signs of shipping damage. Do not sign the bill of lading accepting the unit(s) until inspection has been completed. Check for damage promptly after the unit(s) are unloaded. Once the bill of lading is signed at the jobsite, the unit(s) are now the property of the SOLD TO party and future freight claims MAY NOT be accepted by the freight company.

Jobsite Storage

⚠ WARNING

Risk of Fire — Flammable Refrigerant!

Failure to follow instructions below could result in death or serious injury, and equipment damage.

The equipment shall be stored in a room without continuously operating ignition sources.

NOTICE

Microbial Growth!

Failure to follow instructions below could result in odors and damage to the equipment and building materials.

The floor or foundation must be level and the condensate drain at the proper height for proper drainage and condensate flow. Standing water and wet surfaces inside the equipment can become an amplification site for microbial growth (mold). If there is evidence of microbial growth on the interior insulation, it should be removed and replaced prior to operating the system.

This unit is intended for indoor use only. To protect the unit from damage due to the elements, and to prevent possible IAQ contaminant sources from growing, the unit should be stored indoors. If indoor storage is not possible, the following provisions for outdoor storage must be met:

- Place the unit(s) on a dry surface or raise above the ground to assure adequate air circulation beneath the unit.
- Cover the unit(s) with a water proof tarp to protect them from the elements.
- Make provisions for continuous venting of the covered units to prevent moisture from standing on the unit(s) surfaces. Wet interior unit insulation can become an amplification site for microbial growth (mold) which has been determined to be a cause of odors and serious health related indoor air quality problems.
- Store units in the normal UP orientation to maintain oil in the compressor.
- Stack horizontal units no more than three units high.

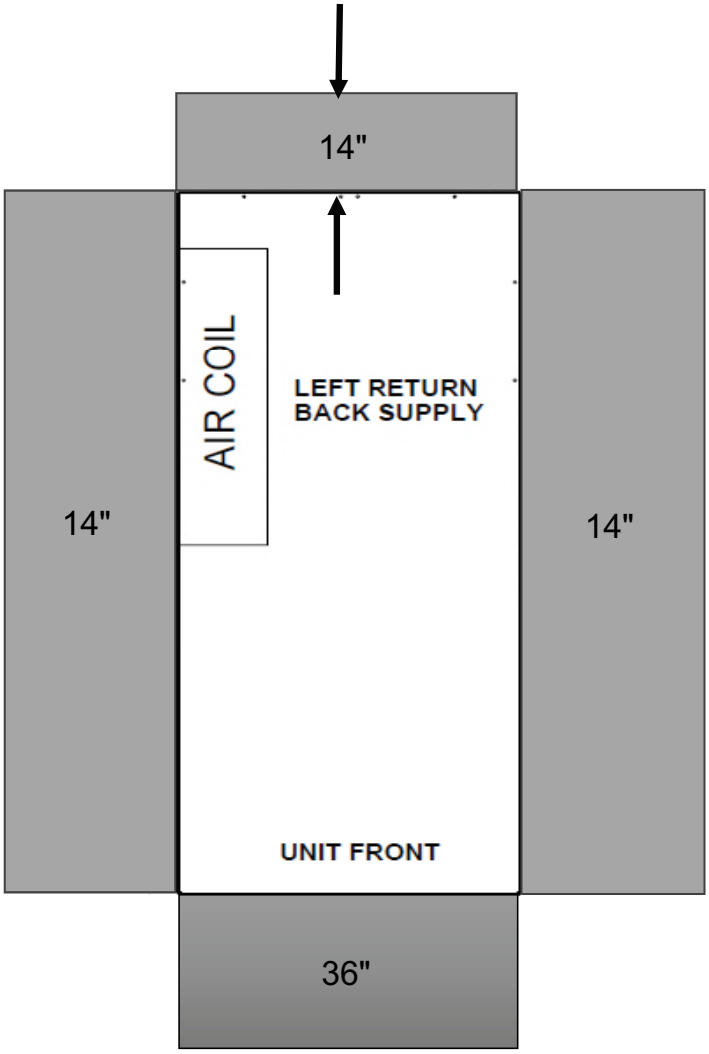
Unit Dimensions

Service Clearances

According to NEC requirements, 36 inches of access and working space is provided and maintained around all control boxes and electrical equipment to permit ready and safe operation and maintenance of such equipment. Local codes may require more clearance to electrical equipment. Check all code requirements before unit installation.

GELK Clearances

Figure 1. Left return, back supply, control box front service



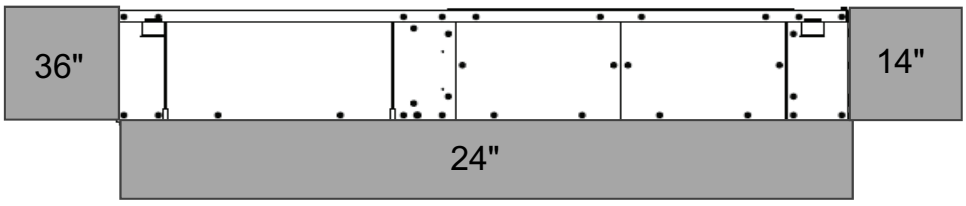


Figure 2. Left return, back supply, control box slide down service

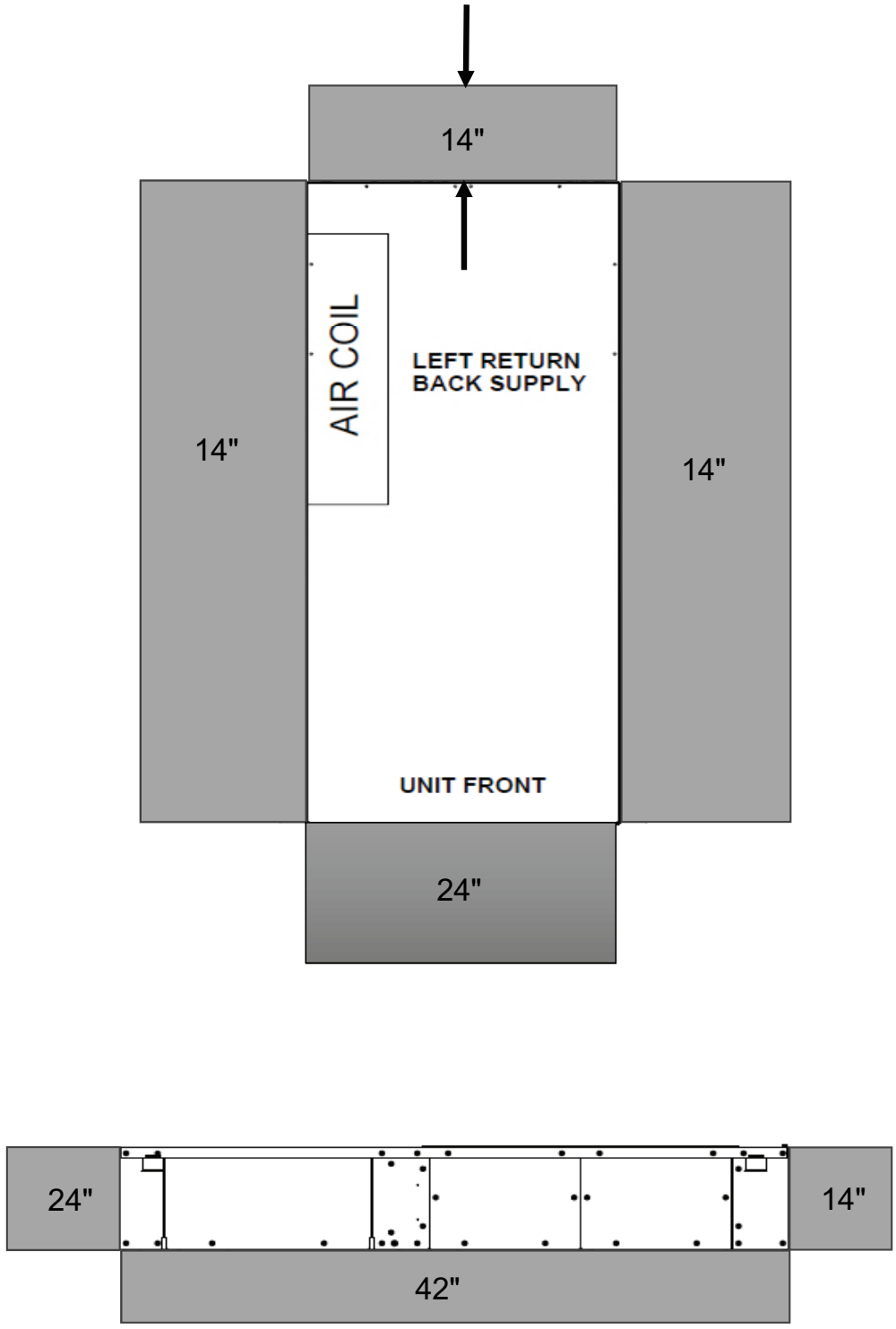


Figure 3. Right return, back supply, control box front service

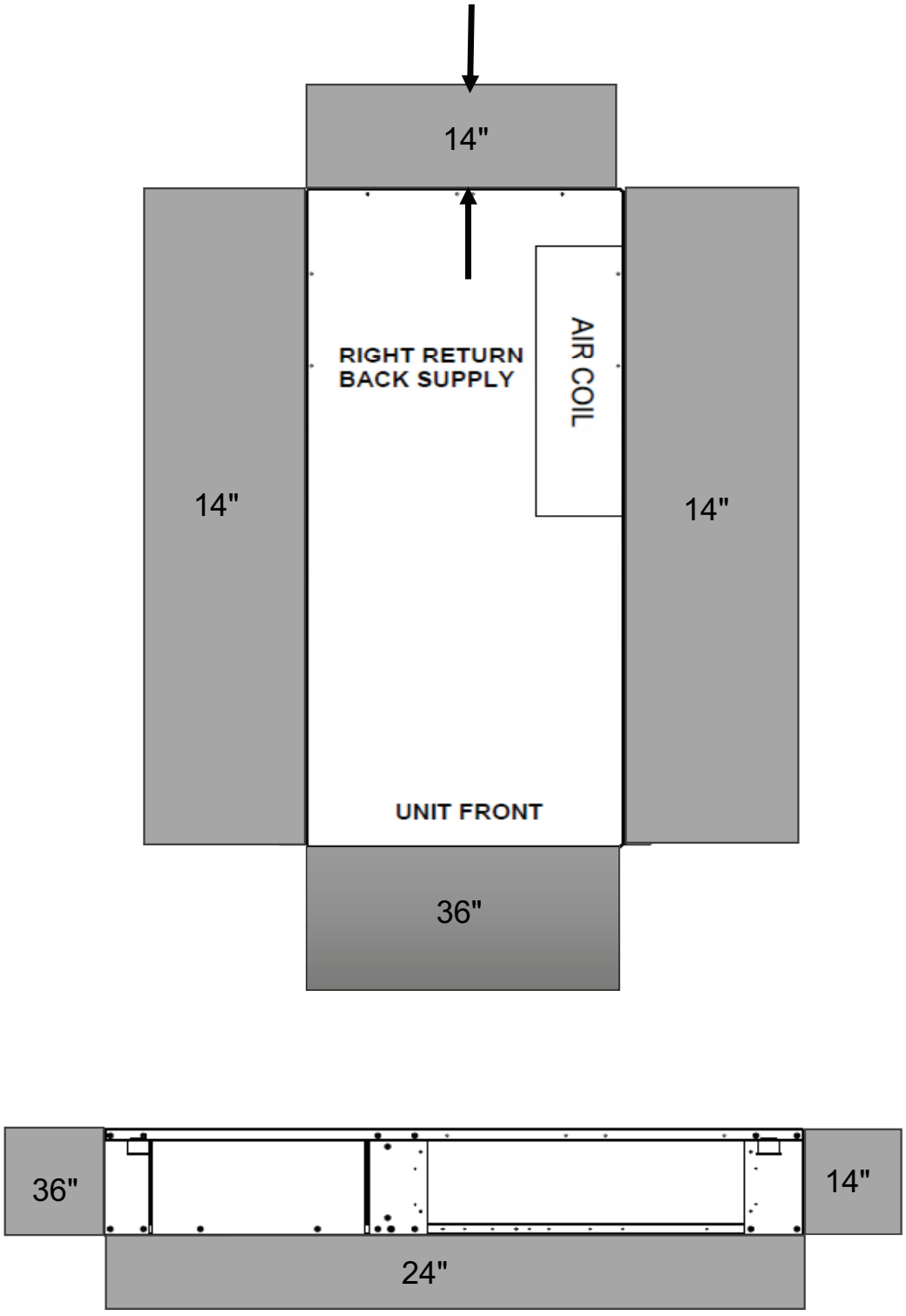
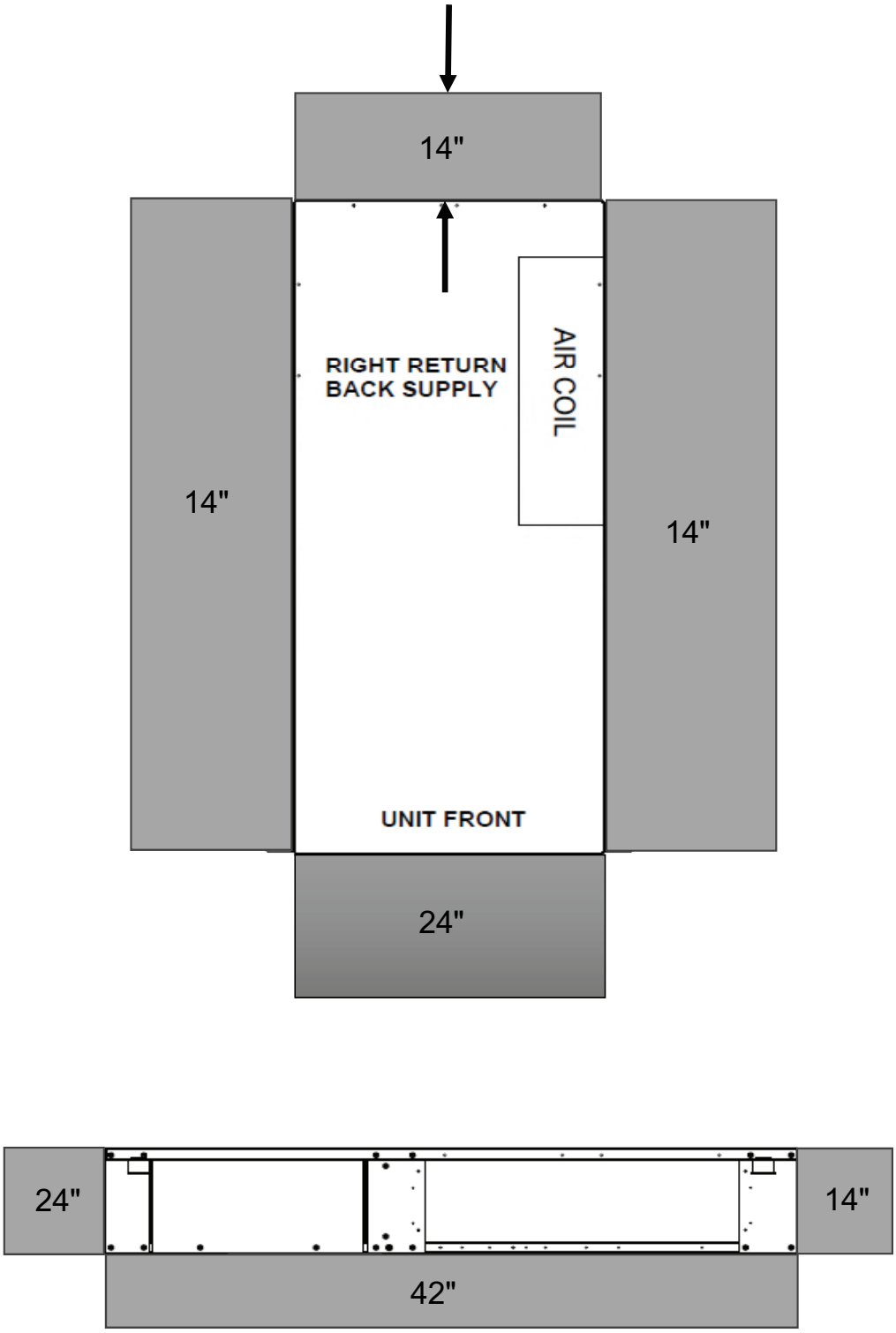


Figure 4. Right return, back supply, control box slide down service



Servicing the Control Box for a GELK Unit

The GELK unit control box can be serviced through the front service panel and the bottom service panel by sliding down the control box, particularly when there is insufficient clearance for servicing.

To access the control box through the bottom service panel:

1. Remove the control and electrical bottom service panels.
2. Carefully slide down the control box, which may be self-locked in position.
3. After completing the necessary servicing, carefully slide the control box back into position within the unit, confirming that it is securely hung on the control box bracket.
4. Rearrange the wire harnesses.
5. Slide the control box back to its original position.
6. Verify the control box bolts are fully seated in the designated slots.
7. Reinstall the bottom service panel.

Note: *If the control box is not properly installed, opening the bottom service panel may cause it to dislodge and slide off unexpectedly, posing a risk of injury.*

Figure 5. Re-installed control box

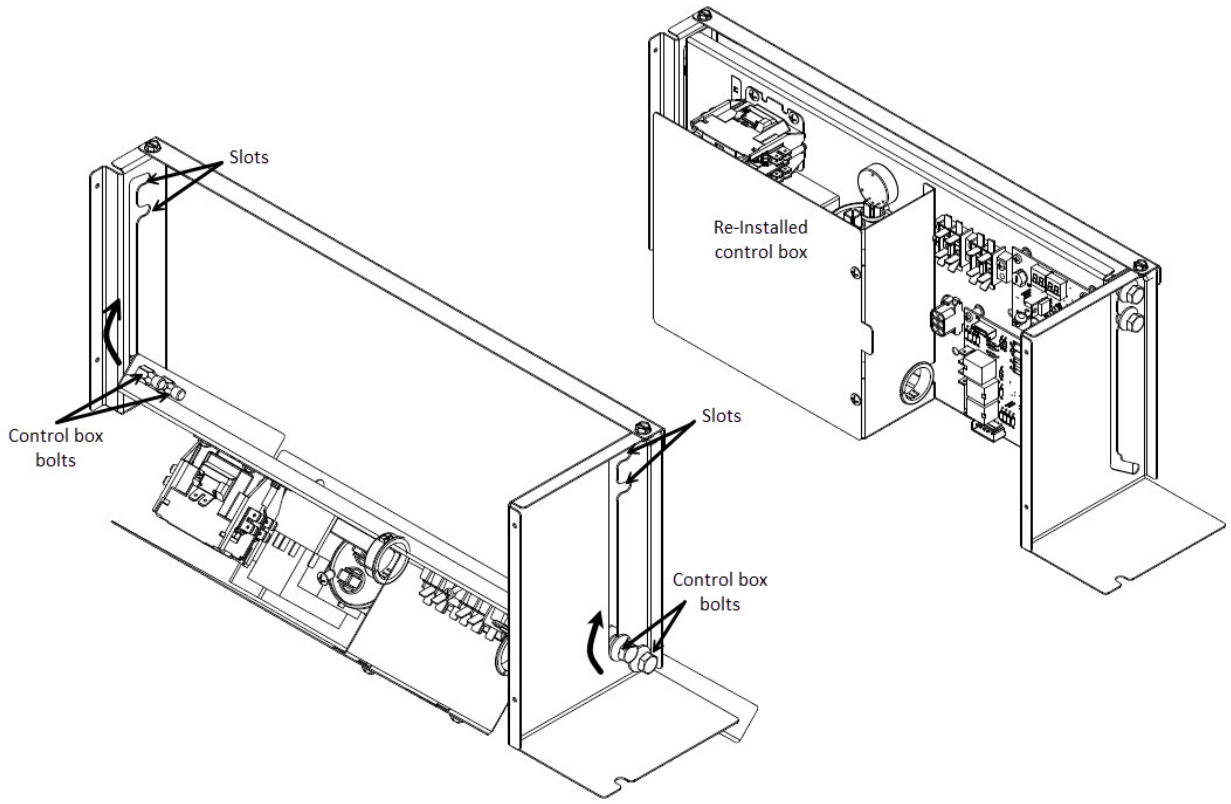


Figure 6. GELK unit access – right return, back supply

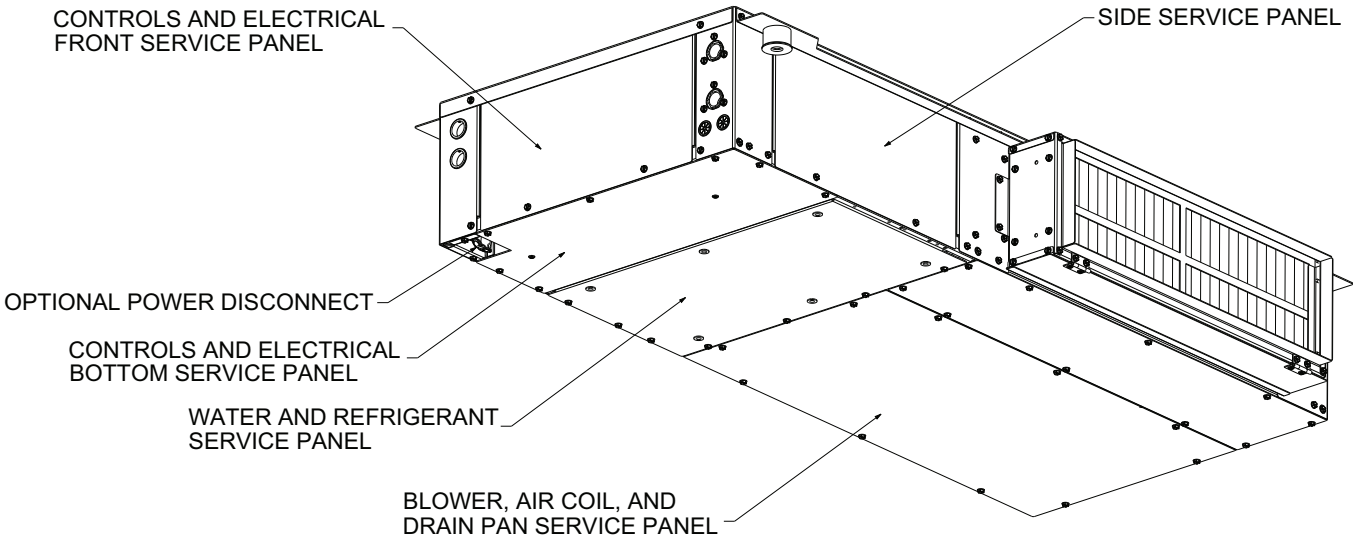


Figure 7. GELK unit access – left return, back supply

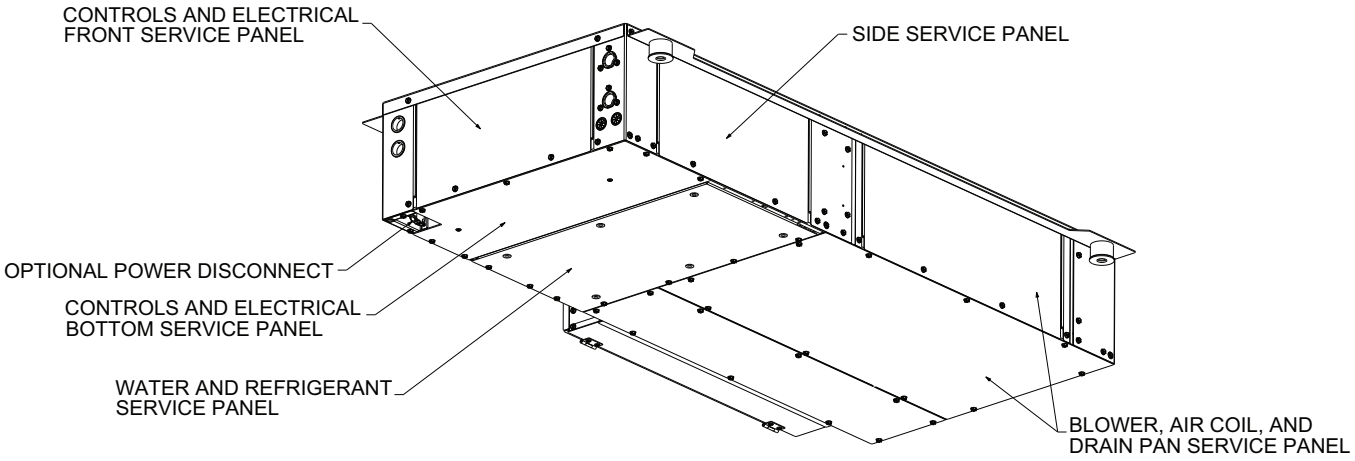


Figure 8. GELK unit slide-down control box

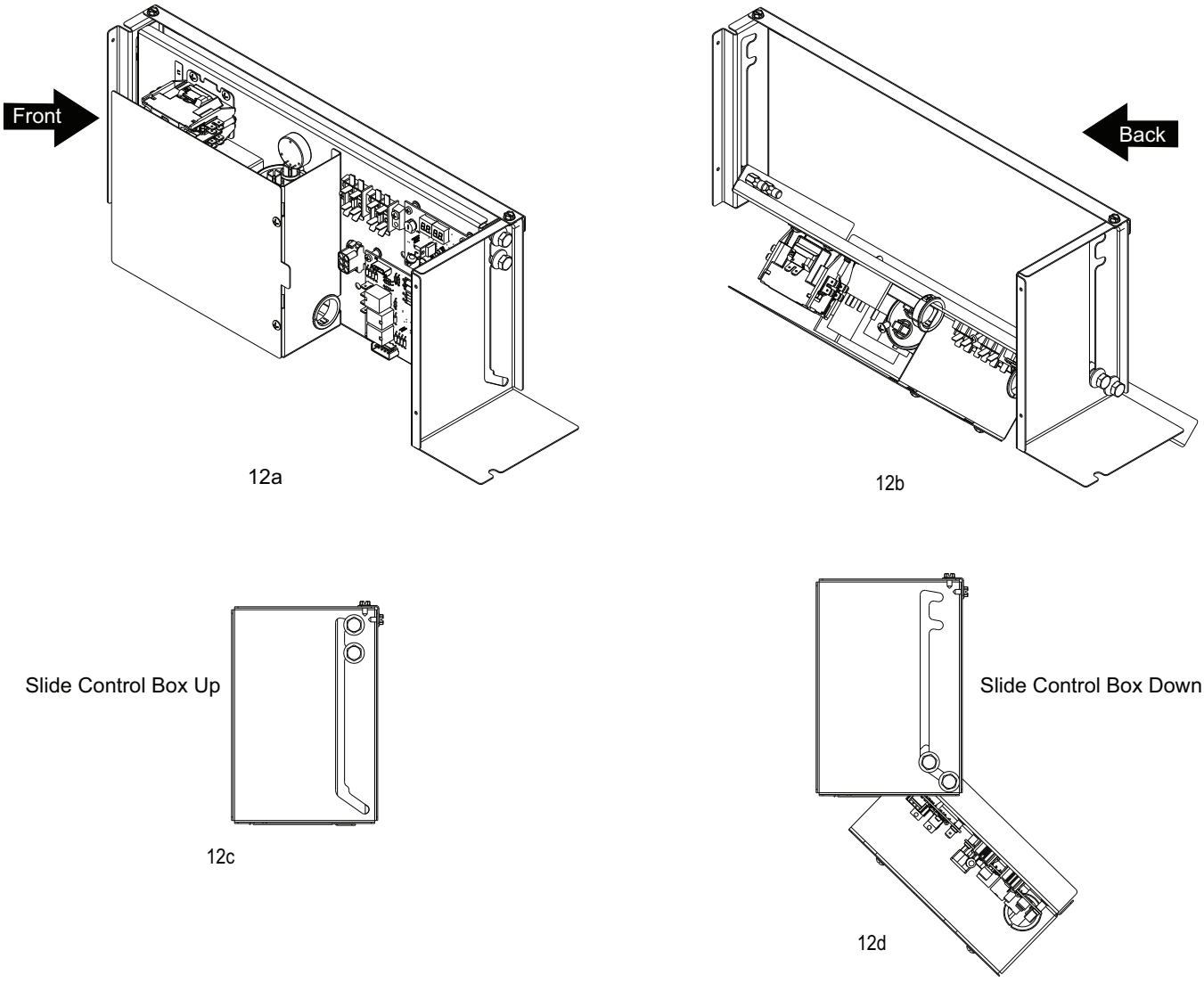
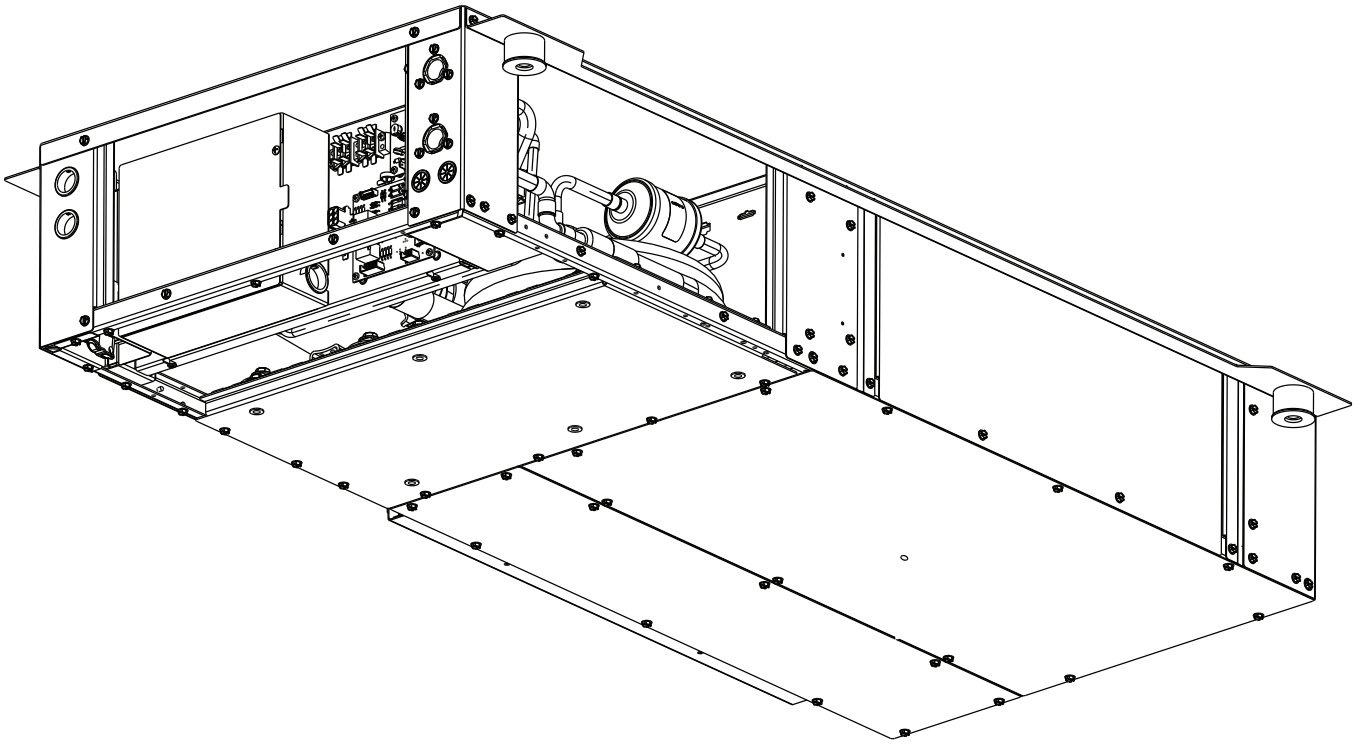


Figure 9. GELK unit control box – inner view



Dimensional Data

Figure 10. Left return/back supply GELK009, 012

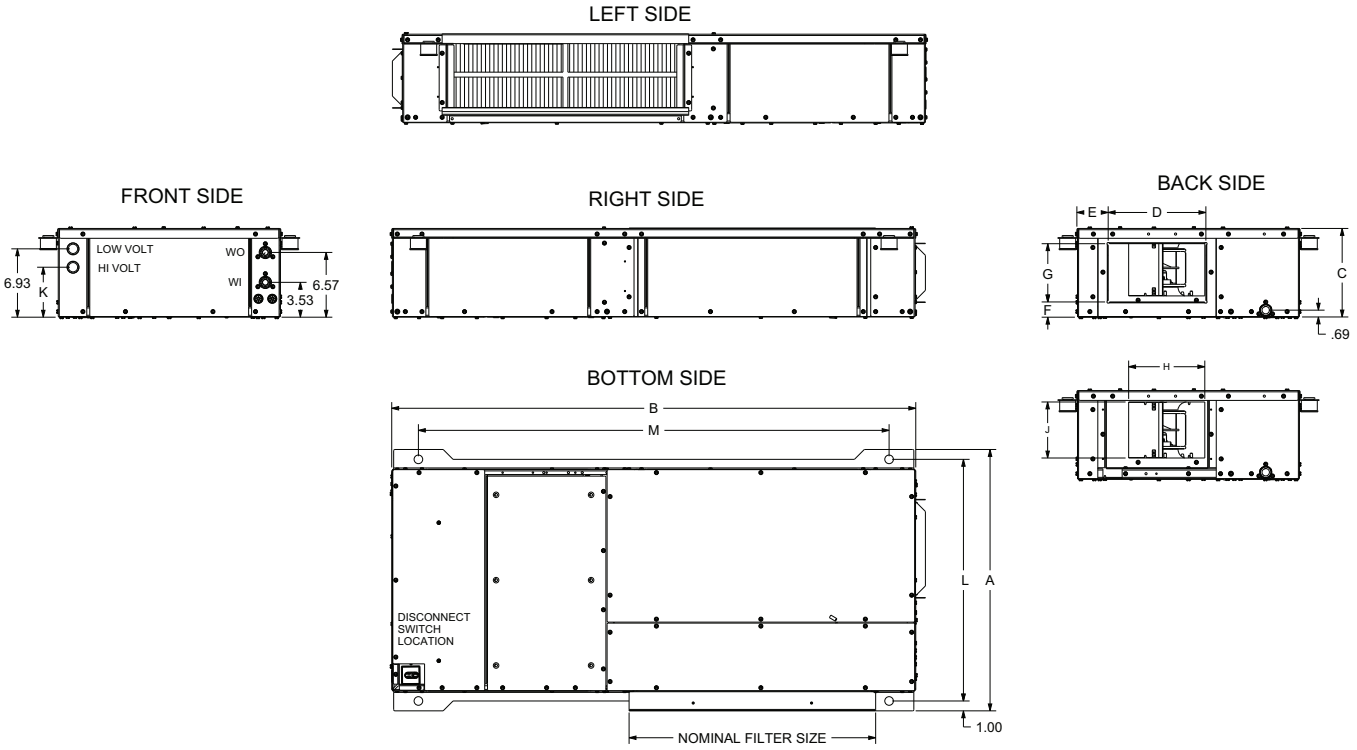


Table 17. Left return/back supply GELK009, 012

Cab Size	GELK	Width	Depth	Height	Duct Collar	Duct Collar Location		Blower Opening		Hi Volt	Unit hanging location		Nominal Filter Size	W.I. NPTI	W.O. NPTI	DRAIN NPTI
		A	B	C	D X G	E	F	H	J	K	L	M				
Low Profile	009, 012	26.5	53	9	10 x 6	3.1	1.5	7.72	5.68	5	24.5	47.73	7.5 x 25	0.50	0.50	0.75

Note: Dimensions represent unit hanging dimensions including base rails for hanging.

Figure 11. Right return/back supply GELK009, 012

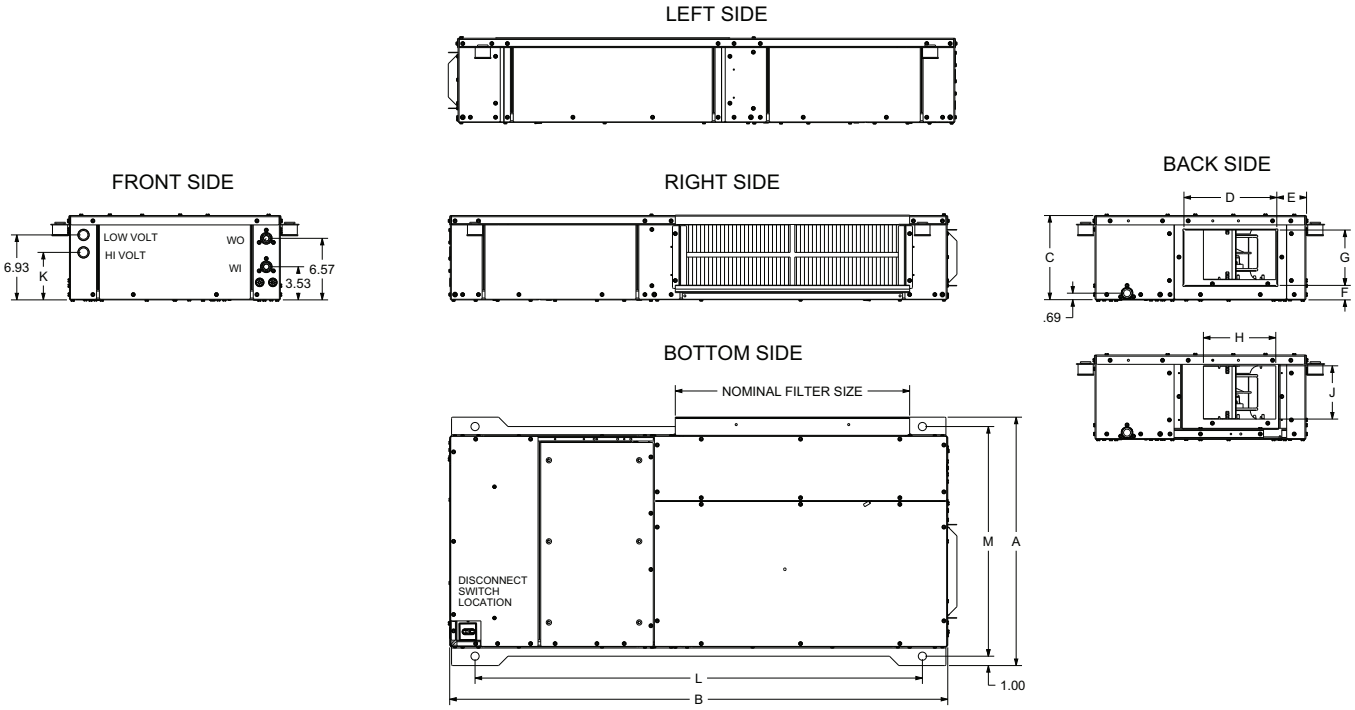


Table 18. Right return/back supply GELK009, 012

Cab Size	GELK	Width	Depth	Height	Duct Collar	Duct Collar Location		Blower Opening		Hi Volt	Unit hanging location		Nominal Filter Size	W.I. NPTI	W.O. NPTI	DRAIN NPTI
		A	B	C	D X G	E	F	H	J	K	L	M				
Low Profile	009, 012	26.5	53	9	10 x 6	3.1	1.5	7.72	5.68	5	24.5	47.73	7.5 x 25	0.50	0.50	0.75

Note: Dimensions represent unit hanging dimensions including base rails for hanging.

Weights

Table 19. Unit weights GELK009 and 012 (0.75 and 1 tons)

GEL (60 Hz)	Shipping weight with pallet (lb)	Unit weight without pallet (lb)
GELK009	262	172
GELK012	268	178

Weight Distribution for Hanging the GELK Model

⚠ WARNING

Improper Unit Lift!

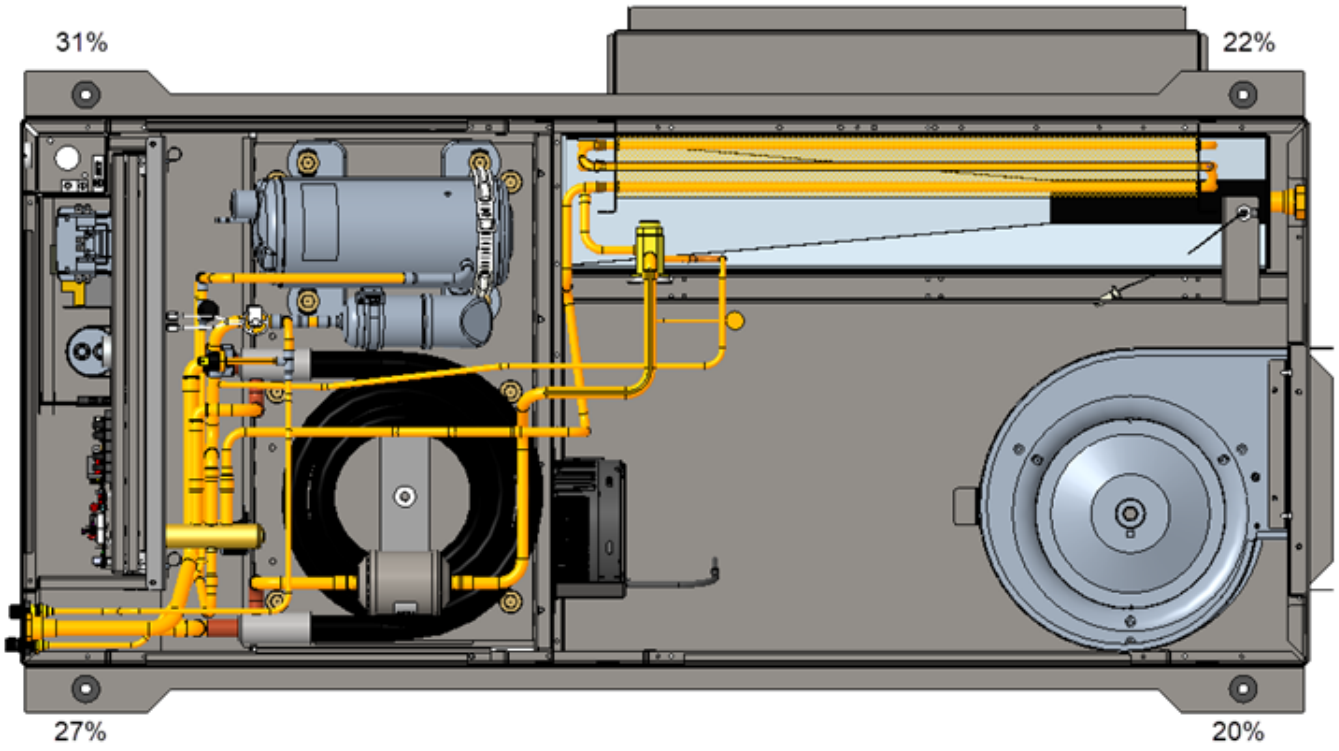
Failure to properly lift unit in a LEVEL position could result in unit dropping and possibly crushing operator/technician which could result in death or serious injury, and equipment or property-only damage.

Test lift unit approximately 24 inches (61 cm) to verify proper center of gravity lift point. To avoid dropping of unit, reposition lifting point if unit is not level.

The approximate weight distribution for proper hanging of the unit is indicated by weight distribution in the figure below.

Tolerance on the weights determined are ±15%.

Figure 12. Weight distribution GELK



A2L Information and Installation Requirements

Installation/Code Compliance Requirements

Building level controls may need to be upgraded/modified to demand leak mitigation actions. Those actions include, but are not limited to, fully opening damper and VAV boxes (if present), and disabling electric heat in VAV boxes (if present).

Verify the equipment refrigerant charge is in accordance with the room area limitation as described in Minimum Room Area Limits section.

Ensure that there are labels on the equipment stating it contains a flammable refrigerant.

A2L Work Procedures

⚠ WARNING

Risk of Fire — Flammable Refrigerant!

Failure to follow instructions below could result in death or serious injury, and equipment damage.

- **To be repaired only by trained service personnel.**
- **Do not puncture refrigerant tubing.**
- **Dispose of properly in accordance with federal or local regulations.**
- **The equipment shall be stored in a room without continuously operating ignition sources.**

⚠ WARNING

Refrigerant under High Pressure!

Failure to follow instructions below could result in an explosion which could result in death or serious injury or equipment damage.
System contains refrigerant under high pressure. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or refrigerant additives.

⚠ WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

The units described in this manual use R-454B refrigerant. Use ONLY R-454B rated service equipment or components with these units. For specific handling concerns with R-454B, contact your local Trane representative.

Installation, repair, removal, or disposal should be performed by trained service personnel.

At all times, Trane's maintenance and service guidelines shall be followed. If in doubt, contact Trane technical support for assistance.

Servicing

Prior to initiating work on equipment, check the area with an appropriate refrigerant detector. Ensure the service personnel are properly trained regarding work in potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed, or intrinsically safe. Be aware that the refrigerant does not contain an odor.

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available on hand. A dry powder or CO_2 fire extinguisher should be located adjacent to the charging area.

At all times, Trane's maintenance and service guidelines shall be followed. If in doubt, contact Trane technical support for assistance.

All maintenance staff and others working in the local area shall be instructed on the nature of the work being carried out. Work in confined spaces shall be avoided.

Ignition Source Mitigation

Do not use any sources of ignition when working on the refrigeration system.

Keep all ignition sources, including cigarette smoking, away from the site of installation, repair, removal or disposal, during which refrigerant can potentially be released to the surrounding space.

Survey the area around the equipment before initiating work to ensure no flammable hazards or ignition risks are present.

"No Smoking" signs shall be displayed.

Do not use devices that can be a source of ignition to accelerate defrosting of components. Use only defrost and cleaning procedures recommended by Trane. Do not pierce or burn.

Ventilation

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere. If

present, check that the ventilation system, including outlets, are operating adequately and are not obstructed.

Refrigerating Equipment

Refrigerant piping or components should not be installed in locations where substances which may corrode them are present.

Check that equipment hazard markings are visible and legible. Replace them if they are not.

For equipment using secondary fluids, like water or glycol, check that refrigerant is not present in the secondary fluid loop before conducting any hot work.

Electrical Devices

Do not apply power to the circuit if a fault exists which compromises safety. If the fault cannot be corrected immediately, but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment, so all parties are advised.

Initial safety checks shall include:

- Cabling is not subject to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. Account for the effects of aging or continual vibration from sources such as compressors or fans.
- Capacitors are discharged. This shall be done in a safe manner to avoid possibility of sparking.
- No live electrical components and wiring are exposed while charging, recovering, or purging the system.
- Verify continuity of earth bonding.
- Replace electrical components with Trane replacement parts, or those meeting the same ratings and qualified for flame arrest protection, UL LZGH2 category.

Leak Detection

Never use an open flame to detect leaks. A halide torch should not be used. Use only approved leak detection methods per this instruction manual.

The following leak detection methods are deemed acceptable for all refrigerant systems.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Verify the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL gas (25% maximum) is confirmed.

Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

Examples of leak detection fluids are:

- Bubble method
- Fluorescent method agents

If a leak is suspected, all naked flames shall be removed/ extinguished.

If a refrigerant leak is found which requires brazing, all refrigerant shall be recovered from the system, or isolated (by means of shut-off valves) in a part of the system remote from the leak.

Refrigerant Removal and Evacuation

Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (special cylinders for the recovery of refrigerant, for example). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration.

The following procedure shall be adhered to:

1. Safely remove refrigerant following local and national regulations.
2. Evacuate.
3. Purge the circuit with inert gas.
4. Evacuate (optional for A2L).
5. Continuously flush or purge with inert gas when using flame to open circuit.
6. Open the circuit.

Prior to refrigerant removal, open all appropriate valves, including solenoid and expansion valves. Use control settings, where available. When not available, manually open all electronically controlled valves using acceptable service procedures.

The recovery equipment shall be in good working order with instructions available. Equipment shall be suitable for the recovery of the flammable refrigerant. For specific handling concerns, contact the manufacturer. Ensure all hose connections are checked for tightness to avoid refrigerant leaks.

In addition, a set of calibrated weighing scales shall be available and in good working order.

The refrigerant shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. Do not mix refrigerants in recovery unit and especially not in cylinders.

Refrigerant recovery unit should be purged with an inert gas after each use or before using with a different refrigerant Class – for example, A2L to A1.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not

remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

The system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

The system shall be vented down to atmospheric pressure to enable work to take place.

The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

Refrigerant Charging

In addition to conventional charging procedures, the following requirements shall be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment.
- Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigerating system.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Prior to refrigerant charging, open all appropriate valves, including solenoid and electronic expansion valves (EXVs). Use control settings, where available. When not available, manually open all electronically controlled valves using acceptable service procedures.

Verify the equipment refrigerant charge is in accordance with the room area limitation as described in Minimum Room Area Limits section.

Decommissioning

Before carrying out the decommissioning procedure, it is essential that the trained service personnel is completely familiar with the equipment and all its details. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

1. Become familiar with the equipment and its operation.
2. Isolate system electrically.
3. Before attempting the procedure, ensure that:
    a. Mechanical handling equipment is available, if required, for handling refrigerant cylinders.
    b. All personal protective equipment is available and being used correctly.
    c. The recovery process is supervised at all times by a competent person.
    d. Recovery equipment and cylinders conform to the appropriate standards.
4. Pump down refrigerant system, if possible.
5. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
6. Make sure that cylinder is situated on the scales before recovery takes place.
7. Start the recovery machine and operate in accordance with instructions.
8. Do not overfill cylinders (no more than 80% volume liquid charge).
9. Do not exceed the maximum working pressure of the cylinder, even temporarily.
10. When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
11. Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.
12. When equipment has been decommissioned, attach a signed and dated label stating it has been decommissioned and emptied of refrigerant.
13. Ensure that there are labels on the equipment stating it contains flammable refrigerant.

A2L Application Considerations

This product is listed to UL standard 60335-2-40, Household and Similar Electrical Appliances – Safety – Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers, which defines safe design and use strategies for equipment using A2L refrigerants. This standard limits the refrigerant concentration in a space in the event of a refrigerant leak. To meet the requirements, the UL standard defines minimum room area, refrigerant charge limit, minimum circulation airflow and/or ventilation airflow requirements, and limits the use of ignition sources in spaces. The standard may require a unit refrigerant leak detection system.

For equipment with R-454B and charge amounts less than or equal to 3.91 lbs per circuit, this UL standard does not prescribe a room area limit and does not require a refrigerant leak detection system or any circulation airflow

or ventilation airflow mitigation strategies. However, ignition sources in ductwork must be evaluated.

Depending on the application, a specific requirement of ANSI/ASHRAE Standard 15, Safety Standard for Refrigeration Systems, could be more stringent than UL 60335-2-40 requirements. See *Refrigeration Systems and Machinery Rooms Application Considerations for Compliance with ASHRAE® Standard 15-2022 Application Engineering Manual* (APP-APM001*-EN) for more information.

Ignition Sources in Ductwork

Do not install open flames in the ductwork. Hot surfaces exceeding 700°C (1290°F) should not be installed in the ductwork unless the average airflow velocity is not less than 1.0 m\s (200 ft\min) across the heater and proof of airflow is verified before system is energized.

Electric heaters can exceed the surface temperature limit if airflow distribution is poor, or insufficient airflow is provided over the heater.

Surface temperatures of most gas heaters do not exceed the surface temperature limits due to ANSI construction requirements.

Ignition Sources in Unit

This unit does not contain any ignition sources. All potential ignition sources, (including factory or field installed accessory electric heaters, gas heaters, relays, and contactors) were evaluated during product UL listing.

Minimum Room Area Limits (Refrigerant charge greater than 3.91 lb per circuit)

Equipment with R–454B charge amounts greater than 3.91 lb per circuit may require additional circulation or ventilation airflow mitigation strategies. In this case, two minimum room area (A_{min}) thresholds:

- The first threshold defines when equipment serving a single room is required to provide circulation airflow, either continuous or activated by a leak detection system. A ducted system requires circulation airflow unless the smallest room it serves is larger than the adjusted A_{min} threshold. This product contains a leak detection system if a circuit charge is greater than 3.91 lbs. As a result, no further leak detection system evaluation is required.
- The second threshold defines when additional ventilation airflow is required. If the room area, A or TA, is below the adjusted A_{min} or TA_{min} threshold, additional ventilation is required to remove refrigerant in the event of a leak. See the UL 60335-2-40 Clause GG.8 and ANSI\ASHRAE Standard 15 Section 7 for natural and mechanical ventilation requirements.

Table 20. Minimum room area — GELK009 and 012 (0.75 and 1 Tons)

Models	Minimum Room Area (m^2) 2.2 meters height	Minimum Room Area (ft^2) 7.2 feet height
GELK009	2.1	22.5
GELK012	2.4	25.3

Minimum Room Area (A_{min}) Adjustments

Use equation below to adjust the minimum room area, as applicable, based on the unit's installation height, altitude, and occupancy level it serves.

$$A_{min.adj} = \text{Nameplate } A_{min} \times \text{Altitude Adj} \times \text{Height Adj} \times F_{occ}$$

Multiply the altitude adjustment factor in the table below by A_{min} listed on the unit nameplate or in the Installation, Operation, and Maintenance (IOM) manual.

Table 21. Altitude adjustment factor

Altitude (ft)	Sea Level to 2000	2001 to 4000	4001 to 6000	6001 to 8000	8001 to 10000	10001 to 12000	12001 to 14000	14001 to 15000	Over 15000
A_{min} Adjustment	1	1.05	1.11	1.17	1.24	1.32	1.41	1.51	1.57

In addition, A_{min} can be adjusted if the unit is installed in a room at a height that is higher than the minimum height shown on the unit. To adjust A_{min}, multiply by the ratio of the unit minimum release height (in meters) / actual release height (in meters). Use 0.6 m in the ratio for unit minimum installation heights less than or equal to 0.6 m.

For institutional occupancies, ASHRAE Standard 15 applies an additional adjustment factor F_{occ} to the amount of a charge allowed in a space. To calculate the adjusted A_{min} for institutional occupancies, multiply the A_{min} on the nameplate by two.

EXAMPLE 1: 20 Ton Packaged Rooftop Multi-Zone VAV System Serving an Institutional Occupancy Space

The packaged unit serves 7600 $ft.^2$ of a nursing home located at an attitude of 4000 ft. The unit has two equally

charged 10 ton refrigeration circuits. Each circuit has 12 lbs of refrigerant with a minimum room area requirement of 180 ft.^{2} with a 2.2 m release height.

$$TA_{min.adj} = 180 \text{ ft.}^2 \times 1.05 \times 2 = 378 \text{ ft.}^2$$

No additional ventilation is required.

EXAMPLE 2: 10 Ton Split System Serving a Single Commercial Occupancy Space

The split system serves a 1500 ft.^{2} manufacturing space at 5000 ft. altitude. The final installed charge of the single circuit 10 ton unit is 20 lb. The unit has an open return with a release height of 1 m and ducted supply air. The unit A_{min} is 660 ft.^{2}.

$$A_{min.adj} = 660 \text{ ft.}^2 \times 1.11 = 733 \text{ ft.}^2$$

No additional ventilation is required.

Determining Room Area (A or TA)

The room area (A) is the room area enclosed by the projection to the floor of the walls, partitions, and doors of the space that the equipment serves. For ducted systems, total room area (TA) of all rooms connected by ducts, may be used instead of A.

Rooms connected by drop ceilings only are not considered a single room.

Rooms on the same floor of the building, and connected by an open passageway, can be considered part of the same room if the passageway is a permanent opening, extends to the floor and is intended for people to walk through.

Adjacent rooms on the same floor of the building and connected by permanent openings in the walls and/or doors between rooms (including gaps between the wall and the floor), can be considered part of the same room if the openings meet the following criteria.

- The opening is permanent and cannot be closed.
- Openings extending to the floor, such as door gaps, need to be at least 20 mm above the floor covering surface.
- Natural ventilations opening areas must meet the requirements of ANSI\ASHRAE Standard 15-2022, Section 7.2.3.2.

Rooms that are connected by a mechanical ventilation system can be considered a single room area if the mechanical ventilation system meets the requirements of ANSI\ASHRAE Standard 15-2022, Section 7.6.4.

Installation

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

Important: *If the unit is not equipped with an optional factory installed non-fused disconnect switch, a field supplied disconnect switch must be installed at or near the unit in accordance with National Electrical Code (NEC latest version).*

General Installation Checks

The checklist below is a summary of the steps required to successfully install a commercial unit. This checklist is intended to acquaint the installing personnel with what is required in the installation process. It does not replace the detailed instructions that are in the applicable sections of this manual.

1. Remove packaging and inspect the unit. Check the unit for shipping damage and material shortage; file a freight claim and notify appropriate sales representation.

   The GELK unit is anchored to the skid using four angle brackets. Remove the brackets before lifting the unit into place.
2. Verify the correct model, options and voltage from the unit nameplate.
3. Pull out all field attached parts (i.e. filter rack, duct collar, filter and mounting screws) from the unit packaging for field mounting.
4. Verify the installation location of the unit provides the required clearance for proper operation.
5. Remove refrigeration access panel and inspect the unit. Be certain the refrigerant tubing has clearance from adjacent parts.
6. Fabricate and install duct work
7. Install and connect a condensate drain line and trap to the drain connection.

Main Electrical

⚠ WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

1. Verify the power supply complies with the unit nameplate specifications.
2. Inspect all control panel components and tighten any loose connections.
3. Connect properly sized and protected power supply wiring to the installed disconnect switch for GELK unit.
4. Install proper grounding wires to an earth ground.

Note: *All field-installed wiring must comply with NEC and applicable local codes.*

Low Voltage Wiring (AC) Requirements

1. Install the thermostat.
2. Connect properly sized control wiring to the proper termination points between the thermostat and the unit control panel.

Filter Installation

Each unit ships with 1-in. (25.4 mm) standard or 2-in. (50.8 mm) MERV 8 air filter. All GELK units ship with the non-ducted or ducted filter rack and filters factory installed.

Note: *Do not operate the unit without filters.*

Ducted Filter Rack (Option)

When filter access is needed at the unit in a ducted return, a ducted filter rack is available.

The duct filter rack option is available in the bottom access configuration.

Figure 13. Filter rack dimensions

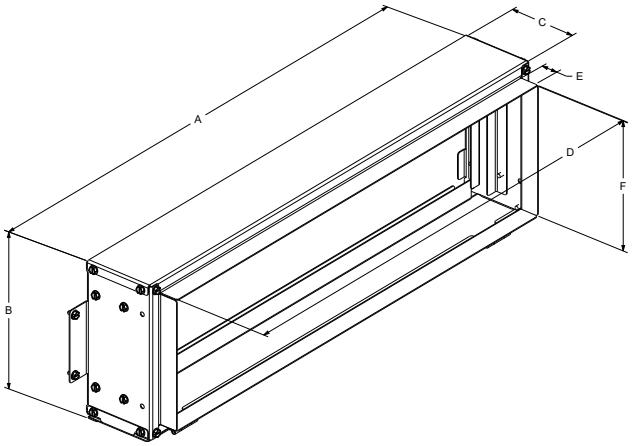


Table 22. Ducted filter opening size – GELK009, 012

Unit Size	A (-in.)	B (-in.)	C (-in.)	D (-in.)	E (-in.)	F (-in.)
GEL-K009, 012	25.46	7.82	3.64	24.25	1.00	5.56

Note: *All dimensions are shown in inches. GELK dimensions are for accessory 1 or 2-inch Filter Rack.*

Hanging the Horizontal Unit

⚠ WARNING

Proper Structural Support Required!

Failure to ensure proper structural ceiling support could result in unit falling from its location which could result in death or serious injury.

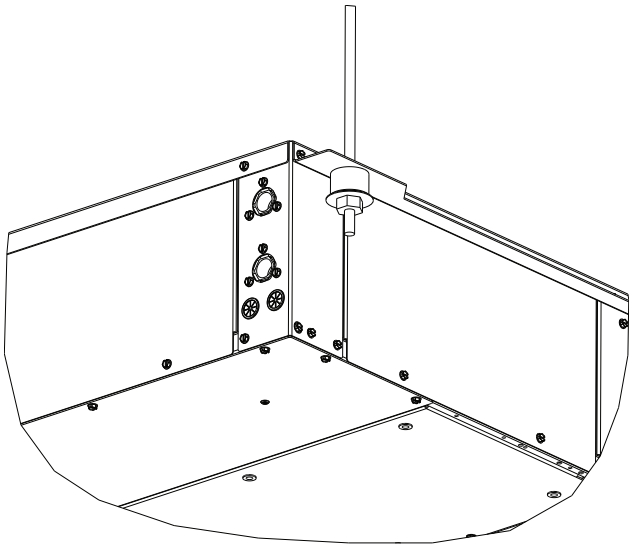
Ceiling structure must be strong enough to support the weight of the unit and any accessories. If unsure, check with a structural engineer.

To hang the GELK configuration, see the instructions and figure below:

1. For GELK models, install the hanging isolators (located in the control box from factory) into the four corners in the top panel.
2. Use a lift with a large supporting surface or a wooden structure supporting the base of the unit (hanging rails) when lifting the unit for installation.
3. Secure the equipment to a joist, concrete, etc. with the use of 3/8-inch (9.7 mm) field provided (all-thread) rod.

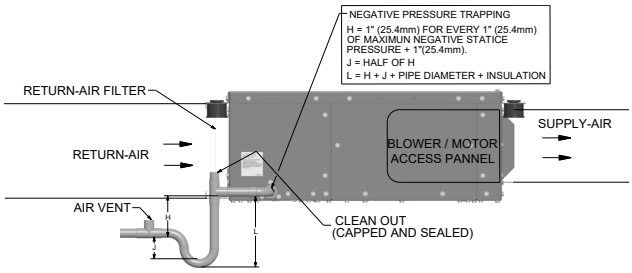
   Each rod should contain field provided nuts and washers to complete the hanging installation.

Figure 14. Hanging the unit – GELK009, 012



Condensate Drain Connection

Figure 15. Negative pressure system



For all GELK models, the drain connection is 3/4-inch NPT.

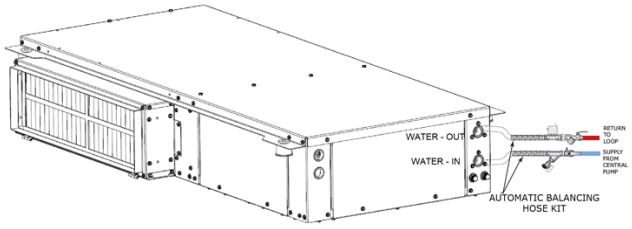
Install proper trapping to the equipment.

When designing the condensate trap for the water-source system, it is important to consider the unit draw-through design requiring negative pressure trapping.

In a properly trapped system, when condensate forms during normal operation, the water level in the trap rises until there is a constant flow. It is imperative to maintain water in the trap and not allow the trap to dry out during heating season. Keeping trap primed at all times will enable the water to flow properly. See the figure above for appropriate dimensions required in a negative pressure system.

Supply Pipe Connections

Figure 16. Supply/return pipe connections



Connect the supply and return hoses to the water-inlet (from supply) and water-outlet (to return) of the unit. For vibration isolation, it is recommended that flexible steel-braided hoses be installed instead of hard piping the equipment to the main loop system. Figure above shows connection of a Hays Mesurflo® balancing hose kit to the water-in and water-out of a vertical unit.

Note: *Above figure example incorporates the Hays Mesurflo® balancing hose kit and a 2-position isolation valve into the system design. An isolation valve is often used in variable speed pumping applications and is designed to stop water flow to the unit during non operation times. This allows the loop water pumps to run only when a requirement for pumping is needed for greater energy efficiency of the overall system design.*

Cleaning and Flushing the Water Loop

After the piping system is complete, the flexible hose connectors should be doubled back to complete the water circuit external to the unit (avoiding trash settle-out in the condenser). An extra pipe may be necessary to connect the hose kits.

1. Water circulation system should be filled with clean water using the water make up connections.

Note: *Air vents should be open during filling.*

2. With the air vents closed, start the circulating pump and then crack the air vents to bleed off the trapped air to confirm circulation through all components of the system.

Note: *Make up water must be available to the system to replace the volume formerly occupied by the air that is bled off.*

3. With the air vented and the water circulating, the entire system should be checked for leaks and repaired as required.
4. Operate the supplementary heat system (boiler) making checks per manufacturer's instructions. During this operation, visual checks should be made for leaks that may have occurred due to increased heat. Repair as required.
5. Open the system at the lowest point for the initial blow down (making sure the make up water is equal to the water being dumped). Continue blow down until the water leaving the drain runs clear, but not less than 2 hours.
6. Shutdown pumps and supplementary heat system. Reconnect the hoses placing the water-to-refrigerant heat exchanger in the water circulating system.

Note: *Vents should be open when the pumps and supplementary heat system are shutdown.*

Field Installed Power Wiring

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

NOTICE

Use Copper Conductors Only!

Failure to use copper conductors could result in equipment damage as the equipment was not designed or qualified to accept other types of conductors.

Verify that the power supply available is compatible with the unit's nameplate. Use only copper conductors to connect the power supply to the unit.

Units rated for dual voltage applications (208V/230V) are shipped with default voltage of 230V from factory. To convert to 208V, the primary lead on the transformer must be removed and switched to the 208V tap.

Main Unit Power Wiring

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

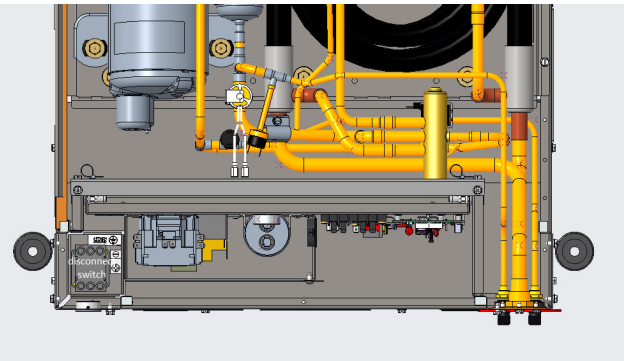
A field supplied disconnect switch must be installed at the unit in accordance with the National Electric Code (NEC latest edition).

Location of the applicable electric service entrance for HIGH (line voltage) may be found in the Dimensions section of this manual.

The high-voltage connection is made at the disconnect switch near the unit control box (see the figure below). See the customer connection diagram that is shipped with the unit for specific termination points.

Provide proper grounding for the unit in accordance with the local and national codes.

Figure 17. Disconnect switch



Control Power Transformer

The transformer is located in the control panel.

The 24 V control power transformers are to be used only with the accessories called out in this manual. A 75 VA transformer is equipped with a circuit breaker. If a circuit breaker trips, turn OFF all power to the unit before attempting to reset it.

⚠ WARNING

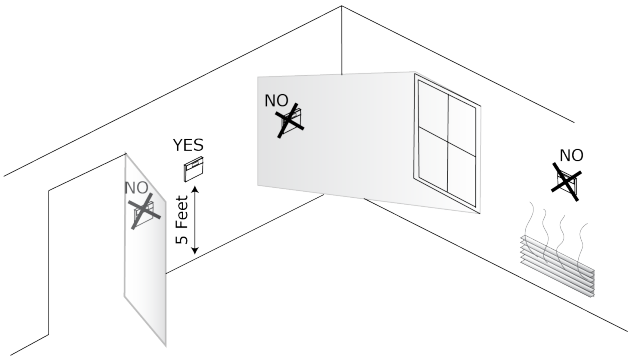
Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

Thermostat Location

Figure 18. Thermostat/sensor location



Location of the thermostat is an important element of effective room control.

Areas where the thermostat should not be located include:

- Behind doors or corners
- Near hot or cold air ducts
- Near radiant heat (heat emitted from appliances or the sun)
- Near concealed pipes or chimneys
- On outside walls or other non conditioned surfaces
- In airflows from adjacent zones or other units

Note: *Thermostat needs to power O for cooling.*

Thermostats

Table 23. Thermostat selection for use with the deluxe controller

Thermostat	Part Number	Description
	X13511535010	1 Heat/1 Cool, non-programmable commercial thermostat for conventional air conditioners and heat pumps that are configured without auxiliary heat • 1 H/1 C
	X13511536010	3 Heat/2 Cool, non-programmable commercial thermostat for conventional air conditioners and heat pumps that are configured with or without auxiliary heat. • 3 H/2 C
	X13511537010	3 Heat/2 Cool, programmable commercial thermostat for conventional (rooftop) air conditioners and heat pumps that are configured with or without auxiliary heat. • 3 H/2 C
	X13511538010	3Heat/2 Cool, programmable touch screen thermostat for conventional air conditioners and heat pump systems. The thermostat will provide the human interface, zone temperature sensing both local and optional remote temperature sensing, and setpoint scheduling on a daily/ weekly basis. This thermostat can also display humidity with a control signal for dehumidification with a local humidity sensor or optional remote humidity sensor. • 3 H/2 C
	Pivot — BAYSTAT814A-W.	Pivot Smart Thermostat is a Wi-Fi/ethernet thermostat for commercial applications. It has a very simple interface for occupants to adjust the thermostat. Cooling and heating control of multiple systems is made even easier and faster when connected to the Pivot App. Supports 2 stage heat pump with auxiliary heat.
	XL824 - TCONT824AS52DB.	The XL824 Smart thermostat is a Wi-Fi/ethernet thermostat for Residential applications such as single family homes, condominiums and apartments. Supports 2 stage heat pump with auxiliary heat. The XL824 can be connected to the Nexia Home App and other home automation systems.

Controls Using 24 Vac

Before installing any wire, see the electrical access locations in the Unit Dimensions and Weights sections of this manual.

The AC control wiring between the controls and the unit termination point must not exceed 3 Ohms/conductor for the length of the run.

NOTICE

Component Failure!

Resistance in excess of 3 ohms per conductor could result in component failure due to insufficient AC voltage supply.

Do not exceed three (3) ohms per conductor for the length of the run.

Check all loads and conductors for grounds, shorts, and mis-wiring. Use copper conductors unless otherwise specified. Do not run the AC low-voltage wiring in the same conduit with the high voltage power wiring.

Table 24. 24V AC conductors

Distance from unit to control	Recommended wire size
000 to 460 ft.	18 gauge
461 to 732 ft.	16 gauge
733 to 1000 ft.	14 gauge

Figure 19. Low voltage wire connection GELK009, 012

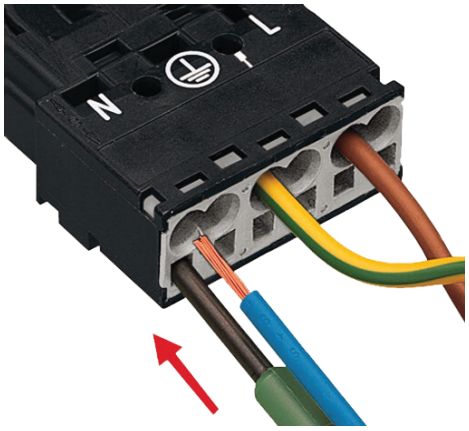
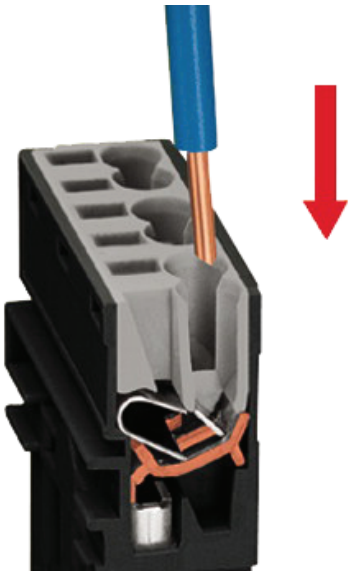
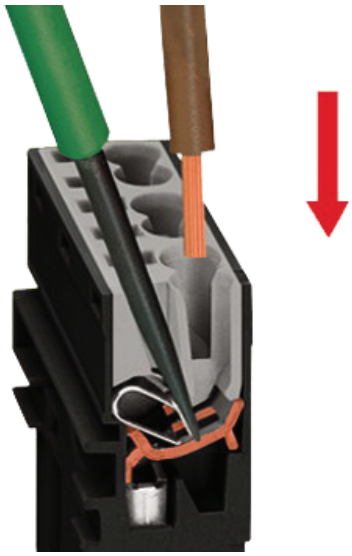


Figure 20. Low voltage single wire connection GELK009, 012



Make connection for a single-wire by inserting a single wire after stripping off the coating.

Figure 21. Low voltage stranded wire connection GELK009, 012



Follow the steps to connect the stranded wire:

1. Release the spring with a dedicated screwdriver (blade width 2.5 mm)
2. Insert the stripped cable as far as it gets inserted.
3. Complete the connection by removing the screwdriver.

Figure 22. Deluxe controls low voltage connection GELK009, 012

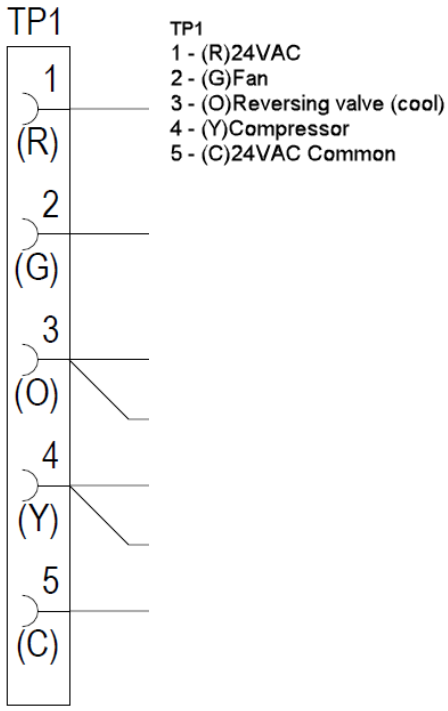
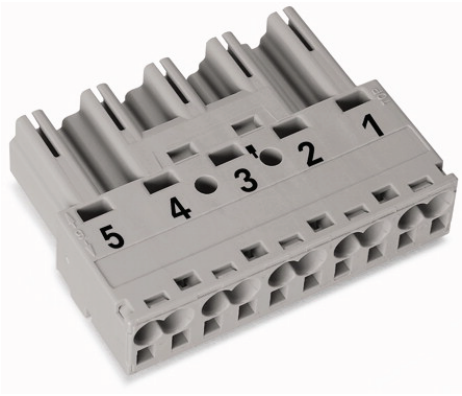
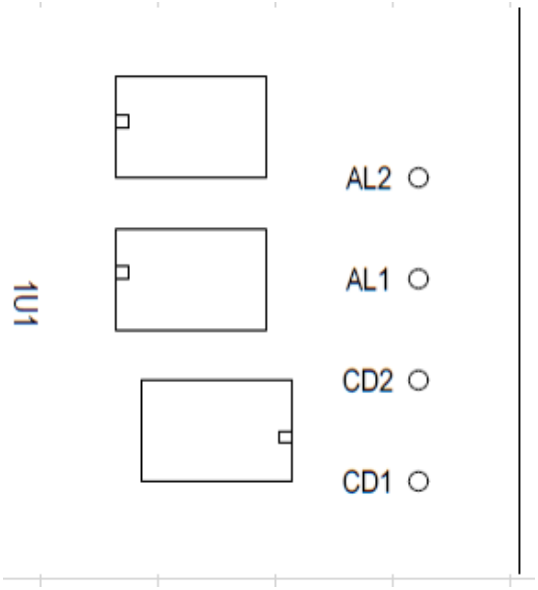


Figure 23. TP1 connection type



Present on GELK009, 012.

Figure 24. Deluxe controls general alarm and compressor disable (GELK009, 012)



Deluxe board (1U1) connections

AL1, AL2 - Alarm Contact output

CD1, CD2 - Compressor Disable input (24Vac)

⚠ WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

Airflow Adjustment

⚠ WARNING

Rotating Components!

Failure to disconnect power before servicing could result in rotating components cutting and slashing technician which could result in death or serious injury.

During installation, testing, servicing and troubleshooting of this product it may be necessary to work with live and exposed rotating components. Have a qualified or licensed service individual who has been properly trained in handling exposed rotating components, perform these tasks.

Units with Deluxe 24V controls

The ECM is programmed for constant torque and delivers airflow similar to a PSC motor while operating at a higher efficiency.

Figure 25. ECM control box

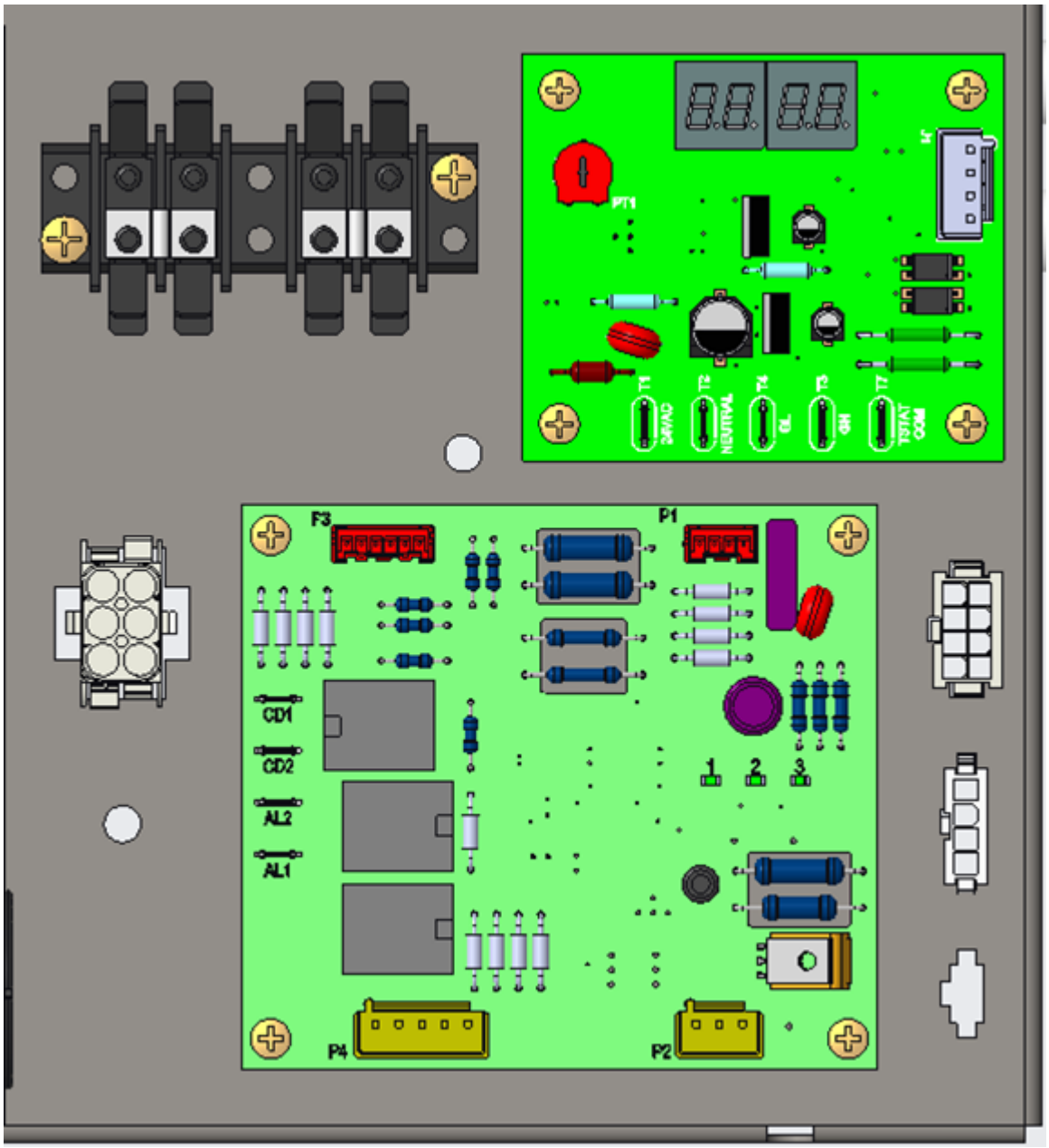
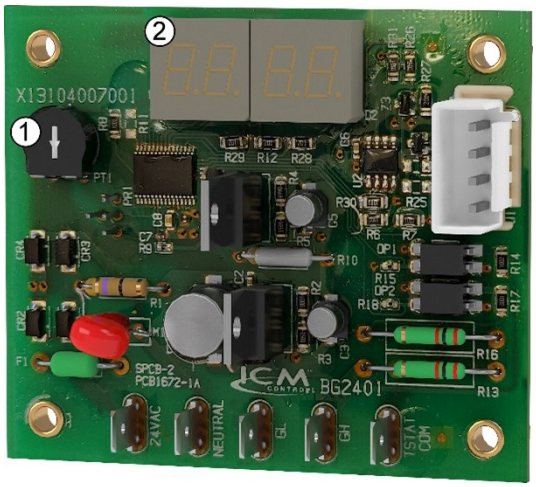


Figure 26. ECM control board



1. Potentiometer will be used to adjust the PWM output
2. Seven segment display

Using a screwdriver, the potentiometer is used to adjust the PWM output from 20% to 100% PWM. Increasing the PWM increases the motor speed. When setting the airflow for air balancing, the high-speed terminal (GH) must have 24 Vac signal. This confirms the PWM output is adjusted for the full load airflow.

The display shows the commanded motor speed percentage. If running on low speed (GL), the low-speed value is displayed. If running in GH the high-speed value is displayed. If both GH and GL input signals are present, the PWM output value is the GH value.

Pre-Start Checklist

Before energizing the unit, the following system devices must be checked:

- Is the high voltage power supply correct and in accordance with the nameplate ratings?
- Is phasing of the unit correct per compressor rotation (scroll compressor only)?
- Is the field wiring and circuit protection the correct size?
- Is the low voltage control circuit wiring correct per the unit wiring diagram?
- Is the piping system clean/complete and correct? (A recommendation of all system flushing of debris from the water-to-refrigerant heat exchanger, along with air purging from the water-to-refrigerant heat exchanger be done in accordance with the *Water-Source and Ground-Source Heat Pump Systems – Application Manual* (SYS-APM010*-EN).
- Is vibration isolation provided? (i.e. unit isolation pad, hose kits)
- Is unit serviceable? (See clearance specifications in Unit Dimensions and Weights).
- Are the low/high-side pressure temperature caps secure and in place?
- Are all the unit access panels secure and in place?
- Is the thermostat in the OFF position?
- Is the water flow established and circulating through all the units?
- Is the duct work correctly sized, run, taped, insulated and weather proofed with proper unit arrangement?
- Is the condensate line properly sized, run, trapped, pitched and primed?
- Is the thermostat correctly wired and in a good location?
- Does the indoor blower turn freely without rubbing?
- Has all work been done in accordance with applicable local and national codes?
- Has heat transfer fluid been added in the proper mix to prevent freezing in closed system application?

Start-Up

Initial Unit Start-Up

Note: *Start-up with the heat pump thermostat is included below:*

1. Set the thermostat to the highest position.
2. Set the thermostat system switch to COOL with the fan control to AUTO. The compressor should NOT run.
3. Reduce the thermostat setting until the compressor, reversing valve, solenoid valve, and loop pump are energized. Adjust water flow utilizing pressure/temperature plugs and comparing to tables contained in specification sheet data.
4. Water leaving the heat exchanger should be warmer than the entering water temperature (approximately 9 to 12ºF); blower operation should be smooth; compressor and blower amps should be within data plate ratings; the suction line should be cool with no frost observed in the refrigerant circuit.
5. Check the cooling refrigerant pressures against values in “Operating Pressures,” p. 49.
6. Turn the thermostat system switch to the OFF position. Unit should stop running and the reversing valve should de-energize.
7. Leave unit off for approximately 5-minutes to allow for pressure equalization.
8. Turn the thermostat to the lowest setting.
9. Set the thermostat system switch to the HEAT position.
10. Adjust the temperature setting upward until the unit is energized. Warm air should blow from the register. A water temperature decrease of approximately 5 to 9ºF leaving the heat exchanger should be noted. The blower and compressor operation should be smooth with no frost observed in the refrigeration circuit.
11. Check the heating refrigerant pressures against values in “Operating Pressures,” p. 49.
12. Set the thermostat to maintain the desired space temperature.
13. Instruct the owner on system operation.

Table 25. Checklist

MODE	Heat	Cool
Entering fluid temperature	_____F	_____F
Leaving fluid temperature	_____F	_____F
Temperature differential	_____F	_____F
Return-air temperature DB/WB	_____F	_____F
Supply-air temperature DB/WB	_____F	_____F
Temperature differential	_____F	_____F
Water coil heat exchanger (Water Pressure IN)	_____PSIG	_____PSIG
Water coil heat exchanger (Water Pressure OUT)	_____PSIG	_____PSIG
Pressure Differential	_____PSIG	_____PSIG
COMPRESSOR	—	—
Amps	—	—
Volts	—	—
Discharge line temperature (after 10 minutes)	_____F	_____F

Operating Pressures

There are many variables (airflow, air temperatures) in an air conditioning system that will affect operating refrigerant pressures and temperatures. The charts below shows approximate conditions and is based on air flow at the rated SCFM, entering air at 80.6°F (DB), 66.2°F (WB) in cooling, 68°F (DB) in heating. (+)Heating data with 35°F EWT is based on the use of an anti-freeze solution having a freezing point 20°F lower than the minimum expected entering temperature.

Table 26. Operating pressures in cooling/heating for GELK009, 012 units

Operating Data										
Model	Entering Water Temp (°F)	Water Flow (GPM)	Cooling				Heating			
			Suction Pressure (psig)	Discharge Pressure (pgig)	Water Temp Rise (°F)	Air Temp Drop (°F DB)	Suction Pressure (psig)	Discharge Pressure (psig)	Water Temp Drop (°F)	Air Temp Rise (°F DB)
GELK009	32	1.80	—	—	—	—	69-85	237-289	6-7	16-20
GELK009	32	2.25	—	—	—	—	71-87	238-291	5-6	17-20
GELK009	45	1.80	109-133	145-178	12-14	22-27	90-110	254-311	7-8	21-26

Table 26. Operating pressures in cooling/heating for GELK009, 012 units (continued)

Operating Data										
Model	Entering Water Temp (°F)	Water Flow (GPM)	Cooling				Heating			
			Suction Pressure (psig)	Discharge Pressure (pgig)	Water Temp Rise (°F)	Air Temp Drop (°F DB)	Suction Pressure (psig)	Discharge Pressure (psig)	Water Temp Drop (°F)	Air Temp Rise (°F DB)
GELK009	45	2.25	109-133	140-171	9-11	22-27	92-113	256-313	6-7	21-26
GELK009	55	1.80	110-135	172-210	11-14	22-27	106-130	267-326	8-10	24-29
GELK009	55	2.25	110-135	166-203	9-11	22-27	110-134	269-329	6-8	24-29
GELK009	68	1.80	113-138	207-252	11-14	21-26	122-149	281-344	9-11	27-33
GELK009	68	2.25	112-137	201-246	9-11	21-26	126-154	284-347	7-9	27-33
GELK009	75	1.80	118-145	230-281	11-13	21-25	136-166	291-355	10-12	29-35
GELK009	75	2.25	118-144	224-273	9-11	21-25	140-171	294-359	8-10	29-36
GELK009	86	1.80	122-149	267-326	11-13	20-25	160-195	305-373	11-14	31-38
GELK009	86	2.25	122-149	261-319	9-10	20-25	166-203	307-376	9-11	32-39
GELK009	95	1.80	124-151	298-365	10-12	19-24	—	—	—	—
GELK009	95	2.25	124-151	292-357	8-10	20-24	—	—	—	—
GELK012	32	2.40	—	—	—	—	70-85	259-317	6-7	20-24
GELK012	32	3.00	—	—	—	—	71-87	261-319	5-6	20-24
GELK012	45	2.40	100-123	147-180	12-14	23-28	87-106	284-348	7-9	24-30
GELK012	45	3.00	100-122	142-174	9-11	23-28	90-109	287-351	6-7	25-30
GELK012	55	2.40	102-125	174-212	12-14	22-27	103-126	302-369	8-10	28-34
GELK012	55	3.00	102-125	168-205	9-11	22-27	107-130	305-372	7-8	28-34
GELK012	68	2.40	105-128	210-257	11-14	21-26	120-146	323-394	10-12	31-38
GELK012	68	3.00	104-128	204-250	9-11	22-26	124-151	327-399	8-10	32-39
GELK012	75	2.40	112-137	232-283	12-14	22-26	133-163	336-410	10-13	34-41
GELK012	75	3.00	112-137	225-275	9-11	22-27	138-169	340-416	9-11	35-42
GELK012	86	2.40	115-140	269-329	11-14	21-26	157-192	356-435	12-14	37-46
GELK012	86	3.00	115-140	262-320	9-11	21-26	163-199	361-441	10-12	38-47
GELK012	95	2.40	117-143	301-368	11-13	21-25	—	—	—	—
GELK012	95	3.00	117-142	295-360	9-11	21-25	—	—	—	—

Water Pressure Drop

Use the following tables to define feet of head/pressure drop. Please note the feet of pressure (ft/head) provided is at AHRI/ISO standard.

To calculate feet of head, when using gauges that read in PSIG, multiply PSI by 2.31.

Table 27. Cooling water pressure drop (WPD) in feet of head for GELK009, 012 units

Unit Size (60 Hz)	EWT °F	GPM	Ft. Pressure
GELK009	86	2.25	8.5
GELK012	86	3.0	3.9

Table 28. Heating water pressure drop (WPD) in feet of head for GELK009, 012 units

Unit Size (60 Hz)	EWT °F	GPM	Ft. Pressure
GELK009	68	2.25	10.4
GELK012	68	3.0	4.2

Water Volume

The information below is provided for use in calculating glycol requirements for the unit.

Table 29. Water volume for GELK009, 012

Unit Size (60 Hz)	Water Side Volume (in^3)	Water Side Volume (ft^3)	Water Side Volume (gallons)
GELK009	24.9	0.014	0.108
GELK012	56.2	0.033	0.243

Maintenance

⚠ WARNING

Hazardous Service Procedures!

Failure to follow all precautions in this manual and on the tags, stickers, and labels could result in death or serious injury.

Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the following instructions: Unless specified otherwise, disconnect all electrical power including remote disconnect and discharge all energy storing devices such as capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. When necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been trained in handling live electrical components perform these tasks.

These units are intended to only be serviced or manipulated by approved personnel.

Preventative Maintenance

Maintenance on the unit is simplified with the following preventive suggestions:

Filter maintenance must be performed to assure proper operation of the equipment. Filters should be inspected at least every three months, and replaced when it is evident they are dirty. Filter sizing is shown below.

Table 30. Filter sizing GELK models

Size (60 Hz)	Filter Size (Nominal) inches
GELK009, 012	7.5 x 25

Check the contactors and relays within the control panel at least once a year. It is good practice to check the tightness of the various wiring connections within the control panel.

A strainer (60 mesh or greater) must be used on an open loop system to keep debris from entering the unit heat exchanger and to confirm a clean system.

For units on well water, it is important to check the cleanliness of the water-to-refrigerant heat exchanger. Should it become contaminated with dirt and scaling as a result of bad water, the heat exchanger will have to be back flushed and cleaned with a chemical that will remove the scale. This service should be performed by an experienced service person.

⚠ WARNING

Hazardous Chemicals!

Failure to follow this safety precaution could result in death or serious injury. Coil cleaning agents can be either acidic or highly alkaline and can burn severely if contact with skin or eyes occurs.

Handle chemical carefully and avoid contact with skin. ALWAYS wear Personal Protective Equipment (PPE) including goggles or face shield, chemical resistant gloves, boots, apron or suit as required. For personal safety refer to the cleaning agent manufacturer's Materials Safety Data Sheet and follow all recommended safe handling practices.

It should be noted that the water quality should be checked periodically (See below).

Table 31. Water quality

Scaling	Amount
Calcium and magnesium (total hardness)	Less than 350 ppm
Corrosion	—
pH	7-9.5
Hydrogen Sulfide	Less than 1 ppm
Sulfates	Less than 25 ppm
Chlorides	Less than 125 ppm
Carbon Dioxide	Less than 75 ppm
Total dissolved solids (TDS)	Less than 1000 ppm
Biological Growth	—
Iron Bacteria	Low
Erosion	—
Suspended Solids	Low

Condensate Trap

For units incorporating a negative trap design, confirm that the condensate system is primed with water at all times. Allowing a negative pressure condensate system to run dry could cause a break in the condensate seal allowing the fan to draw water from the condensate line to spray moisture into the mechanical system. By maintaining a primed condensate trap, a seal is created that prevents these complications.

Troubleshooting

⚠ WARNING

Hazardous Service Procedures!

Failure to follow all precautions in this manual and on the tags, stickers, and labels could result in death or serious injury.

Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the following instructions: Unless specified otherwise, disconnect all electrical power including remote disconnect and discharge all energy storing devices such as capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. When necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been trained in handling live electrical components perform these tasks.

Deluxe Controls

Troubleshooting units containing the deluxe control option is easy using the three light emitting diodes (LEDs). These LEDs are provided for indicating the operating mode of the controller and are labeled on the circuit board with numbers as referenced in the table below.

Table 32. Diagnostic LEDs

Color: Green	Color: Red		Controller Mode
LED1	LED2	LED3	—
OFF	OFF	OFF	Control OFF
ON	OFF	OFF	Normal/Compressor OFF
ON	OFF	FLASH	Anti-short cycle
ON	OFF	ON	Normal/Compressor ON
FLASH	ON	OFF	Brownout Condition
ON	FLASH	ON	Soft Lockout (low pressure)
ON	FLASH	FLASH	Soft Lockout (high pressure)
ON	ON	ON	Manual Lockout (low pressure)
ON	ON	FLASH	Manual Lockout (high pressure)
ON	FLASH	OFF	Manual Lockout (condensate overflow)
ON	ON	OFF	Compressor Disable

Table 33. Troubleshooting table

Problem	Heating	Cooling	Cause	Correction
No response to any thermostat setting	X	X	Main power off	Check fuses
	X	X	Defective control transformer	Replace
	X	X	Broken or loose connection	Repair
	X	X	Defective thermostat	Replace
	X	X	Transformer	Reset Transformer
Unit short cycles	X	X	Thermostat or sensor improperly located	Relocate

Table 33. Troubleshooting table (continued)

Problem	Heating	Cooling	Cause	Correction
Blower runs, but compressor does not	X	X	Defective compressor overload	Replace (if external)
	X	X	Defective compressor contactor	Replace
	X	X	Supply Voltage too low	Correct
	X	X	Defective compressor capacitor	Replace
	X	X	Defective windings	Replace
	X	X	Limit switches open	Check cause/Replace or repair
Insufficient capacity	X	X	Dirty filter	Replace/clean
	X	X	Blower RPM too low	Correct
	X	X	Loss of conditioned air due to leaks in ductwork	Repair leaks
	—	X	Introduction of excessively hot return-air	Correct
	X	—	Introduction of excessively cold return-air	Correct
	X	X	Low on refrigerant charge	Locate leak, repair and recharge by weight (not by superheat)
	X	X	Restricted thermal expansion valve	Replace
	X	X	Defective reversing valve	See WSHP-IOM-# for touch test chart
	X	X	Thermostat improperly located	Relocate
	X	X	Unit undersized	Recalculate heat gains/losses
	X	X	Inadequate water flow	Increase GPM
	X	X	Scaling in heat exchanger	Clean or replace
	—	X	Water too hot	Decrease temperature
	X	—	Water too cold	Increase temperature
	X	X	Filter drier blocked	Replace
	X	X	Defective reversing valve	Check or replace
High pressure switch open	—	X	Inadequate GPM	Increase water flow to unit
	—	X	Water too hot	Decrease temperature
	X	—	Inadequate air flow	Check, clean blower and coil
	X	—	Dirty filter	Clean/replace
	X	X	Overcharged with refrigerant	Decrease charge
	X	X	Defective pressure switch	Check or replace
High head pressure	—	X	Trash in heat exchanger	Backflush
	—	X	Low water flow	Increase GPM
	X	X	Overcharge of refrigerant	Decrease charge
	X	X	Non-condensable in system	Evacuate and recharge by weight
	X	X	Water too hot	Decrease temperature
	X	—	Dirty filter	Clean / replace
	X	—	Inadequate air flow	Check, clean blower and coil

Table 33. Troubleshooting table (continued)

Problem	Heating	Cooling	Cause	Correction
Low suction pressure	X	X	Undercharged	Locate leak, repair and recharge
	X	X	Restricted thermal expansion valve	Repair / replace
	—	X	Inadequate air flow	Check, clean blower and coil
	—	X	Dirty filter	Clean/replace
	X	—	Inadequate GPM	Increase GPM
Low pressure switch open	X	—	Inadequate GPM	Increase GPM
	X	—	Water too cold	Increase temperature
	—	X	Inadequate air flow	Increase CFM
	—	X	Dirty filter	Clean/replace
	X	X	Undercharged with refrigerant	Increase charge
	X	X	Defective pressure switch	Replace
	X	X	Heat transfer fluid too cold	Raise water temperature

Wiring Diagrams

This section contains wiring diagrams and isolation valve wiring connections.

Table 34. Isolation valve wiring connections

Control Type	3-Wire Isolation Valve Connections GELK009, 012		
	Common	Close	Open
Deluxe 24V	93B	92B	91B

Notes:

- *For field installed valves, wires 91B, 92B and 93B are coiled behind control box. For field-provided two wire valves connect to wires 91B and 93B.*
- *Wiring diagrams can be accessed via e-library by entering the diagram number in the literature order number search field or by calling technical support.*

Table 35. Wiring diagram for GELK009, 012 model

Number	Unit Description	Model
23115848	DELUXE CONTROLS HEAT PUMP w/ECM MOTOR, SINGLE PHASE	GELK009, 012

Warranty Information

Standard Warranty

The standard water-source heat pump warranty is Trane's parts-only warranty, running 12-months from start-up, not to exceed 18-months from shipment.

There is a standard 5-year compressor warranty.

Extended Warranty

The optional extended warranty is a second through fifth year warranty. The time starts at the end of the standard 1 year coverage through the fifth year.

These extended warranties apply only to new equipment installed in domestic Trane Commercial Systems Group sales territories and must be ordered prior to start-up.

Notes

Trane - by Trane Technologies (NYSE: TT), a global innovator - creates comfortable, energy efficient indoor environments for commercial and residential applications. For more information, please visit trane.com or tranetechnologies.com.

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