

**Installation, Operation,  
and Service Manual**

**H-Series A2L**

**High-Efficiency  
Condensing Unit**

**P/N 3244066 Rev A  
January 2026**

**Refrigerant Type  
A2L (R-454A or R-454C)**

**Certifications**



**WARNINGS:**

**READ THE ENTIRE MANUAL BEFORE INSTALLING OR USING THIS EQUIPMENT.**

If the information in these instructions are not followed exactly, a fire or explosion may result, causing property damage, personal injury, or death. Installation and service must be performed by a qualified installer or service agency.

This equipment uses a low-flammability A2L as the refrigerant. If a refrigerant leak is present or even suspected, do not allow untrained personnel to attempt to find the cause. No open flames, cigarettes, or other possible sources of ignition should be used inside or in the vicinity of the equipment.

Equipment is for outdoor use only and limited to use in an altitude of 6,562 ft (2 km) or less.

**FAILURE TO ABIDE BY THESE WARNINGS COULD RESULT IN AN EXPLOSION, DEATH, INJURY,  
AND PROPERTY DAMAGE.**

We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions or replacements for equipment previously sold or shipped.

# H-Series A2L

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# H-Series A2L

## User Safety and Product Information

### Legal Disclaimer

Review all safety warnings on the case and in this manual before attempting start-up. Hussmann shall not be liable for any repair or replacement made without the written consent of Hussmann, or when the product is installed or operated in a manner contrary to the printed instructions covering installation and service which accompanied such product. Please note that failure to follow the instructions in this document may void your factory warranty.

As used herein, “appliance”, “unit”, and “equipment” each refer to H-Series A2L condensing units unless otherwise stated or contextualized and “system” means a set of things working together as parts of an interconnecting network.

### Environmental Concerns

Hussmann recommends responsible handling of refrigerants. Only certified technicians may handle these refrigerants.

All technicians must be aware and follow the requirements set forth by the Federal Clean Air Act (Section 608) for any service procedure being performed on this equipment that involves refrigerant. Additionally, some states have other requirements that must be adhered to for responsible management of refrigerants.

### ANSI Z535.5 Definitions

The definitions below are used to clarify the magnitude and urgency of harm and damage, considering problems arising from misuse. Relative to their potential danger, the definitions are divided into five parts according to ANSI Z535 Series.



**DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.



**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.



**CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



**NOTICE** is used to address practices not related to personal injury.



**SAFETY INSTRUCTIONS** (or equivalent) signs indicate specific safety-related instructions or procedures.

### Proposition 65



This warning does not mean that Hussmann products will cause cancer or reproductive harm, or is in violation of any product-safety standards or requirements. As clarified by the California State Government, Proposition 65 can be considered more of a 'right-to-know' law than a pure product safety law. When used as designed, Hussmann believes that our products are not harmful. We provide the Proposition 65 warning to stay in compliance with California State law. It is your responsibility to provide accurate Proposition 65 warning labels to your customers when necessary. For more information on Proposition 65, please visit the California State Government website.

# H-Series A2L

## User Safety and Product Information

### Serial Label Location

The serial label is located on left side of the unit (when looking at it from the front). Serial label contains all pertinent information such as model, serial number, amperage rating, and refrigerant information.

### UL Listing

These unit coolers are manufactured to meet ANSI / UL 60335-2-89 and CSA C22.2 standard requirements for safety. Proper installation is required to maintain this listing. This appliance is to be installed in accordance with the Safety Standard for Refrigeration Systems, ANSI/ASHRAE 15.

### Federal / State Regulation

At the time they are manufactured, this equipment meets all federal and state/provincial regulations. Proper installation is required to ensure these standards are maintained.

### Additional Important Labeling

The symbols below indicate specific types of information on the equipment.



**DANGER**—Indicates a risk of fire or explosion. Flammable refrigerant used. To be repaired only by trained service personnel. Do not puncture refrigerant tubing.



Grounding Connection Location

# H-Series A2L

## User Safety and Product Information

### SAFETY INSTRUCTIONS

#### General Safety Instructions

This manual was written in accordance with originally prescribed equipment that is subject to change. Hussmann reserves the right to change or revise specifications and product design in connection with any feature of our products.

Only qualified personnel should install and service this equipment. Personal Protection Equipment (PPE) is required. Wear safety glasses, gloves, protective boots or shoes, long pants, and a long-sleeve shirt when working with this equipment and while handling glass.



The safety of our customers and employees is paramount. The precautions and procedures described in this manual are intended as general methods for safe use of this equipment. Please be sure to comply with the precautions described in this manual to protect you and others from possible harm. Always follow OSHA standards for safety.

Observe the refrigerant type the equipment is designed to work with and any and all precautions on tags, stickers, labels and literature provided and referenced for this equipment. Use only Hussmann approved parts approved through the Hussmann Performance Parts Website. Verify that all repair parts are identical models to the ones they are replacing. Do not substitute parts such as motors, switches, relays, heaters, compressors, power supplies, or solenoids. Read all safety information regarding the safe handling of refrigerant and refrigerant oil, including the Material Safety Data Sheet. MSDS sheets can be obtained from your refrigerant supplier. Service is to be performed by factory-authorized service personnel, so as to minimize the risk of possible injury due to incorrect parts or improper service.

Contractors must strictly adhere to specifications provided by the Engineer of Record (EOR), as well as US EPA regulations, OSHA regulations, and all other federal, state, and local codes. There are numerous hazards, not limited to, but including: burns due to high temperatures or refrigerant flammability, high pressures, toxic substances, electrical arcs and shocks, very heavy equipment with specific lift points and structural constraints, public safety, noise, and possible environmental damage.

# H-Series A2L

## User Safety and Product Information

**WARNING—READ ENTIRE MANUAL BEFORE ATTEMPTING TO SERVICE THIS PRODUCT. ALL SAFETY PRECAUTIONS MUST BE FOLLOWED. ALL WARNINGS MUST BE UNDERSTOOD BEFORE INSTALLATION OR USE.**



### **A2L FLAMMABLE REFRIGERANT USED**

- A2L refrigerant is flammable. Units that are configured to use A2L refrigerants require special attention. No open flames, cigarettes, or other possible sources of ignition should be used inside or in the vicinity of units containing flammable refrigerants.
- Failure to follow instructions can result in an explosion, death, injury and property damage.



**THIS REFRIGERATION EQUIPMENT WAS MANUFACTURED FOR USE WITH A2L LOWER FLAMMABILITY REFRIGERANTS. INSTALLATION AND SERVICE MUST ONLY BE PERFORMED BY A QUALIFIED SERVICE PROVIDER. FAILURE TO ABIDE BY THIS WARNING COULD RESULT IN AN EXPLOSION, DEATH, INJURY AND PROPERTY DAMAGE**

- **WARNING—Risk of fire or explosion—Flammable refrigerant used.** To be repaired only by trained service personnel. Do not puncture refrigerant tubing.
- **WARNING—Risk of fire—Dispose of properly in accordance with federal or local regulations.** Flammable refrigerant used.
- **WARNING—Risk of fire—Flammable refrigerant used.** Consult repair manual/owner's guide before attempting to service this product. All safety precautions must be followed.
- **WARNING—Risk of fire due to flammable refrigerant used—Follow handling instructions carefully in compliance with national regulations.**
- **WARNING—Risk of fire or explosion—Store in a well ventilated room without continuously operating flames or other potential ignition.**
- **WARNING—Risk of fire or explosion—Auxiliary devices which may be ignition sources shall not be installed in the ductwork, other than auxiliary devices listed for use with the specific appliance. See instructions.**
- **WARNING—In order to reduce flammability hazards the installation of this appliance must only be carried out by a suitably qualified person.**
- **WARNING—Risk of fire or explosion—Dispose of properly in accordance with federal or local regulations.** Flammable refrigerant used.
- **WARNING—Do not damage the refrigerating circuit.**
- **WARNING—Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer.**
- **WARNING: Keep clear of obstruction, all ventilation openings in the appliance enclosure or in the structure for building-in.**
- A2L refrigerants are denser than air.
- If a refrigerant leak is present or suspected, do not allow untrained personnel to attempt to find the cause.
- A refrigerant leak must be repaired by a qualified service technician.

# H-Series A2L

## User Safety and Product Information

### WARNING

- No open flames, cigarettes, or other possible sources of ignition should be used near the equipment or its installation location until a qualified service technician and/or local fire department determines that all refrigerant has been cleared from the area and from the refrigeration systems.
- Do not bypass safety shut-off valves located in the refrigeration system.
- The appliance shall not be installed indoors.
- All servicing of this appliance shall be performed only as recommended in this manual.
- This appliance shall only be connected to another appliance suitable for the same refrigerant.
- Installation and service must be performed by a qualified installer or service agency only as recommended by the manufacturer. Do not use any means to clean or service other than those recommended by the manufacturer.
- Contractors must strictly adhere to specifications provided by the Engineer of Record (EOR), as well as US Environmental Protection Agency regulations, OSHA regulations, and all other federal, state and local codes. This work must only be done by qualified, licensed contractors.
- Installation and use of this appliance includes numerous hazards, not limited to, but including: burns due to high temperatures, high pressures, toxic substances, electrical arcs and shocks, very heavy equipment with specific lift points and structural constraints, food and product damage or contamination, public safety, noise, and possible environmental damage.
- Do not store items or flammable materials atop the unit. Do not walk or climb on unit.
- Do not store explosive substances, such as aerosol cans with flammable propellant, in this appliance.
- 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.
- Piping in refrigeration systems shall be so designed and installed to minimize the likelihood of hydraulic shock damaging the system. Solenoid valves shall be correctly positioned in the piping to avoid hydraulic shock.
- Factory installed refrigerant sensors or detectors shall not be disconnected.
- If a leak is present or even suspected, do not allow untrained personnel to attempt to find the cause.
- A hand-held leak detector (“sniffer”) will be used before any repair and/or maintenance.
- Do not use any means to clean, other than those recommended by the manufacturer.
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.
- Protection devices, piping, and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris.
- Piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ANSI/ASHRAE 15, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.

# H-Series A2L

## User Safety and Product Information

### **WARNING**

- Always use a pressure regulator when operating nitrogen tanks.
- The installation of pipe-work shall be kept to a minimum.
- Provision shall be made for expansion and contraction of long runs of piping.
- Flexible pipe elements shall be protected against mechanical damage, excessive stress by torsion, or other forces, and that they should be checked for mechanical damage annually.
- After completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements:
  1. The minimum test pressure for the low side of the system shall be the low side design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system cannot be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.
  2. The test pressure after removal of pressure source shall be maintained for at least 1 h with no decrease of pressure indicated by the test gauge, with test gauge resolution not exceeding 5 % of the test pressure.
  3. During the evacuation test, after achieving a vacuum level specified in the manual or less, the refrigeration system shall be isolated from the vacuum pump and the pressure shall not rise above 1,500 microns within 10 min. The vacuum pressure level shall be specified in the manual, and shall be the lessor of 500 microns or the value required for compliance with national and local codes and standards, which may vary between residential, commercial, and industrial buildings.
- Mechanical connections made in accordance shall be accessible for maintenance purposes.
- LOCK OUT / TAG OUT — To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.
- Means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
- Unit must be grounded. All wiring must be in compliance with NEC and local codes.
- 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 electrical codes.
- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans..
- Particular attention shall be paid to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.
- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

# H-Series A2L

## User Safety and Product Information

### **WARNING**

- Component parts are designed for use with flammable refrigerants and are non-incendive and non-sparking. To minimize the risk of possible ignition due to incorrect parts, component parts shall only be replaced with identical repair parts. Servicing must be done by qualified service personnel only, so as to minimize the risk of possible damage due to incorrect parts or improper service.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.
- Replace components only with parts specified by the manufacturer. Other parts can result in the ignition of refrigerant in the atmosphere from a leak.
- If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Ducts connected to an appliance shall not contain a potential ignition source.
- Be careful when moving or lifting unit. Serious bodily injury or death could occur from falling equipment.
- Precautions shall be taken to avoid excessive vibration or pulsation of the refrigerant piping.
- Any insulation shall be suitable for use with the material being insulated.
- Ensure that the apparatus is mounted securely. Do not use adhesives to fix the unit in place, since they are not considered to be a reliable fixing means.
- Any pressure-relief devices and fusible plugs shall discharge to the atmosphere at a location not less than 15 ft (4.57 m) above the adjoining ground level and not less than 20 ft (6.1 m) from any window, ventilation opening, or exit in any building.
- Refrigerant circuit access ports located outdoors shall be secured to prevent unauthorized access.

**FAILURE TO ABIDE BY THESE WARNINGS COULD RESULT IN AN EXPLOSION, DEATH, INJURY, AND PROPERTY DAMAGE. READ ALL WARNINGS PRIOR TO INSTALLING, PERFORMING MAINTENANCE, OR SERVICING THE EQUIPMENT IN ANY WAY.**

# H-Series A2L

## User Safety and Product Information

### Before Working with A2L Refrigerant

#### Safety Checks

- Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, safety checks are necessary to ensure that the risk of ignition is minimized.
- Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.
- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of 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.
- 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 chemical or CO<sub>2</sub> fire extinguisher should be adjacent to the charging area.
- No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment shall be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.
- 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.
- Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times, the manufacturer’s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer’s technical department for assistance.
- The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:
  - a. The actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed.
  - b. The ventilation machinery and outlets are operating adequately and are not obstructed.
  - c. If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
  - d. Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.
  - e. Refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

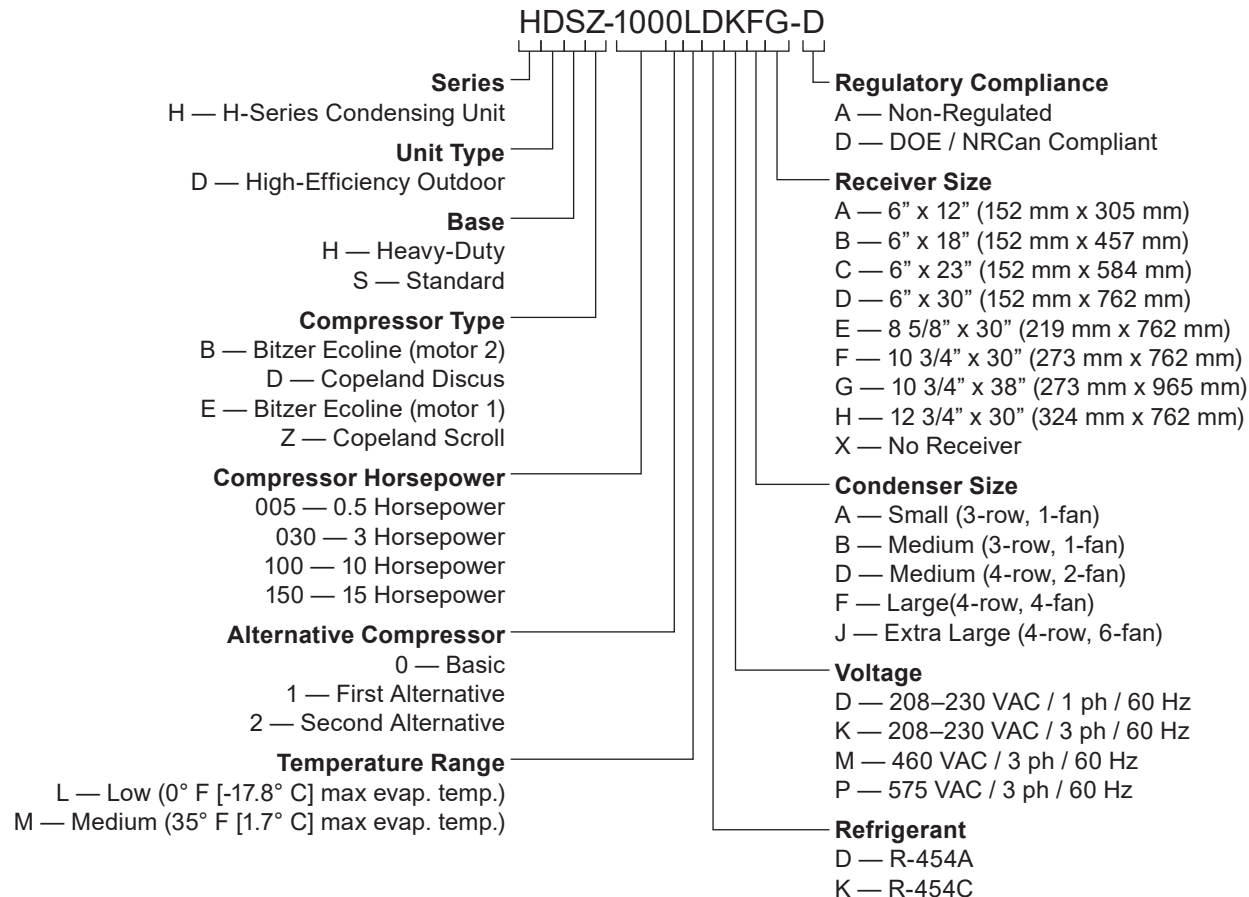
# H-Series A2L

## User Safety and Product Information

### Equipment Labeling

The type of refrigerant to be used is prominently displayed on the serial label. All equipment includes complete wiring diagrams. All wiring is color coded.

### System Nomenclature



### Krack/Hussmann Product Control

Serial number and shipping date of all equipment is recorded in Hussmann's files for warranty and replacement part purposes. All correspondence pertaining to warranty or parts ordering must include the serial number of each piece of equipment involved. This is to ensure the customer is provided with the correct parts.

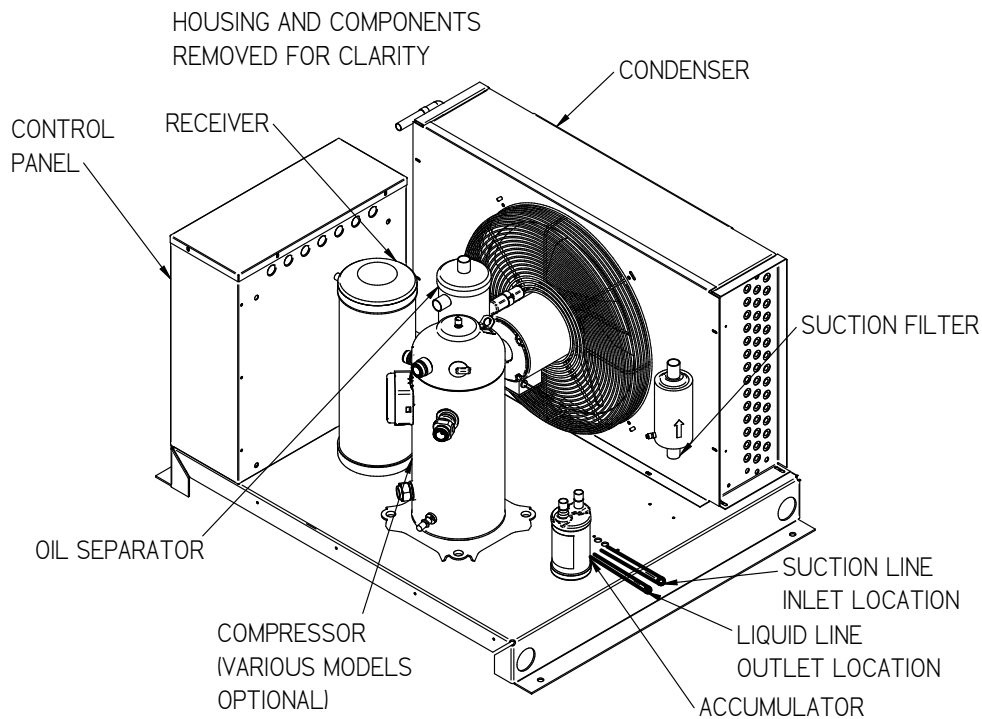
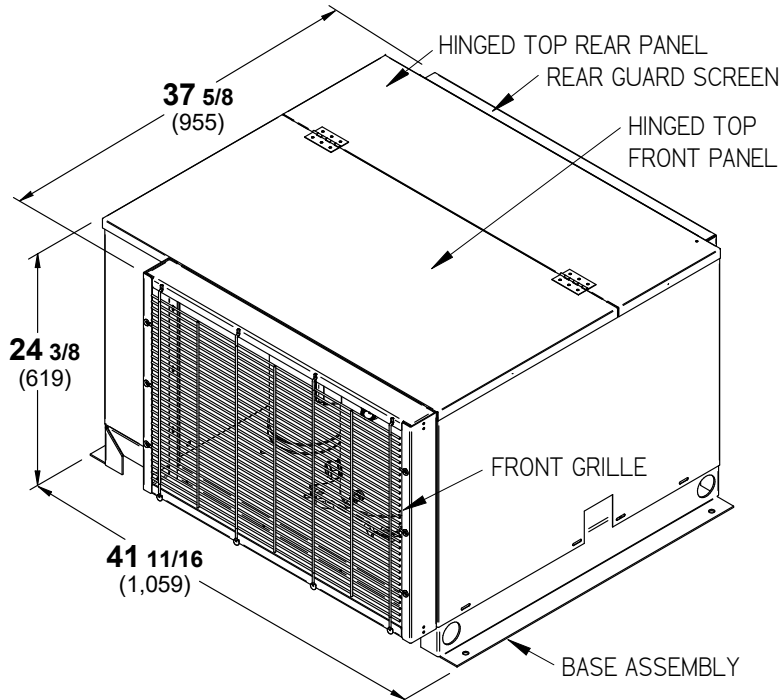
# H-Series A2L

## User Safety and Product Information

### Component Views

These drawings are general representations, but actual product can vary depending on selected options and application. Dimensions are shown in "in. (mm)" format. For detailed dimensional information, consult the datasheet for this equipment.

#### Small Unit with Standard Base

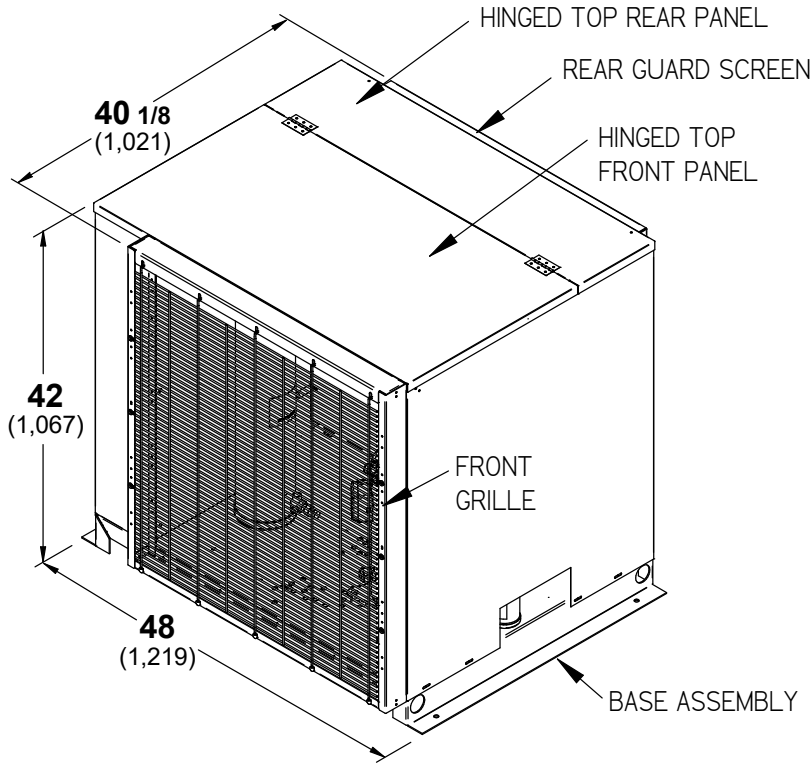


# H-Series A2L

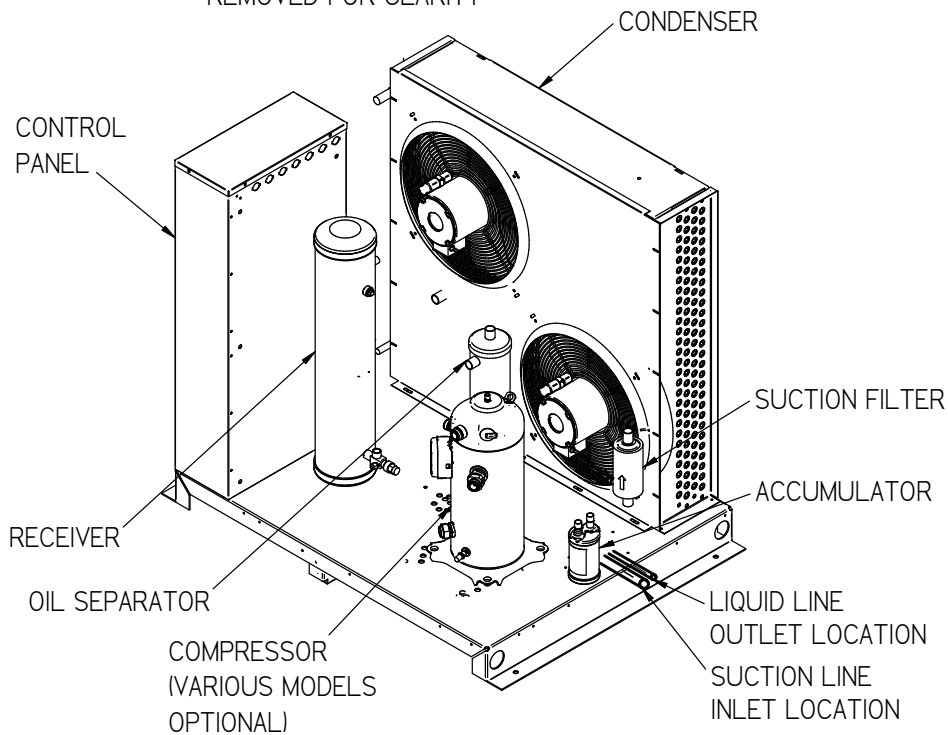
## User Safety and Product Information

These drawings are general representations, but actual product can vary depending on selected options and application. Dimensions are shown in "in. (mm)" format. For detailed dimensional information, consult the datasheet for this equipment.

### Medium Unit with Standard Base



HOUSING AND COMPONENTS  
REMOVED FOR CLARITY

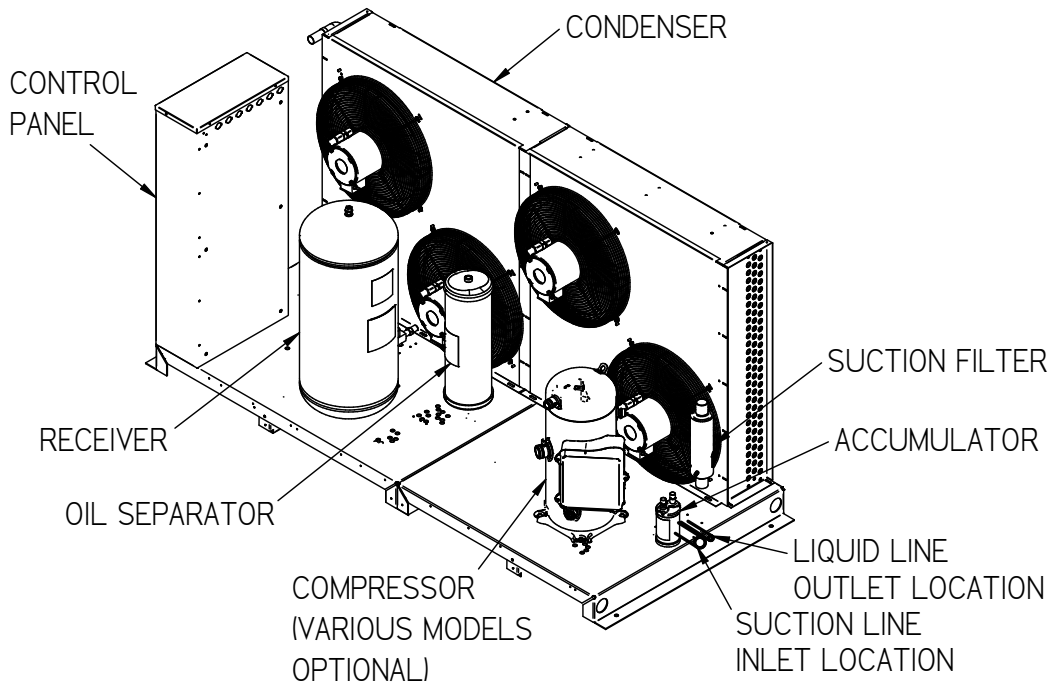
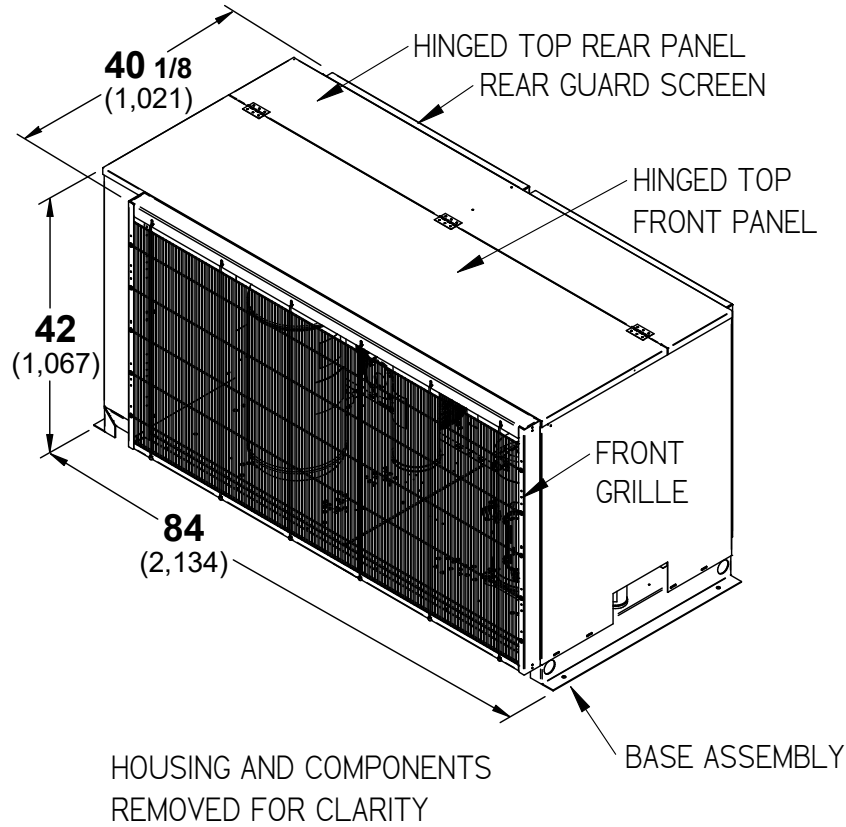


# H-Series A2L

## User Safety and Product Information

These drawings are general representations, but actual product can vary depending on selected options and application. Dimensions are shown in "in. (mm)" format. For detailed dimensional information, consult the datasheet for this equipment.

### Large Unit with Standard Base

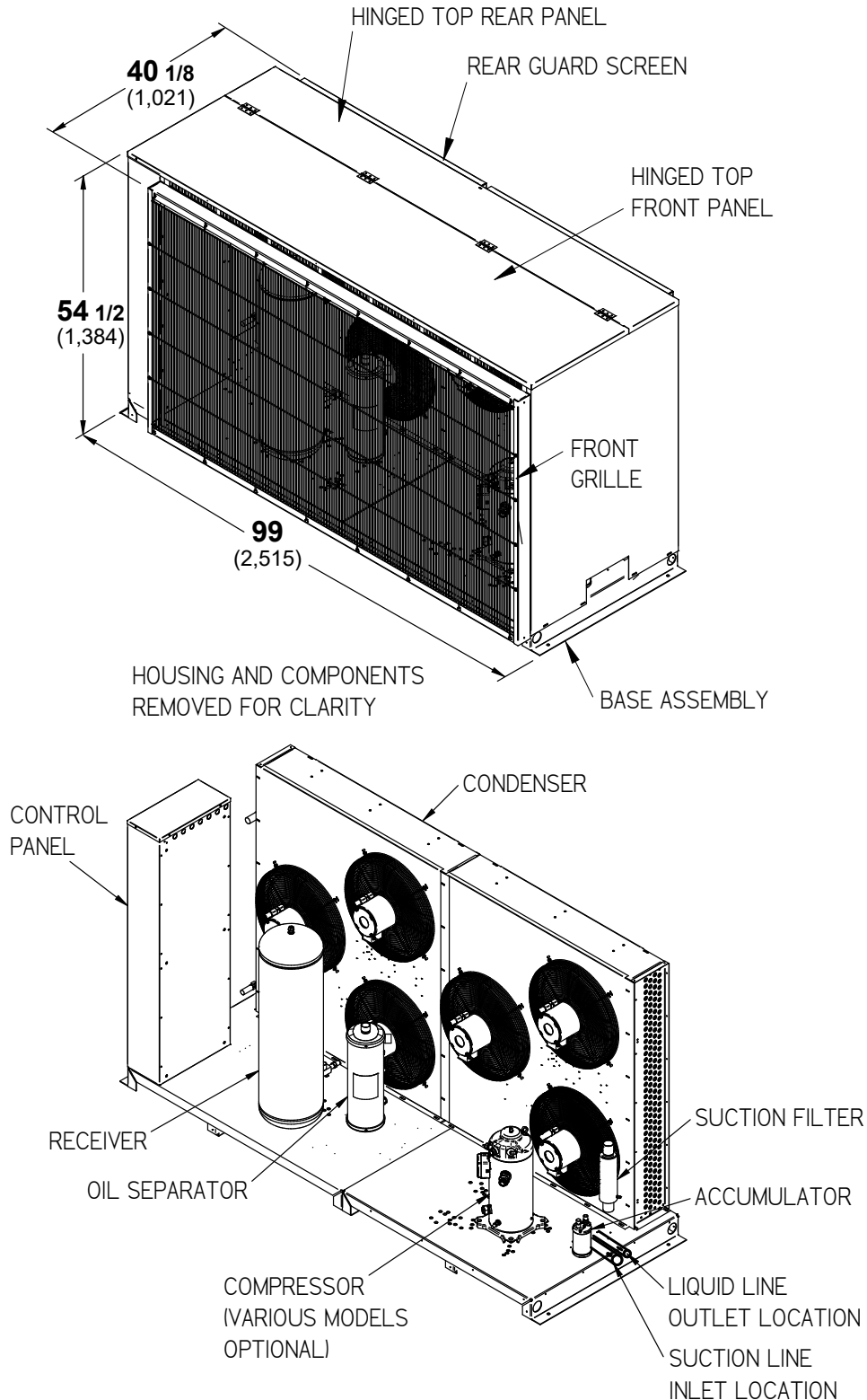


# H-Series A2L

## User Safety and Product Information

These drawings are general representations, but actual product can vary depending on selected options and application. Dimensions are shown in "in. (mm)" format. For detailed dimensional information, consult the datasheet for this equipment.

### Extra Large Unit with Standard Base

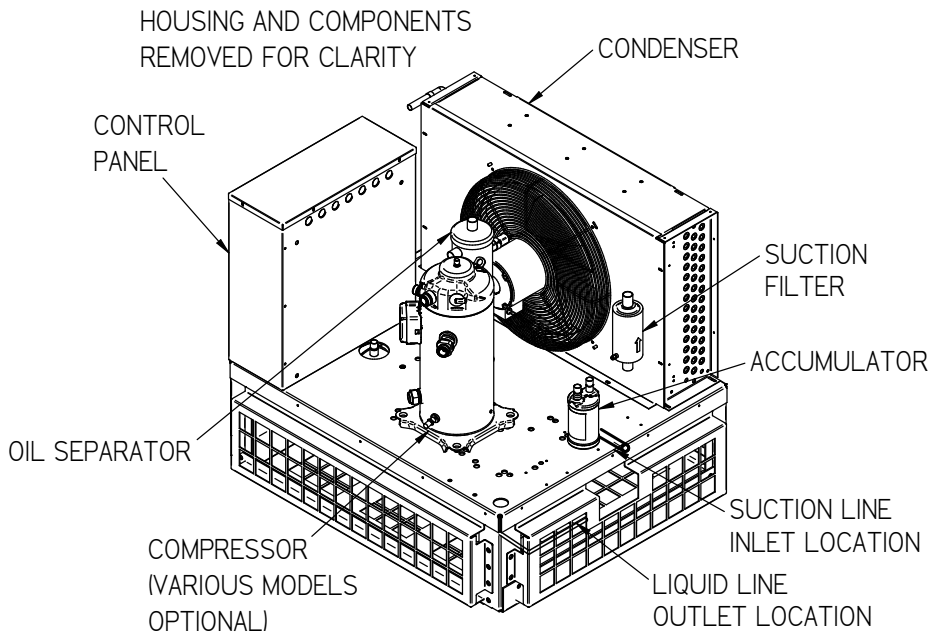
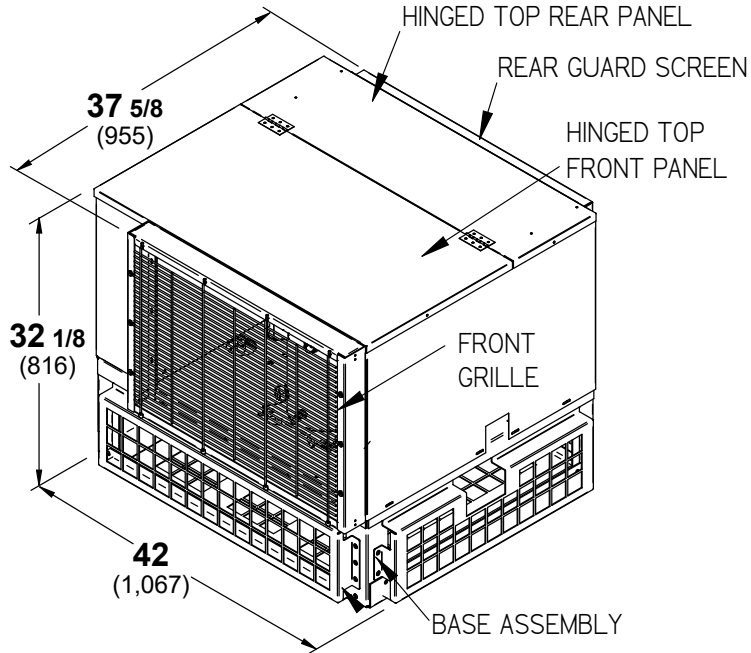


# H-Series A2L

## User Safety and Product Information

These drawings are general representations, but actual product can vary depending on selected options and application. Dimensions are shown in "in. (mm)" format. For detailed dimensional information, consult the datasheet for this equipment.

### Small Unit with Heavy-Duty Base

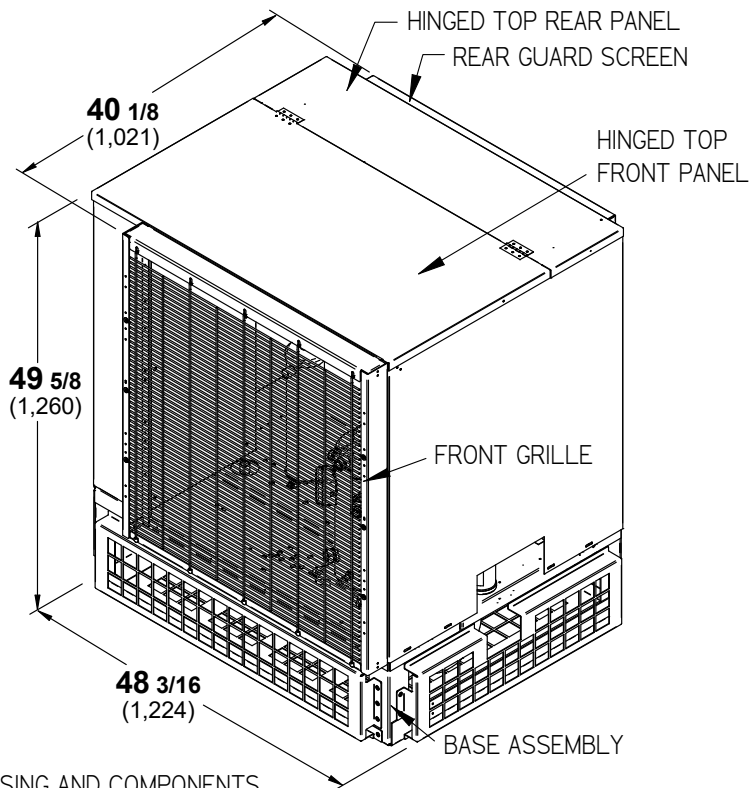


# H-Series A2L

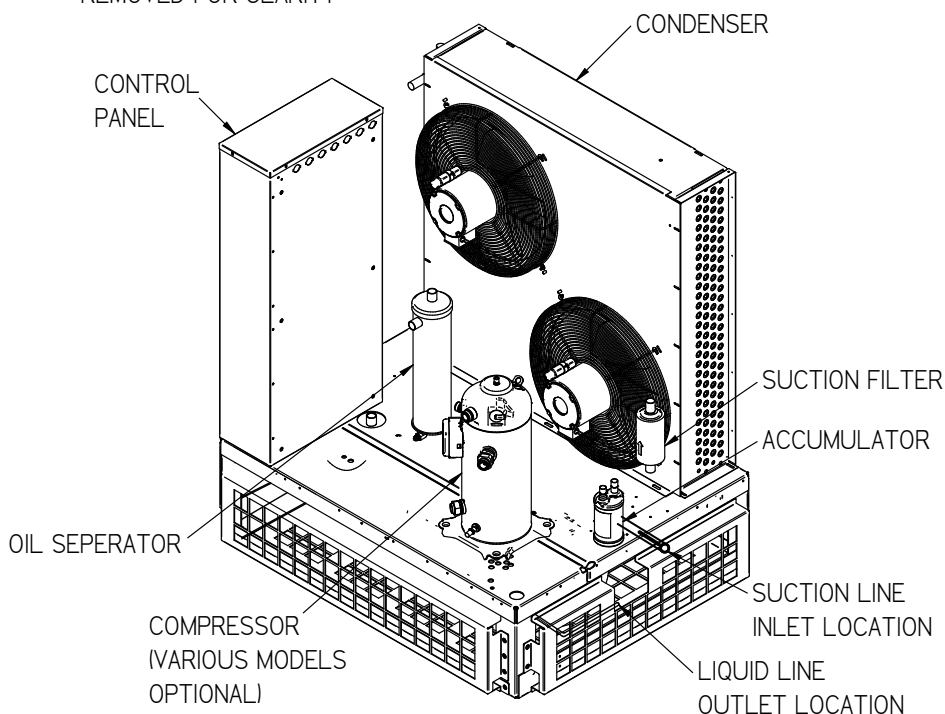
## User Safety and Product Information

These drawings are general representations, but actual product can vary depending on selected options and application. Dimensions are shown in "in. (mm)" format. For detailed dimensional information, consult the datasheet for this equipment.

### Medium Unit with Heavy-Duty Base



HOUSING AND COMPONENTS REMOVED FOR CLARITY

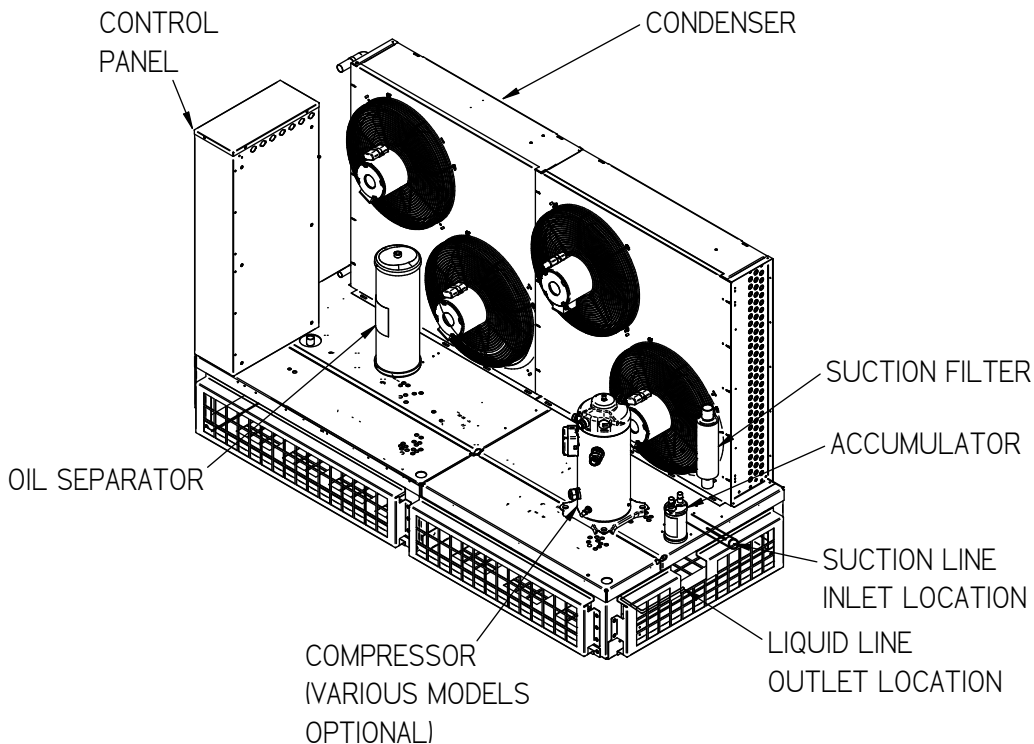
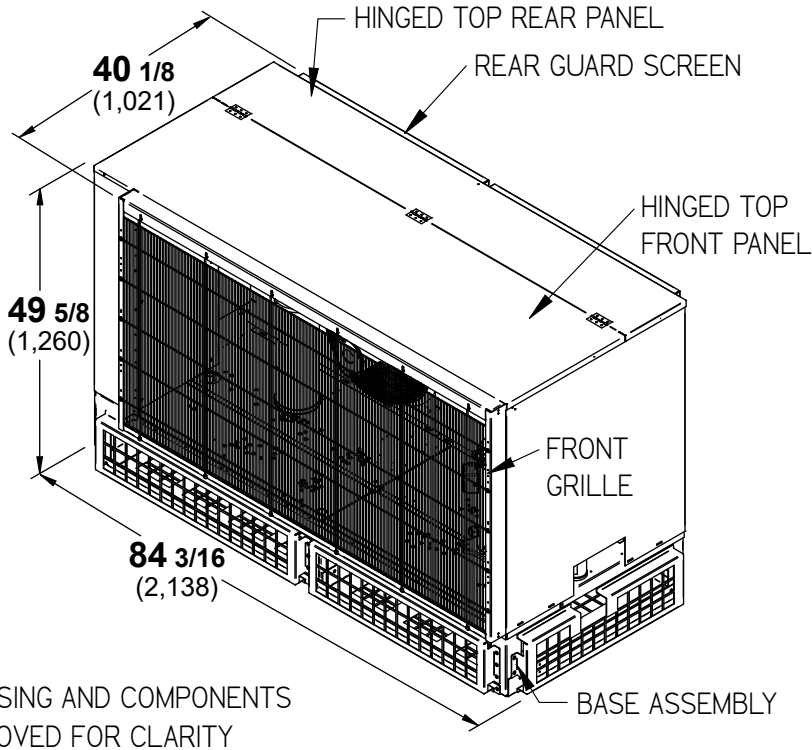


# H-Series A2L

## User Safety and Product Information

These drawings are general representations, but actual product can vary depending on selected options and application. Dimensions are shown in "in. (mm)" format. For detailed dimensional information, consult the datasheet for this equipment.

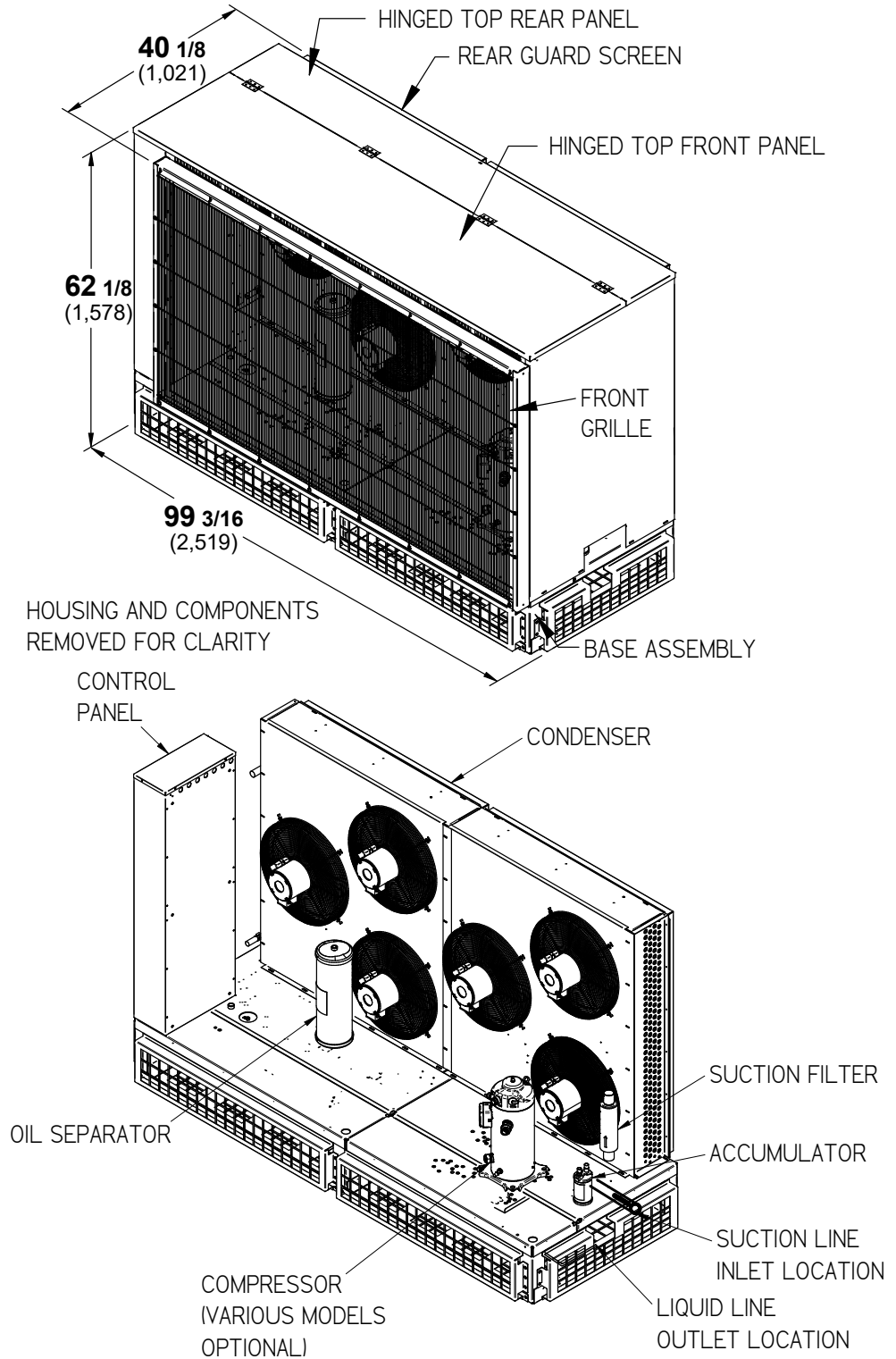
### Large Unit with Heavy-Duty Base



# H-Series A2L

These drawings are general representations, but actual product can vary depending on selected options and application. Dimensions are shown in "in. (mm)" format. For detailed dimensional information, consult the datasheet for this equipment.

## Extra Large Unit with Heavy-Duty Base



# H-Series A2L

## Installation Information

### Equipment Inspection / Shipping Damage

Upon delivery of the equipment, verify that the correct equipment has been received by comparing the information on the equipment serial label with the ordering and submittal documents. All equipment should be thoroughly examined for shipping damage before and during unloading. Equipment has been carefully inspected at our factory prior to shipment. Any claim for loss or damage must be made to the carrier. The carrier will provide any necessary inspection reports and/or claim forms.

The refrigeration coil section of each H-Series is leak tested, evacuated to remove moisture, and then shipped with a pressurized nitrogen gas holding charge. Absence of this charge may indicate a leak has developed in transit. The system should not be charged with refrigerant until it is verified that there is no leak, or the source of the leak is located and repaired if necessary.

### Apparent Loss or Damage

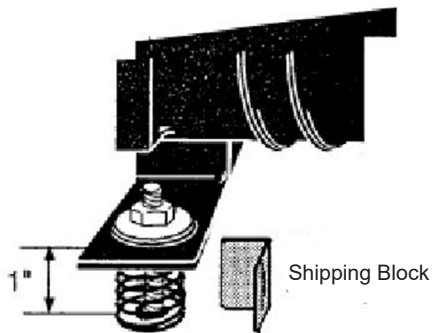
If there is an obvious loss or damage, it must be noted on the freight bill or express receipt and signed by the carrier's agent; otherwise, carrier may refuse claim.

### Concealed Loss or Damage

When loss or damage is not apparent until after equipment is uncrated, retain all packing materials and submit a written response to the carrier for inspection within 15 days.

### Shipping Block Removal

When the optional spring mounting kit is installed, the unit is shipped with blocks under each compressor foot to prevent transit damage. Loosen the mounting spring nuts at least one full turn and remove the blocks. Adjust the torque on the mounting spring nuts so that the compressor feet are 1 in. (25 mm) above the unit's base.

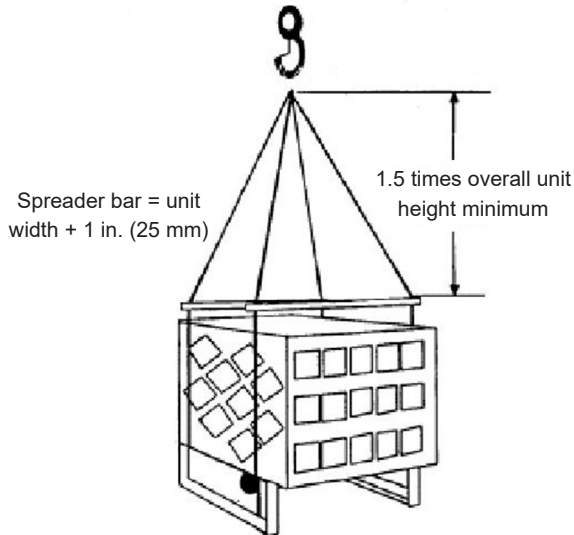


# H-Series A2L

## Installation Information

### Equipment Handling

Under no circumstances should the manifolds, piping return, or control panel be used for lifting or moving the unit. Secure lifting hooks to the underside of the base. The installer is responsible to see that equipment used to move the unit is operated within its limits.



Secure lifting hooks on underside of base where sheet metal ends.

Approximate Weight		
Unit Size	Standard Base	Heavy-Duty Base
small	430 lb (195 kg)	550 lb (249 kg)
medium	710 lb (322 kg)	830 lb (376 kg)
large	1,370 lb (621 kg)	1,575 lb (714 kg)
extra large	1,795 lb (814 kg)	2,005 lb (909 kg)

### Exterior Loading

Do NOT walk on top of the equipment or damage to the equipment and serious personal injury could occur. Equipment is not structurally designed to support external loading such as the weight of a person.

# H-Series A2L

## Installation Information

### Location

Equipment must be located in a dedicated operating area to provide enough working space for service personnel and meet applicable electrical codes. Check national and local codes for requirements before installation. If this product is enclosed within a penthouse, lean-to, or other open structure, natural or mechanical ventilation shall be provided.

The equipment room floor must solidly support the compressor unit as a live load. Ground level installation seldom presents problems, but a mezzanine installation must be carefully engineered. A concrete base must be built on the mezzanine floor to keep mechanical vibrations and noise to an acceptable level.

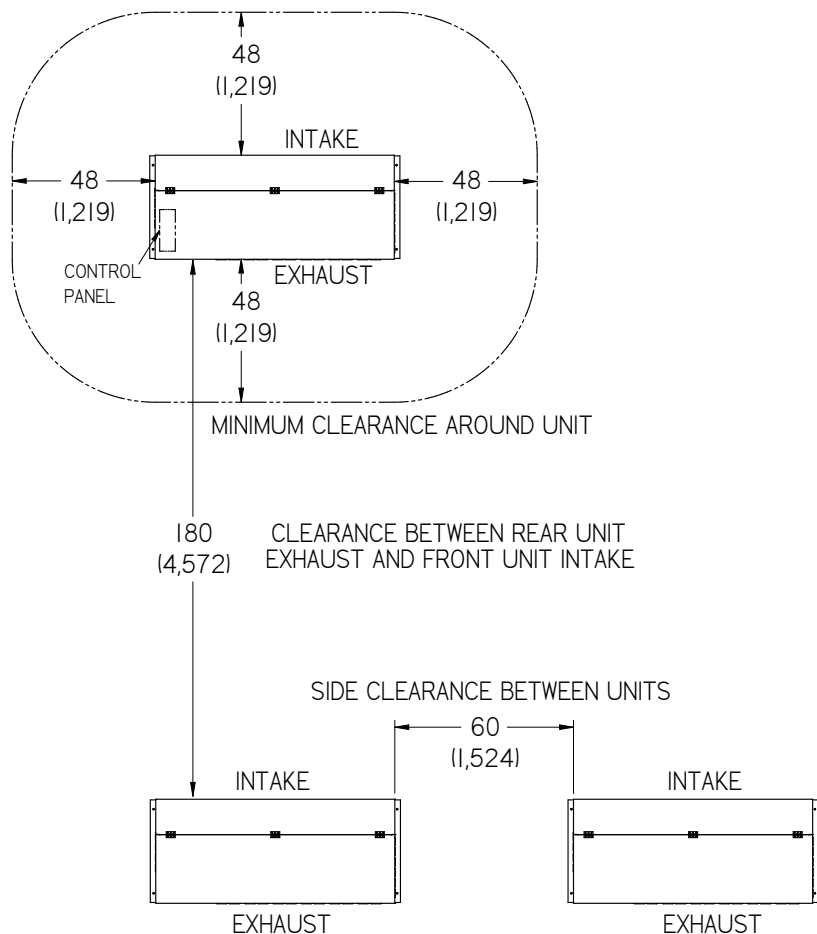
Refrigerant circuit access ports located outdoors shall be secured to prevent unauthorized access.

**Required spacing is site specific. It is the installer's responsibility to check local codes and standards.**

The following minimum clearance requirements must be observed for all installations:

- Outdoor units of any kind shall not be installed within 20 ft (6.1 m) of any building opening.
- Minimal distance between a unit and any vertical structure (excluding open chain-link fence) is 4 ft (1.2 m)
- Minimal distance between one unit exhaust and the intake of another outdoor condensing unit is 15 ft (4.6 m)
- Minimum distance between the closed sides of two condensing units is 5 ft (1.5 m)

Large, standard base model shown for reference. Clearances are the same regardless of model size.



# H-Series A2L

## Installation Information

### Unit Mounting

Hard mounting is standard on all units. All piping was carefully design to absorb the vibration that is generated by the compressor and fan motors.

When setting the units, plan in relation to the rest of the equipment to be installed and existing structures. Some minimum and maximum distances are listed. Note: Piping equivalent is not the same as linear distance.

It is the responsibility of the installing contractor to ensure that final installation meets all applicable code requirements.

### Receiver Capacity

Receiver Size	Refrigerant	
	R-454A	R-454C
6" x 12" (152 mm x 305 mm)	10.9 lb (4.9 kg)	11.1 lb (5 kg)
6" x 18" (152 mm x 457 mm)	16.4 lb (7.4 kg)	16.8 lb (7.6 kg)
6" x 23" (152 mm x 584 mm)	21 lb (9.5 kg)	21.5 lb (9.8 kg)
6" x 30" (152 mm x 762 mm)	27.4 lb (12.4 kg)	28 lb (12.7 kg)
8 5/8" x 30" (219 mm x 762 mm)	52.9 lb (24 kg)	54.1 lb (24.5 kg)
10 3/4" x 30" (273 mm x 762 mm)	80.8 lb (36.7 kg)	82.6 lb (37.5 kg)
10 3/4" x 38" (273 mm x 965 mm)	104.2 lb (47.3 kg)	106.6 lb (48.4 kg)
12 3/4" x 30" (324 mm x 762 mm)	98.2 lb (44.5 kg)	100.5 lb (45.6 kg)

# H-Series A2L

## Installation Information

### Electrical Information

Equipment requires a dedicated electrical circuit(s) with ground. Consult equipment datasheet for additional electrical specifications. Always use a dedicated circuit with the amperage stated on the equipment. Do not overload the circuit. Refer to the serial label located on the control panel to determine wire size (MCA) and over-current protection (MOPD). If in doubt, consult an electrician.

It is necessary to allow for disconnection of the appliance from the supply power after installation. Disconnect power before servicing any equipment. If the H-Series is equipped with an electrical power disconnect switch, ensure the switch is locked in the "OFF" position before any electrical work is performed to the unit.

### Special Fan Consideration

Fan motors operating at higher elevations will draw lower than rated amps, as well as draw a less effective air volume across the coil surface. This is due to the reduced density of the higher altitude air resulting in higher compressor discharge pressure along with reduced unit capacity. Consult factory if you suspect this situation.

### Field Wiring

**WARNING:** All power supplied to the equipment must be shut off before opening any compartments, cleaning, or performing maintenance.

**WARNING:** Always check the serial label or datasheet for component voltage and amperes.

Components are wired as completely as possible at the factory with all work completed in accordance with the National Electrical Code (NEC). All deviations required by governing electric codes will be the responsibility of the installer. All wiring must be in compliance with governing electrical codes.

Field wiring must be sized for component amperes stamped on the serial label. Main lugs in the compressor control panel are sized for copper wire only. Actual ampere draw may be less than specified. Based on the full load amps of the system, select the largest connectible wire size based on NFPA 70® (NEC) and local codes.

### Electrical Connections

All wiring must be in compliance with NEC and local codes. The power supply voltage, phase, and frequency must match what is shown on the unit data label. Motor voltage, horsepower, and full load amps (F.L.A.) can also be found on the main serial label. All electrical connections are to be made at a terminal block, in the electrical wireway, or in a handy box. The equipment must be properly grounded and should only be worked on by a qualified technician/electrician.

Any field-supplied connectors must be UL compliant for the intended application, including compliance in relation to potential hazards presented by flammable refrigerants, and follow all other applicable codes including NEC.

460 VAC and 575 VAC models require two connections as standard, one for the compressor and one for control and defrost systems. Optional single connection systems use a transformer for control and defrost systems.

### Unit Cooler Fan Wiring

Unit cooler fan should be wired from the condensing unit panel (or an outside panel for off-time defrost if needed).

### Evaporator Mounted Liquid Line Solenoid

Power for a liquid line solenoid can be picked up from the fan circuit.

### Cooler Door Switch Wiring

The switch must be mounted to the cooler door frame and must be wired to control the field-installed liquid line solenoid and evaporator fans. Door switches are wired in series.

### Other Controls

The basic defrost circuits are shown on the wiring diagrams in this manual. When other controls are used, refer to the manual included with that control.

# H-Series A2L

## Installation Information

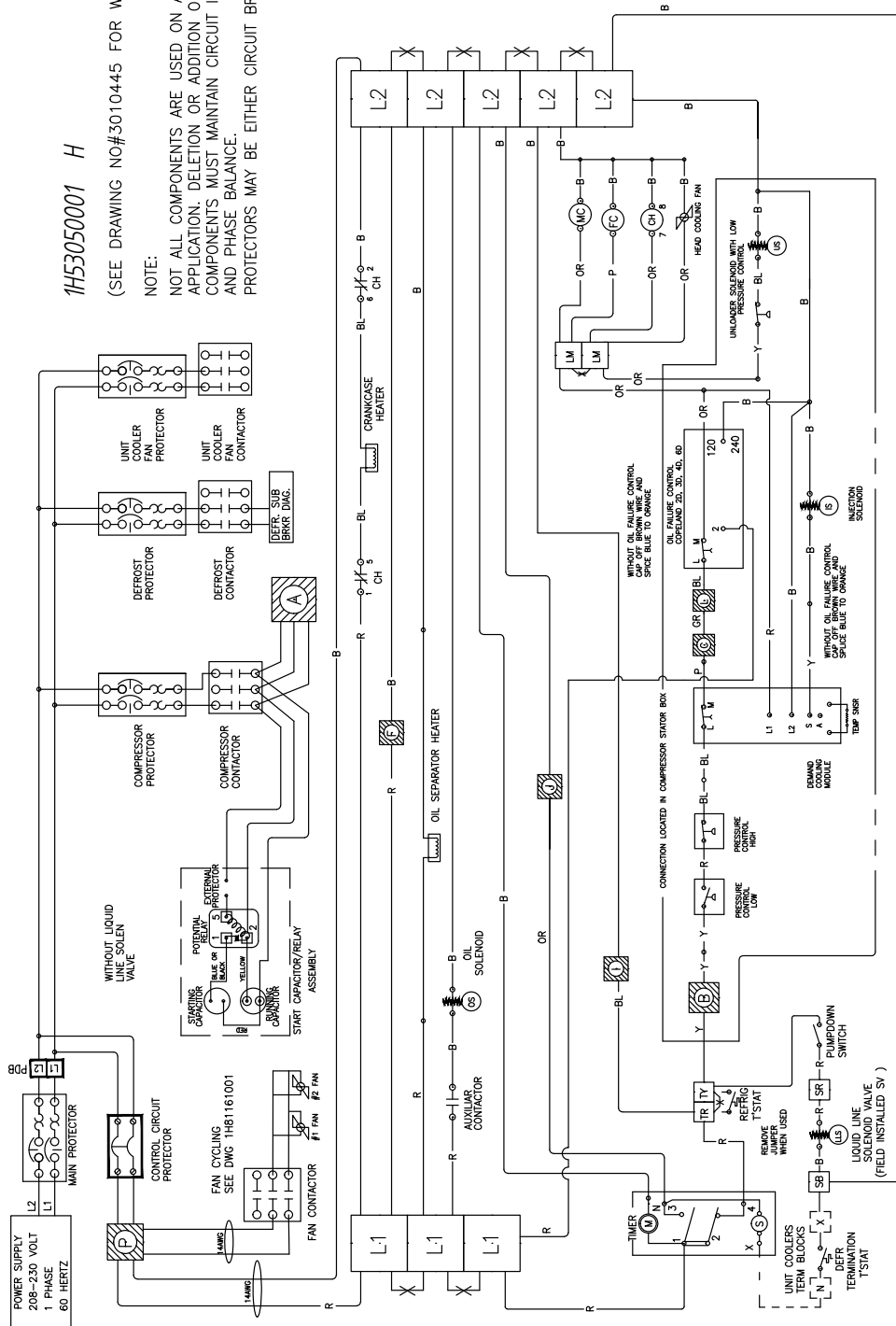
### Wiring Diagrams

#### 208-230 VAC, 1-Phase

1H53050001 H

(SEE DRAWING NO#3010445 FOR WIRING OPTION BLOCKS)

NOTE:  
 NOT ALL COMPONENTS ARE USED ON A SPECIFIC APPLICATION, DELETION OR ADDITION OF COMPONENTS MUST MAINTAIN CIRCUIT INTEGRITY AND PHASE BALANCE.  
 PROTECTORS MAY BE EITHER CIRCUIT BREAKER OR FUSES.



# H-Series A2L

## Installation Information

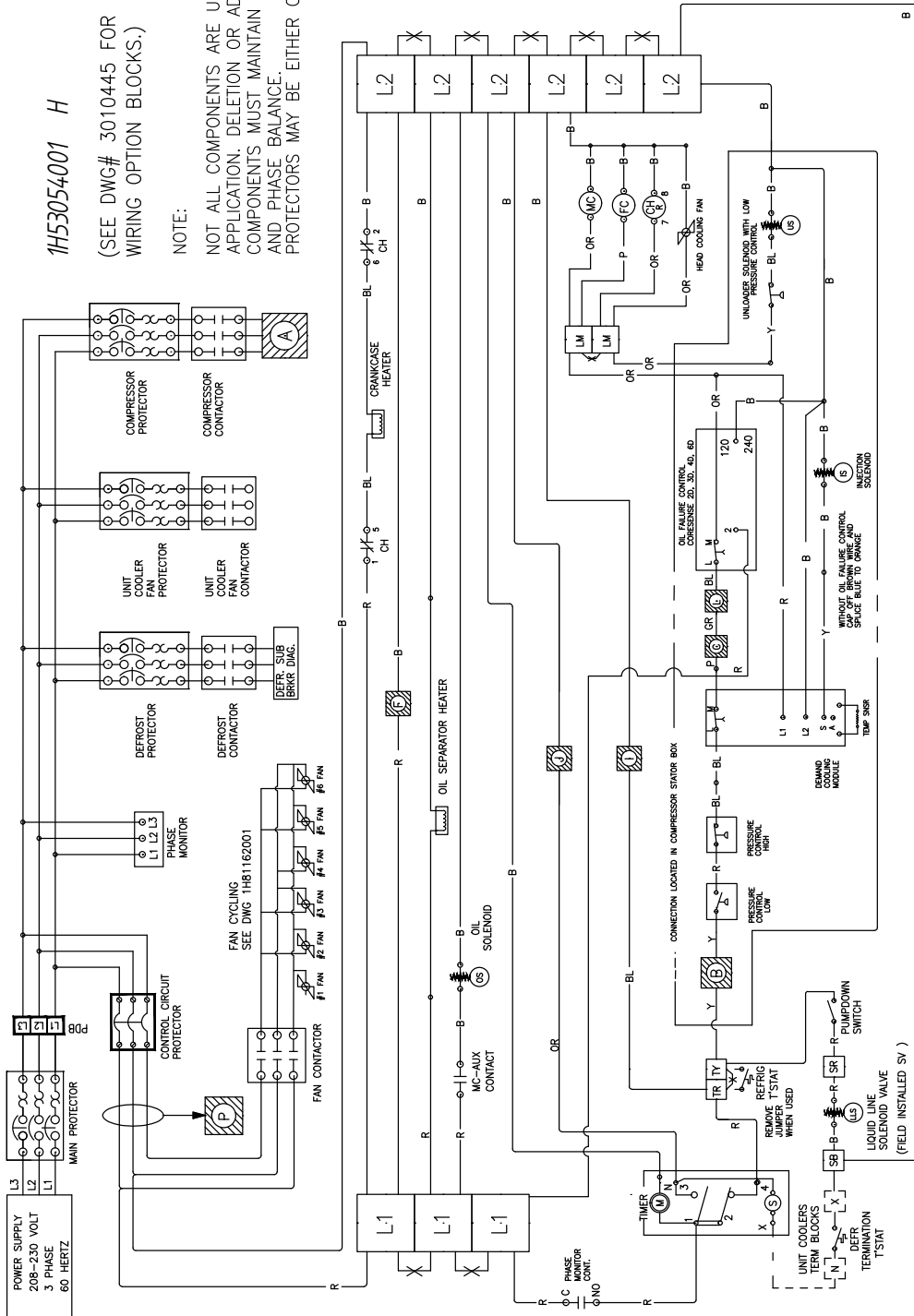
208-230 VAC, 3-Phase

1H53054001 H

(SEE DWG# 3010445 FOR WIRING OPTION BLOCKS.)

NOTE:

NOT ALL COMPONENTS ARE USED ON A SPECIFIC APPLICATION. DELETION OR ADDITION OF COMPONENTS MUST MAINTAIN CIRCUIT INTEGRITY AND PHASE BALANCE. PROTECTORS MAY BE EITHER CIRCUIT BREAKER OR FUSES.



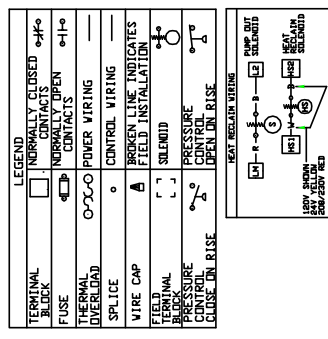
# H-Series A2L

## Installation Information

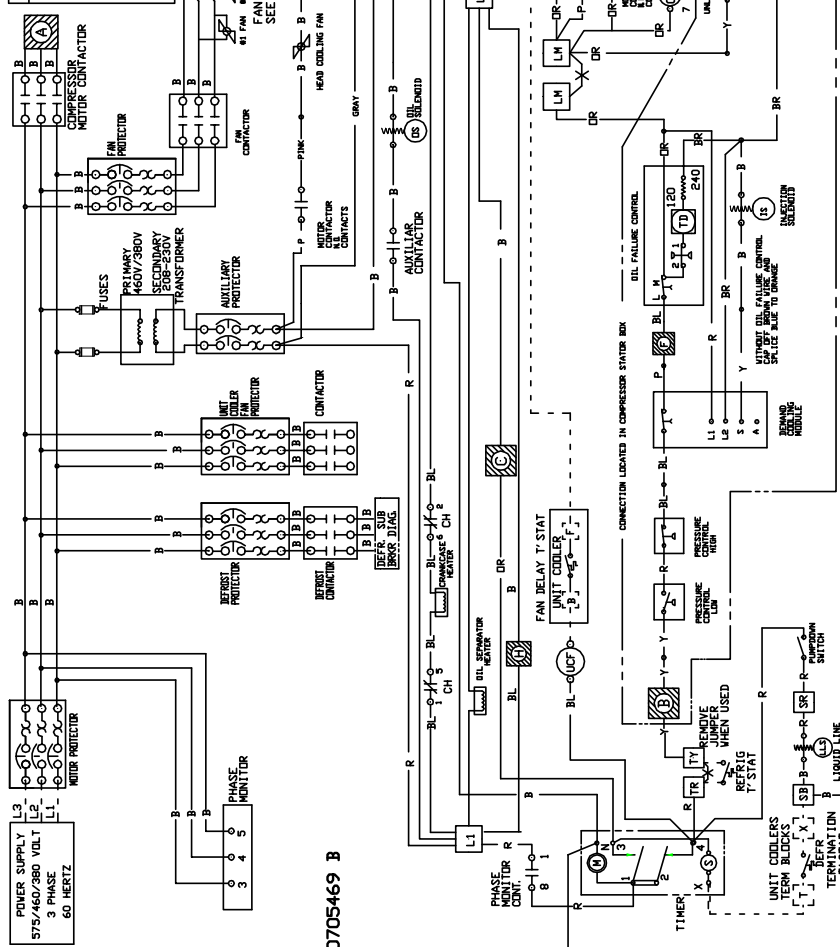
### 460 VAC and 575 VAC, 3-Phase (version 1)

WIRE COLOR CODE	CIRCUIT BREAKER SIZE (A)	MINIMUM WIRE SIZE (AWG)
R = RED	15	14
BL = BLUE	20	12
DR = DRANGE	40	10
P = PURPLE	50	8
PK = PINK	60	6
Y = YELLOW	70	4
BR = BROWN	90	3
B = BLACK	100	3
GR = GRAY	110	2
	150	1/0
	175	2/0

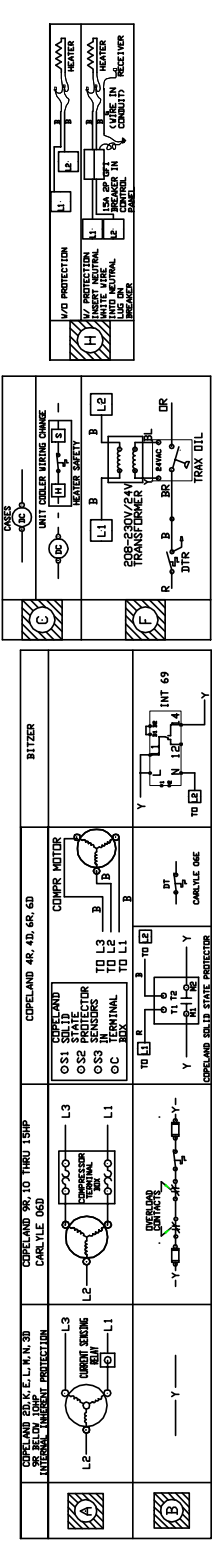
LEGEND	
TERMINAL BLOCK	INDICALLY CLOSED CONTACTS
FUSE	INDICALLY OPEN CONTACTS
THERMAL OVERLOAD	POWER WIRING
SPLICE	CONTROL WIRING
WIRE CAP	BROKEN LINE INDICATES FIELD INSTALLATION
TERMINAL BLOCK	SOLENOID
CONDUIT	COMPRESSOR CONTROL
CLOSE ON RISE	HEAT RECLAIM WIRING



- NOTES**
- NOT ALL COMPONENTS ARE USED IN ALL APPLICATIONS. REFER TO THE WIRING DIAGRAM FOR ADDITIONAL INFORMATION. COMPONENTS MUST MAINTAIN CIRCUIT INTEGRITY AND PHASE BALANCE.
  - PROTECTORS MAY BE EITHER CIRCUIT BREAKER OR FUSES.
  - SEE OPTION WIRING BLOCK G WHEN L10 IS USED. INDICATE CONNECTION WITH OR WITHOUT PUMP/DRUM IS REQUIRED.



0705469 B



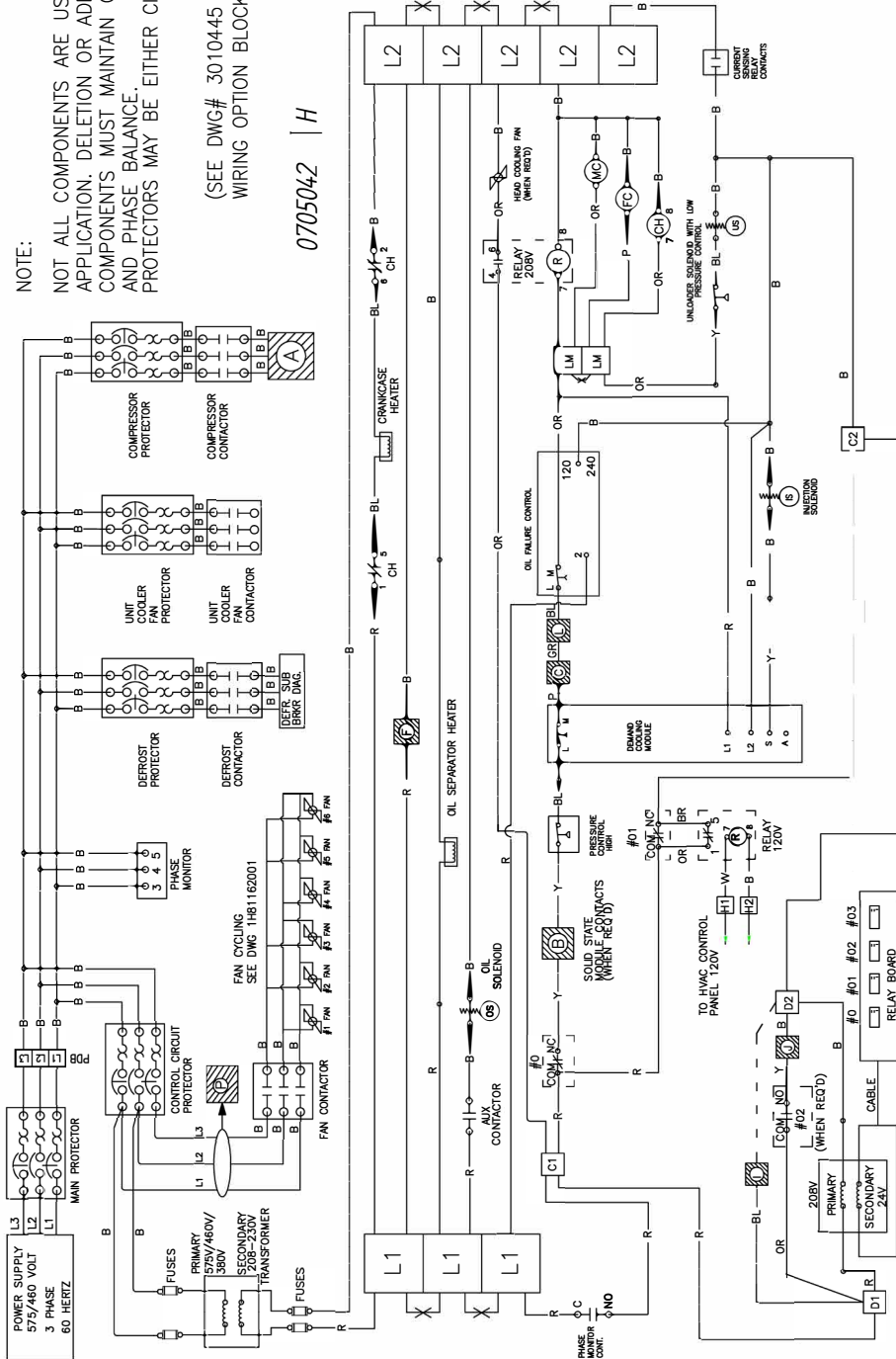
# H-Series A2L

## Installation Information

460 VAC and 575 VAC, 3-Phase (version 2)

NOTE:  
 NOT ALL COMPONENTS ARE USED ON A SPECIFIC APPLICATION. DELETION OR ADDITION OF COMPONENTS MUST MAINTAIN CIRCUIT INTEGRITY AND PHASE BALANCE.  
 PROTECTORS MAY BE EITHER CIRCUIT BREAKER OR FUSES.  
 (SEE DWG# 3010445 FOR WIRING OPTION BLOCKS.)

0705042 | H



# H-Series A2L

## Installation Information

### Fan Wiring (208–230 VAC, 1-phase)

VOLTAGE PHASE TAPE OR CONDUCTOR COLOR	
V/L	L1 L2 L3
208V	BLACK RED BLUE
460/230V	BROWN ORANGE YELLOW
575V	RED BLACK BLUE

CIRCUIT BREAKER OR FUSE SIZE (A)	MINIMUM WIRE SIZE (AWG)
8	18
15	14
20	12
30	10
40	8
50	8
60	6
70	4
80	4
90	3
100	3
110	2
125	2
150	1/0
175	2/0

WIRE COLOR CODE	
RD = RED	YL = YELLOW
BL = BLUE	WH = WHITE
OR = ORANGE	BR = BROWN
PR = PURPLE	BK = BLACK
PK = PINK	GR = GRAY

**LEGEND**

- NORMALLY OPEN CONTACT  
 - NORMALLY CLOSE CONTACT  
 - ELECTRO MECHANICAL PRESSURE CONTROL SWITCH  
 - AMBIENT TEMP SENSOR NORMALLY OPEN CONTACT  
 - WIRE CONNECTION SPICE  
 - CONDENSER FAN

FAN CYCLING NOTES:  
 1. MAKE LABELS FOR FANS AND CORRESPONDING CYCLING SWITCHES AS FOLLOWS:  
 LABEL FANS AS FAN#1, FAN#2, FAN#3, ETC.  
 LABEL CYCLING SWITCHES AS FAN CYC SW2, FAN CYC SW3, ETC.



# H-Series A2L

## Installation Information

### Fan Wiring (460 VAC and 575 VAC, 3-phase)

VOLTAGE PHASE TYPE OR CONDUCTOR COLOR		
V/L	L1	L2
208V	BLACK	RED
460/580V	BROWN	ORANGE
575V	RED	BLACK
		BLUE

CIRCUIT BREAKER MINIMUM WIRE SIZE OR FUSE SIZE (A)	MINIMUM WIRE SIZE (AWG)
8	18
15	14
20	12
30	10
40	8
50	8
60	6
70	4
80	4
90	3
100	3
110	2
125	1
150	1/0
175	2/0

WIRE COLOR CODE	
RD = RED	YL = YELLOW
BL = BLUE	WH = WHITE
OR = ORANGE	BR = BROWN
PR = PURPLE	BK = BLACK
PK = PINK	GR = GRAY

**LEGEND**

Ⓢ-1-Ⓢ - NORMALLY OPEN CONTACT  
 Ⓢ-1-Ⓢ-Ⓢ - NORMALLY CLOSE CONTACT  
 Ⓢ-1-Ⓢ-Ⓢ-Ⓢ - SELECTED NOMINAL PRESSURE  
 Ⓢ-1-Ⓢ-Ⓢ-Ⓢ-Ⓢ - CONTROL SWITCH  
 O/UTR - AMBENT TEMP SENS NORMALLY OPEN CONTACT  
 Ⓢ-1-Ⓢ-Ⓢ-Ⓢ-Ⓢ-Ⓢ-Ⓢ - WIRE CONNECTION SPLICE  
 - CONDENSER FAN

FAN CYCLING NOTES:  
 1. MAKE LABELS FOR FANS AND CORRESPONDING CYCLING SWITCHES AS FOLLOWS:  
 LABEL FANS AS FAN#1, FAN#2, FAN#3, ETC.  
 LABEL CYCLING SWITCHES AS FAN CYC SW2, FAN CYC SW3, ETC.

# H-Series A2L

## Installation Information

### Optional Wiring Blocks

3010445 A

**BLOCK DESCRIPTION**

- A - COMPRESSOR TERMINAL WIRING
- B - SOLID STATE MODULE WIRING
- C - TRAX-OIL WIRING
- D - COILS AND CONNECTIONS
- E - SCROLL LIQUID INJECTION
- F - HEAT TAPE WIRING - COPELAND RECIP
- G - LIQUID INJECTION - COPELAND RECIP
- H - CONDENSER FAN
- I - UNIT COOLER - FAN DELAY T-STAT
- J - UNIT COOLER - FAN DELAY T-STAT
- K - PHASE MONITOR TIME DELAY RELAY
- L - COPELAND SCROLL ZL/ZB\*\*K5E WITH NEW CORESENSE DIAGNOSTICS
- M - CONDENSER FAN WIRING
- N - ECM MOTOR WIRING

**COPELAND SCROLL ZL/ZB\*\*K5E WITH NEW CORESENSE DIAGNOSTICS**

**Liquid Injection Shut-Off (WHEN USED)**

NOTES:  
1. Remove demand signal wire from terminal "D" when EZ Controller is applied. (Demand thru RS-485)

**CONDENSER FAN WIRING**

FROM CONDENSER FAN CONTACTOR

\* FOR THIS APPLICATION SINGLE CONDENSER FAN REQUIRES CONTACTOR ALSO.  
NOTE: FOR FAN CYCLE CONTROL SEE FAN CYCLING DRAWINGS #1H81162001, #1H81163001

**REFERENCE - EATON ADJUSTABLE TIME DELAY**

REVERSE TIME DELAY RELAY WIRING FROM HIGH-PRESSURE CONTROL IS USED CUT INTO ORANGE WIRE FROM "M" CONNECTION. SPC1, SPC11 & CPC IPC JR. RED WIRE CONNECT TO BLUE WIRE FROM FRESH OIL.

TO L1 (COM)

TO L2 LINE ON AUXILIARY

NON SCROLL COMPRESSORS  
STANDARD APPLICATION  
ORANGE WIRE TO BOX  
SPECL. SPC11 & CPC IPC JR. RED WIRE CONNECT TO SCROLL COMPRESSORS

ADJUSTABLE TIME DELAY  
EATON TIMER A1(L1) A2(L2) 15 18  
TIME DELAY 15 (NO) B1

STANDARD TIMER, SPC11  
RED WIRE TO DISCHARGE T-STAT OR IF NO T-STAT RUN RED WIRE TO CONNECT WITH RED WIRE FROM FRESH OIL TRAX-OIL

**REFERENCE HEAT RECLAIM WIRING**

H51 H52  
120V SHOWN  
24V YELLOW  
208/230V RED  
HEAT RECLAIM SOLENOID

**VOLTAGE PHASE TAPE OR CONDUCTOR COLOR**

L1	L2	L3
BLACK	RED	BLUE
208V =	BROWN	ORANGE
460V =	RED	YELLOW
575V =	BLACK	BLUE

**NOTE: FOR FAN CYCLE CONTROL SEE FAN CYCLING DRAWINGS #1H81161001, #1H81162001, #1H81163001**

FAN CONTACTOR  
FAN MOTOR  
HEAD COOLING FAN (WHEN REQ'D)

ANALOGY PROTECTOR  
CONTROL BREAKER

NOTES:  
1. USE WHEN 4 OR MORE ECM FANS ARE APPLIED  
2. ECM MOTORS AVAILABLE ONLY FOR 208V SUPPLY

**COPELAND SCROLL 3-6 HP LIQUID INJECTION SOLENOID**

CURRENT SENSING RELAY (WHEN REQ'D)

COPELAND SCROLL 7 1/2 HP AND UP LIQUID INJECTION SOLENOID

W/O PROTECTION  
MOTOR PROTECTION  
INSERT NEUTRAL INTO MULTIPOLAR BREAKER

# H-Series A2L

## Installation Information

### Piping Overview

Important: Since Hussmann has no direct control over the installation, providing freeze-burst protection is the responsibility of the installing contractor.

Important: The inlet and outlet manifold headers are not designed to support field piping.

System design must conform to all local and national codes, laws, and regulations applying to the site of installation. In addition, the safety code for mechanical refrigeration (ASME B31.5) should be followed as a guide for installation and operation practice.

Refrigerant line sizes and piping techniques should be obtained from the ASHRAE guide or equivalent reference. Under no circumstances should the refrigerant connection size of the unit be used as the basis for sizing the lines. Lines must be properly braced throughout the system.

### Piping Installation Requirements

- Use only clean, dehydrated, sealed refrigeration grade copper tubing.
- Use dry nitrogen in the tubing during brazing to prevent the formation of copper oxide. Warning: Always use a pressure regulator on nitrogen tanks.
- AC&R type copper tubing should be used throughout.
- Tubing should be cut with a wheel-type cutter, not a hacksaw. Deburr before assembly.
- If the onsite tubing lengths to be used were not previously capped (i.e., are not perfectly clean) they should be dragged internally with a clean, lint-free rag before fabricating into the system. Always clean all pipe and fitting areas that will be brazed with the proper grade emery cloth.
- Soft solders are not to be used.
- Plan to use only oxy-acetylene brazing.
- All joints should be made with silver alloy brazing material, and use 45% silver solder for dissimilar metals.
- A higher content silver brazing rod must be used to avoid excessive use of flux, less it be pushed into the system piping, which will create problems later. Use a silver solder which contains sufficient silver content necessary for joint strength and flexibility yet requires minimum use of flux. For copper-to-copper joints, use a phos-copper solder with 15% silver content. Some easy-flow types require no flux, and the resultant joints are of maximum strength without brittleness.
- Nitrogen should be used to purge the air from the connecting tubing during brazing in order to prevent copper oxide formations.
- Installation shall include protection from physical damage in operation and service and be in compliance with national and local codes and standards, such as ANSI/ASHRAE 15, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.
- The installation of pipework shall be kept to a minimum.
- A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts.
- Mechanical connectors used indoors shall comply with ISO 14903 or UL 207 or CSA C22.2 No. 140.3. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be refabricated.
- Refrigerant tubing shall be protected or enclosed to avoid damage. Flexible refrigerant connectors (such as connecting lines between the indoor and outdoor unit) that might be displaced during normal operation shall be protected against mechanical damage.

# H-Series A2L

## Installation Information

- Mechanical connections shall be accessible for maintenance purposes.
- Provision shall be made for expansion and contraction of long runs of piping.
- Protection devices, piping, and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris.
- Piping in refrigeration systems shall be so designed and installed to minimize the likelihood of hydraulic shock damaging the system.
- Steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation.
- Flexible pipe elements shall be protected against mechanical damage, excessive stress by torsion, or other forces, and they should be checked for mechanical damage annually.
- Precautions shall be taken to avoid excessive vibration or pulsation of the refrigerant piping.
- After completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements as detailed by UL safety standard. Pressures may come from unit data label or from customer specification.
  1. The minimum test pressure for the low side of the system shall be the low side design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system cannot be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.
  2. The test pressure after removal of the pressure source shall be maintained for at least 1 hour with no decrease of pressure indicated by the test gauge, with rest gauge resolution not exceeding 5% of the test pressure.
  3. During the evacuation test, after achieving a vacuum level specified in the manual or less, the refrigeration system shall be isolated from the vacuum pump and the pressure shall not rise above 1500 microns within 10 min.
- Field-made refrigerant joints indoors shall be tightness tested according to applicable codes and requirements.
- Equipment piping in the occupied space shall be installed in such a way to protect against accidental damage in operation and service.
- Solenoid valves and/or safety shut-off valves shall be correctly positioned in the piping to avoid hydraulic shock or pressure.
- Insulation shall be suitable for use with the material being insulated.
- The indoor equipment and pipes shall be securely mounted and guarded such that accidental rupture of equipment cannot occur from such events as moving furniture or reconstruction activities.

# H-Series A2L

## Installation Information

### Piping Installation

The purging process should only be done with the compressor system off and with pressures equalized. Do not attempt to do this unless you are qualified and have the proper reclaim/recovery equipment mandated by the EPA.

Undersizing connecting lines will cause several problems in the refrigeration system. High pressure drop in the discharge line takes away from the system's capacity as well as resulting in excessive power usage.

Oversizing a discharge line will inhibit compressor lube oil circulation. The proper balance is to design discharge lines for approximately 4,000 ft/min (1,219 m/min) velocity in vertical risers and can be lowered to 2000 ft/min (610 m/min) in sloped horizontal runs. "P" traps should be installed at the base of all vertical discharge riser lines to facilitate proper oil return to the compressor. This is especially true immediately downstream of the compressor in order to prevent refrigerant liquid and/or oil migrating back into the compressor heads when the compressor is not running.

High pressure drop in the liquid line can result in the complete reduction of the liquid sub cooling, thus causing flash gas at the expansion valve. Coil starving and reduced capacity will be the result. Liquid lines can also be misapplied if sized too large. The sizing affects the oil-to-refrigerant mixture ratio as well as necessitating charging the system with an excessive amount of refrigerant. Proper sizing of both the discharge and liquid lines is a necessity for a properly working system.

Generally, horizontal piping runs should grade slightly downwards in the direction of flow. Liquid line piping must be arranged so that it is free draining from the condenser to the receiver. The liquid line must be free of any traps or loops and constantly be pitched downhill towards the receiver. Avoid long horizontal lines on roofs. The liquid line is to be sized so the velocity does not exceed 100 ft/min (30 m/min). Where the ambient temperature can be below the equipment room temperature, a check valve must be installed in the liquid line to prevent liquid migration at the condenser.

Provisions must be made to accommodate expansion and contraction of the lines, especially if the lines have long runs with few elbows or bends. The lines must also be adequately supported at frequent intervals in accordance with good piping practice. It is necessary that field bracing provide adequate support at the condenser connections.

Pressure testing of the piping should be done as soon as the field piping has been completed. The high-side test pressure should not exceed the pressure listed on the condenser nameplate. Nitrogen may be used to increase the trace refrigerant pressure for leak testing. It is recommended that an electronic type leak tester be used. Shipping vibrations can stress joints, thus producing operating leaks that would otherwise go undetected from just a low-pressure holding charge. Therefore, check for leaks at all joints—field and factory—before charging the system.

# H-Series A2L

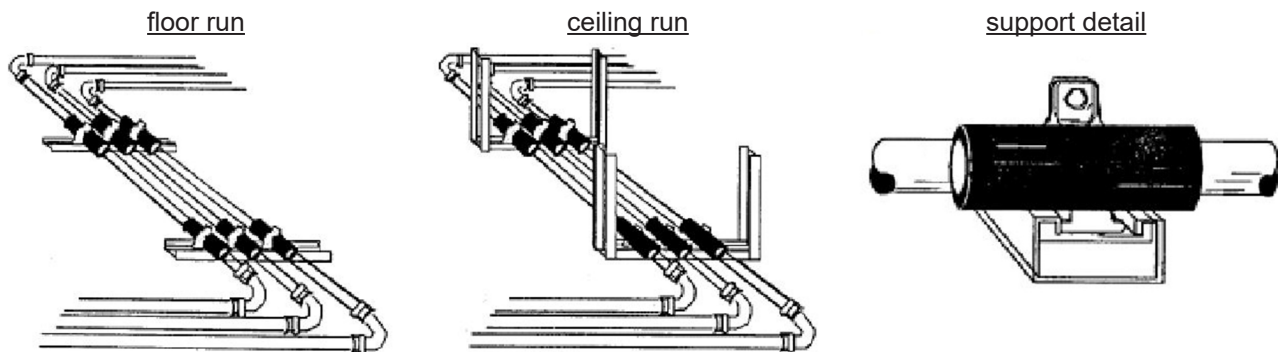
## Installation Information

### Refrigeration Line Runs

Liquid lines and suction lines must be free to expand and contract independently of each other. Do not clamp or solder them together. Supports must allow tubing to expand and contract freely. Do not exceed 100 feet (30.5 m) without a change of direction and/or offset.

Pitch horizontal suction lines toward the compressor with a slope of 1/2 in. (13 mm) for every 10 ft (3 m). All suction risers should have a p-trap installed at the base of the riser and have an inverted trap installed at the top of the riser. All traps should be the same diameter as the horizontal run. Install a suction midpoint p-trap for every 16 ft (4.9 m) of vertical rise. Install a one-piece trap for both the base and inverted trap.

Use long radius elbows to reduce line resistance and breakage. Avoid the use of 45-degree elbows. Install service valves at several locations for ease of maintenance and reduction of service costs. These valves must be UL approved for the minimum design working pressure of the system.



### Angle Valve and Elbow Run Lengths

Angle valves and elbows must be figured as additional straight pipe. The chart below gives equivalent lengths for these components.

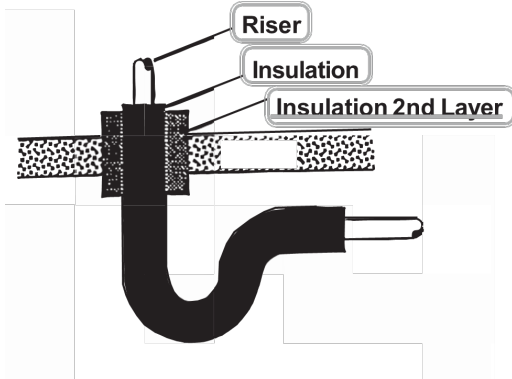
Tube Size	Angle Valve	Long Radius 90° Elbow
1/2"	6 ft (1.83 m)	0.9 ft (0.27 m)
5/8"	7 ft (2.1 m)	1 ft (0.31 m)
7/8"	9 ft (2.7 m)	1.4 ft (0.43 m)
1 1/8"	12 ft (3.7 m)	1.7 ft (0.52 m)
1 3/8"	15 ft (4.6 m)	2.3 ft (0.7 m)
1 5/8"	18 ft (5.5 m)	2.6 ft (0.79 m)
2 1/8"	24 ft (7.3 m)	3.3 ft (1 m)
2 5/8"	29 ft (8.8 m)	4.1 ft (1.25 m)
3 1/8"	35 ft (10.7 m)	5 ft (1.52 m)
3 5/8"	41 ft (12.5 m)	5.9 ft (1.8 m)
4 1/8"	47 ft (14.3 m)	6.7 ft (2 m)

# H-Series A2L

## Installation Information

### Piping Through Walls and Floors

Refrigeration lines that are run through walls or floors must have a p-trap installed, and the lines must be properly insulated. Avoid running lines through the refrigeration cases. When this is done, the lines must be adequately insulated using a closed-cell elastomeric foam insulation.



### Refrigerant Line Sizing

Refer to ASHARE standards for line sizing. The installer is responsible for sizing the piping for each application.

### Refrigeration Line Stubs Out

Stub sizes do not necessarily match line sizes. Reduction fittings must be field supplied and installed. The installer is responsible to account for any factors which may affect the system.

### Condenser Line Sizing

For longer runs use the following formula:

Using feet as measurement:  $\text{Table Capacity} * \sqrt{100/\text{Longer Length}} = \text{Longer Line Capacity}$

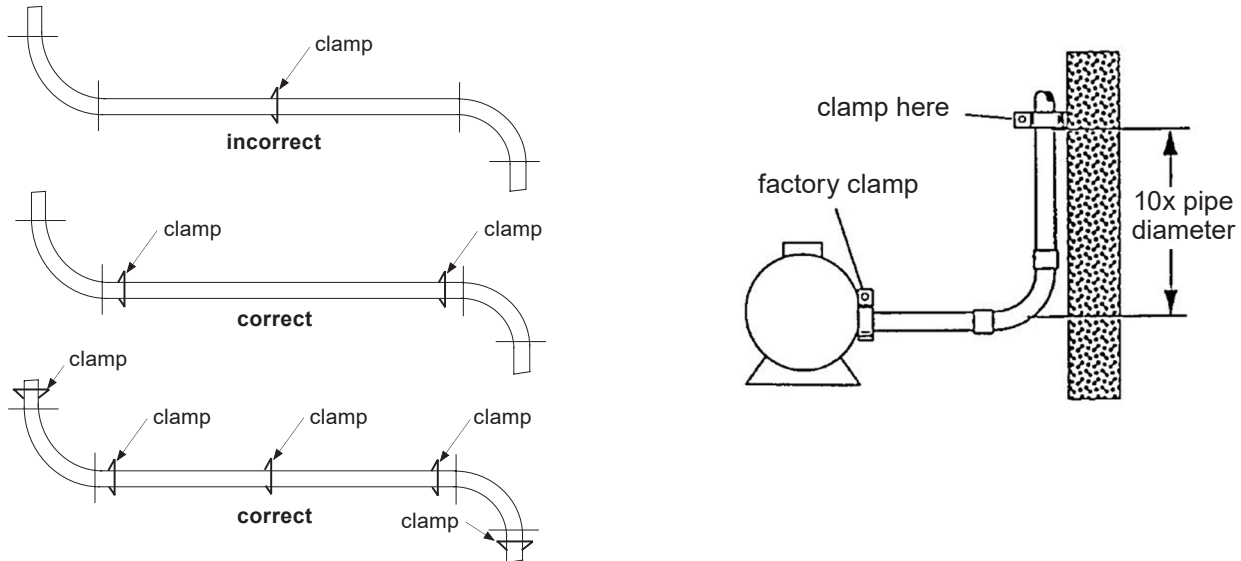
Note: This formula applies only to remote condenser lines, and only to longer runs of these lines. A 25 ft (7.6 m) run does not necessarily have double the capacity of a 100 ft (30.5 m) run.

# H-Series A2L

## Installation Information

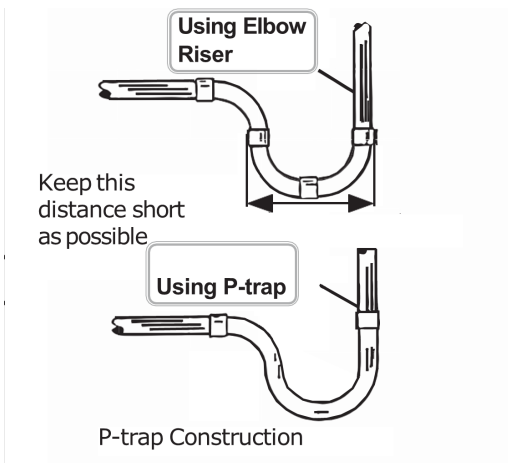
### Piping From Machinery to Solid Object

When mounting lines from machinery to a solid object, allow line to be able to move appropriately to prevent metal fatigue from vibration. Do not over support piping that is in contact with the compressor. The machinery must not be tightly stressed from piping that does not allow for some vibration. If piping is too tight metal fatigue will occur.



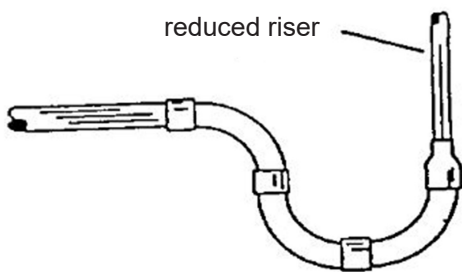
### P-Trap Construction

P-traps must be installed at the bottom of all suction risers to return oil to the compressors to avoid trapping oil.



### Reduced Riser

When a reduced riser is necessary, place the reduction coupling downstream of the p-trap.



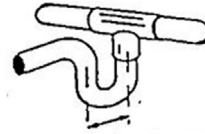
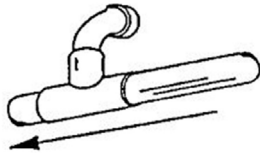
# H-Series A2L

## Installation Information

### Suction Line

Pitch line in direction of flow. Size may be reduced by one size at one third of run load and again after the second third. Do not reduce below evaporator connection size. Suction returns from evaporators enter at the top of the branch line.

Suction Line Return



Liquid Line Take Off Loop

### Liquid Line (off-time and electric defrost)

Line may be reduced by one size after one half of the case load run. Do not reduce below evaporator connection size. Take-offs to evaporators exit the bottom of the liquid line. Provide an expansion loop for each evaporator take-off (minimum 3 in. [76 mm] diameter).

### Field Connections of Heat Reclaim

This will not apply to factory heat reclaim. Each circuit of the heat reclaim coil is tagged to correspond with a specific condensing unit and must be connected only to that unit.

### Special Piping for Open Rooms

An open preparation room allows heat infiltration from the rest of the store at a rate which may jeopardize total refrigeration performance. To protect the rest of the refrigeration system, open preparation evaporators must be piped with a crankcase pressure regulating valve (CPR). The CPR is field-installed in the suction line(s) from the evaporator(s). The installer is responsible for proper adjustment of the valve.

### Insulation

Additional insulation for the balance of the liquid and suction lines is recommended wherever condensation drippage is objectionable or the lines are exposed to ambient conditions.

# H-Series A2L

## Installation Information

### Protecting Valves and Clamps

When brazing near factory installed clamps or valves be sure to protect them with a wet rag to avoid overheating. Insulate all reduced risers. Avoid using water or wet rags to cool a brazed joint. Allow brazed joints to air cool.

All clamps must be properly anchored. Rubber grommets must be installed to prevent chafing of the lines.

### Elbows

Only use long radius elbows. Long elbows have been shown to have less pressure drop and greater strength. It is especially important to use long radius elbows for hot gas discharge lines.

### Factory Supplied Stubs

Stub sizes provided do not automatically correspond to the line sizes necessary. It is the installer's responsibility to supply reduction couplings.

### Purge Valve Location

The purge valve must be installed at the highest point of an inverted p-trap, with at least a 6 in. (152 mm) rise

Warning: Vent the receiver safety relief device properly. Use with approved recovery vessel only.

### Purge Relief Valve

A standard fusible plug is installed on all receivers. The connection size for piping from the fusible plug is 3/8" NPT. An optional relief valve is also available, which replaces the fusible plug and has the same connection size for piping (3/8" NPT).

# H-Series A2L

## Operation and Controller

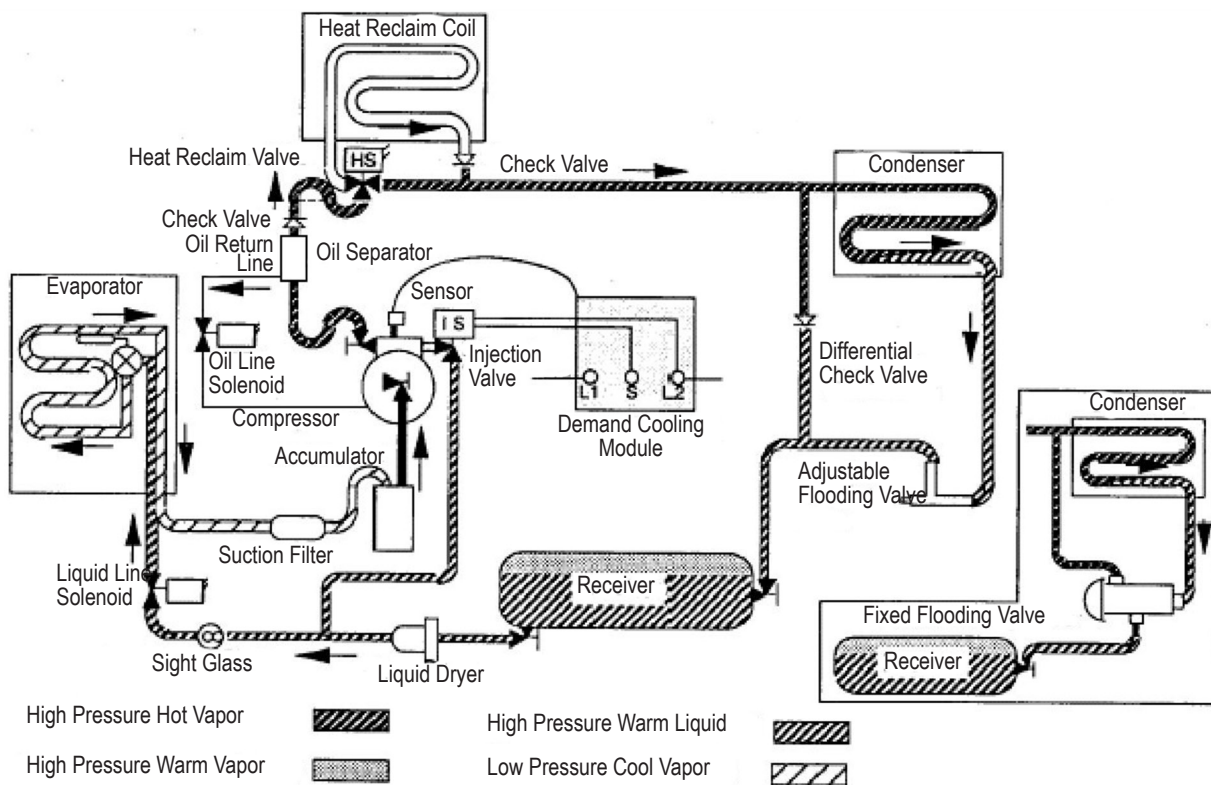
### Sequence of Operation

#### Refrigeration Cycle

Typically, refrigeration falls into low or medium temperature ranges. An average low temperature condensing unit maintains a suction temperature of -20° F (-28.9° C) with a low-temp satellite operating at -33° F (-36.1° C). A common medium temperature condensing unit operates at 25° F (-3.9° C) with a low-temperature satellite operating at 7° F (-13.9° C).

These constants are maintained throughout the following explanations.

- In the diagrams refrigerant flow direction is generally clockwise and indicated by directional arrows.
- Electric solenoid valves carry the same initial abbreviations as in the electric schematics.
- Refrigeration lines not actually in the cycle being discussed are shown closed or removed.
- Pressure in oil lines will also retain a fixed pattern.



# H-Series A2L

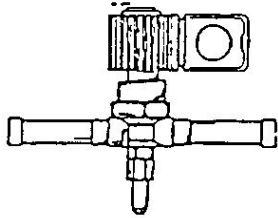
## Operation and Controller

### Oil Separator

Beginning with the compressor, refrigerant vapor is compressed and flows to the oil separator. The oil is stored in the bottom of the oil Separator and returned to the compressors through the oil return line.

When an oil separator is installed the following components are required:

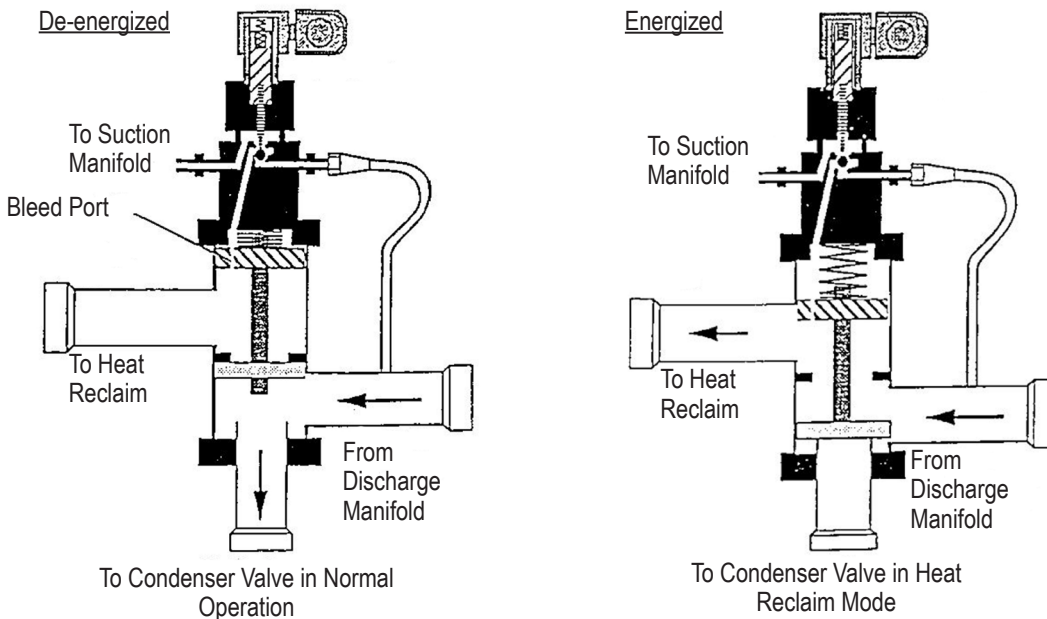
- Check valve on the discharge line after the oil separator, to prevent refrigerant migration during low ambient temperatures from the condenser to the oil separator and from that to the compressor.
- Oil line solenoid, on the oil return line, to prevent the oil returning from the compressor (when the compressor is not running) or heat reclaim. The excessive oil in the crankcase when the compressor starts, could cause damage to the compressor such as broken valve plate, piston, etc.



### Heat Reclaim Valve

A 3-way heat reclaim valve directs the superheated discharge gas to either the condenser or a heat reclaim device when energized. When the reclaim solenoid is deenergized, the valve directs the refrigerant to the condenser.

The condenser rejects the heat that must be removed from refrigerant to cause it to condense.



# H-Series A2L

## Operation and Controller

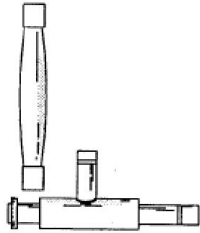
### Fan Cycling / Flooding Valves

For low ambient conditions, fan cycling or flooding valves are required. These valves may be fixed or adjustable. The adjustable flooding valve works in parallel with a 20 pound differential check valve.

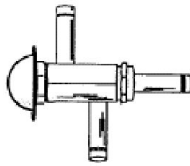
The flooding valve maintains head pressure in low ambient conditions by restricting liquid refrigerant flow from the condenser. This causes liquid refrigerant to be backed up in the condenser thus reducing available heat transfer surface and causing the discharge pressure to rise.

Units are equipped with adjustable ORI flooding valves for winter control and ORD differential valves for receiver pressure regulation. Multi-fan units are also equipped with a temperature control to cycle off half the fans in low-ambient conditions.

adjustable



fixed



# H-Series A2L

## Operation and Controller

### Pre-Startup

- Observe all previous listing warnings, cautions, and requirements to ensure all listed requirements are met and/or observed before proceeding.
- Visually inspect all lines and joints for proper piping practices to minimize the potential for leaks.
- Close angle valves for pressure transducers.
- Open valves to condenser, heat reclaim, and receiver.
- Liquid line solenoid valve solenoid should be energized.
- Verify refrigerant requirements for system, compressors, and TEVs in merchandisers and coolers.
- Electrical supply and component requirements.

### Oil Levels

Condensing units using Bitzer compressors are shipped dry. Oil can be ordered as a ship loose accessory or will need to be supplied separately.

Check the oil sticker on the condensing unit before adding oil. All oil used must match the specification put forth by the compressor manufacturer.

Before operation, check that oil levels for the compressor to ensure sight glass 1/8 to 1/2 full.

### Test Charge and Evacuation

Using vapor refrigerant trace gas to pressurize the system to 15 PSIG (1.03 bar). Carefully add dry nitrogen to bring the system pressure up to 150 PSIG (10.3 bar). Use an electronic leak detector to inspect all connections. If a leak is found, isolate, repair, and retest. Be sure system is at 150 PSIG (10.3 bar) and all valves closed to isolate the leak are opened afterward. After the last leak is repaired and retested, the system must stand unaltered for 12 hours with no pressure drop from 150 PSIG (10.3 bar).

Nitrogen and moisture will remain in the system unless proper evacuation procedures are followed. Nitrogen left in the system may cause head pressure problems. Moisture causes TEV ice blockage, wax build up, acid oil, and sludge formation.

Do not simply purge the system to the atmosphere. This procedure is expensive, harmful to the environment, and may leave moisture and nitrogen behind.

Do not run the compressors to evacuate. This procedure introduces moisture into the compressor's crankcase oil and does not produce adequate vacuum to remove moisture from the rest of the system at normal temperatures.

# H-Series A2L

## Operation and Controller

### Pre-Charge Checklist

While the system is being evacuated preparation for charging can begin. During any of the pull downs check:

Check controller program if applicable.

#### Display Cases, Walk-In Coolers, and Freezers

- Electrical requirements and power supply
- Electrical connections tight and clean
- Proper fan operation
- Thermostat setting

#### Condensing Unit

- Electrical requirements and power supply
- Electrical connections tight and clean
- Proper fan operation
- Pressure settings
- Defrost settings
- Adjust head pressure valve

To obtain maximum energy efficiency, the ORI flooding valve should be field-adjusted to allow the minimum condensing temperature permitted for the application in question, based on the compressor operating envelope.

Due to variations in equipment designs and installations, the ORI flooding valve may need to be adjusted to a slightly higher pressure setting to achieve proper operation of the refrigeration system.

The temperature control setpoints should be field-adjusted to cycle off half the fans at ambient temperatures below 40° F (4.4° C).

#### Air Cooled Condenser

- Electrical requirements and power supply
- Electrical connections tight and clean
- Proper fan operation
- Thermostat or pressure settings
- Damper operation, if equipped

#### Heat Reclaim and other systems

- Electrical requirements and power supply
- Electrical connections tight and clean
- Component operation.

Note: Remember to reinstate control to unit components that were jumpered to make test.

During the last evacuation look up and make a list of the required control settings for the system. High and low pressure, heat reclaim lockout (if applicable), winter control settings, and other controls on the system should be noted.

# H-Series A2L

## Installation Information

### Refrigerant Charging Procedure

Only the specified refrigerant type can be used. See the equipment datasheet for information on operating and releasable charge. Shut down the unit at first indication of unusual operation.

The triple evacuation method should be used to achieve a leak-free, dry system. For the first evacuation, the system should be pulled down to 1,000 microns. The second evacuation should be pulled to 500 microns. The final evacuation should be pulled down to at least 300 microns. A dry, leak-free system is when the system holds a vacuum of 300 microns for 24 hours with the vacuum pump de-energized and valved off. Between each evacuation, break the vacuum with dry nitrogen.

When connecting hoses between the refrigeration system, manifold gauges, and refrigerant cylinder, ensure that the connections are secure and there are no potential sources of ignition nearby. Ensure that contamination of different refrigerants does not occur when using charging equipment.

Use dedicated hoses to service the type of refrigeration system being serviced (e.g., R-454C equipment for an R-454C system). Hoses or lines should be as short as possible to minimize the amount of refrigerant contained in them.

Ensure that the refrigeration system is properly grounded prior to charging the system with refrigerant, to avoid the potential for static build-up.

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

- a. 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.
- b. Cylinders shall be kept in an appropriate position according to the instructions.
- c. Ensure that the REFRIGERATING SYSTEM is earthed prior to charging the system with refrigerant.
- d. Label the system when charging is complete (if not already).
- e. 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.

Extreme care must be taken not to overfill the refrigeration system. After charging, carefully disconnect the hoses, attempting to minimize the quantity of refrigerant released. Further leak check the service ports, hoses, refrigerant tanks. Original service port washers and caps anywhere in the system must be reinstalled to prevent refrigerant leaks. Caps must be tightened to 12–14 in-lb (1.4–1.6 nm) torque.

### Refrigerant Charge Label

After charging is complete, note the refrigerant type and charge amount using permanent marking on the refrigerant charge label affixed to the equipment.

Refrigerant	Charge
R- _____	_____ lbs

# H-Series A2L

## Installation Information

### Winter Charge

When charging the condensing unit equipped with winter head pressure control valve, additional refrigerant is required for winter operation. Approximate values shown below.

Condenser Size	Summer Charge	Winter Charge
A	1 lb (0.45 kg)	6 lb (2.7 kg)
B	3 lb (1.36 kg)	13 lb (5.9 kg)
D	4 lb (1.81 kg)	17 lb (7.7 kg)
F	8 lb (3.6 kg)	34 lb (15.4 kg)
J	13 lb (5.9 kg)	56 lb (25.4 kg)

### Compressor Motor Rotation Check (Scroll)

Note: Do not run compressors for more than 10 seconds during test.

To check compressor rotation, use the following procedure:

- Install gauges on suction and discharge side of compressor. A momentary compressor run should cause a drop in suction header and a rise in discharge header pressure.
- With main disconnect OFF, switch OFF all breakers or fuses in the control panel.
- Turn ON main disconnect.
- Look for the light on the single phase protector. If it is not lit, turn OFF the main disconnect. Have the field connections to the main breaker of the unit corrected so the phase protector indicates phase alignment (the light is lit).
- Turn ON the main disconnect.
- Momentarily turn ON the compressor and verify correct pumping direction. If the compressor is rotating backwards, change two legs on the load side of the compressor contactor.

# H-Series A2L

## Operation and Controller

### Final Checks

Once the system is up and running, it is the responsibility of the installer to see that all the fine adjustments are made so the condensing unit delivers maximum temperature performance and efficiency for the customer. These include:

- Confirm ORI flooding valve setpoint (when applied)
- Confirm fan-cycling temperature-control setpoint
- Confirm factory-installed scroll compressor terminal rain cover (when supplied) is properly re-installed on outdoor units after service (the black ABS cover is secured to the compressor shell with heat-resistant webbing and a squeeze-release buckle)
- Defrost scheduling and timing condenser controls
- Winter controls
- TEV superheat adjustment
- High and low pressure controls
- Thermostat settings
- Adjustments to electronic controls
- Reinstall the wire grille on the front side of the unit enclosure
- Make sure electrical enclosure is properly grounded and reinstall panel door after service

Thoroughly inspect all field piping while the equipment is running and add supports where line vibration occurs. Be sure additional supports do not conflict with pipe expansion and contraction.

When condition space is completely stocked, check the operation of the system again.

After 48 hours of operation, replace the liquid drier and suction filter cores (if applicable).

After 90 days, recheck the entire system including all field wiring.

# H-Series A2L

## Maintenance and Service

### **WARNING**

**READ ALL WARNINGS AND PROCEDURES IN THIS MANUAL AND ON THE UNIT BEFORE SERVICING OR PERFORMING MAINTENANCE ON THIS EQUIPMENT.**

**FAILURE TO ABIDE BY THESE WARNINGS COULD RESULT IN AN EXPLOSION, DEATH, INJURY, AND PROPERTY DAMAGE.**

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized.

- Work shall be undertaken under a controlled procedure, as documented below, to minimize the risk of a flammable gas or vapor being present while work is being performed.
- Prior to performing any service work, make sure all tools and equipment have been certified for use with flammable refrigerants.
- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of 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.
- 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 chemical or CO<sub>2</sub> fire extinguisher should be adjacent to the charging area.
- No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment shall be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.
- 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.
- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation. Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to the original specification, damage to seals, incorrect fitting of glands, etc.
  - i. Ensure that the apparatus is mounted securely.
  - ii. Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer’s specifications.

# H-Series A2L

## Maintenance and Service

- Component parts are designed for use with flammable refrigerants and are non-incendive and non-sparking. To minimize the risk of possible ignition due to incorrect parts, component parts shall only be replaced with identical repair parts. Servicing shall be done by qualified service personnel only, so as to minimize the risk of possible damage due to incorrect parts or improper service.
- Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times, the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating. Replace components only with parts specified by the manufacturer. Other parts can result in the ignition of refrigerant in the atmosphere from a leak.
- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. 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:
  - i. Ensure that capacitors are discharged—this shall be done in a safe manner to avoid the possibility of sparking.
  - ii. Ensure that no live electrical components and wiring are exposed while charging, recovering, or purging the system.
  - iii. Ensure that there is continuity of earth bonding.
- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- LOCK OUT / TAG OUT — To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.
- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.
- Refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.
- To reduce the risk of fire, electrical shock or injury when cleaning this equipment:
  - Remove supply power from the equipment before cleaning.
  - Keep all liquids away from electrical and electronic components.
- If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

# H-Series A2L

## Maintenance and Service

### Maintenance and Cleaning

Proper maintenance and cleaning are critical for optimal system performance. It is recommended that the equipment and all piping and system components be visually inspected regularly. No acidic or caustic cleaners and no abrasive materials should be used to clean the equipment.

### **WARNING**

- Remove supply power from the condenser and connected refrigeration system before working on the equipment.
- Use caution and proper safety precautions when working on or around sheet metal pieces or fan blades to avoid potential injury.
- Improper service and maintenance may cause personal and/or property damage.
- Have quenching cloth and fire extinguisher available in proximity to any work being performed.

### Inspection

If the condensing unit is equipped with an electrical power disconnect switch, make sure the switch is locked in the “OFF” position before any electrical work is performed on the unit. Without a disconnect switch on the unit, make sure all power to the unit is off from the source.

Electrical connections should be inspected periodically and tightened if required. Loose electric connections can cause severe electrical damage as well as nuisance trip out and burnouts.

During the unit startup phase, check the fans for the correct rotation. While the fans are rotating the airflow should pass through the coil surface first, flow through the fan and away from the unit. If the fans are pushing the air into the coil surface the fans are rotating in the wrong direction and the motor wiring needs to be corrected.

Regular inspection ensures reliable operation and reduces downtime.

### Preventative Maintenance

#### Every Two Weeks

- Review system pressures, temperatures, and oil levels.
- Check alarm history and electrical supply voltages.
- Inspect for vibration, noise, or abnormal operating conditions.

#### Monthly

- Inspect contactor, fan motors, and electrical terminals.
- Clean condenser fan blades and guards.
- Check insulation, conduits, and control panel integrity.
- Verify oil separator and filter-drier performance.

#### Every Three Months

- Record suction, discharge, and liquid line pressures and temperatures.
- Test safety and control devices.
- Clean suction and liquid line strainers.
- Check compressor mounts and piping support integrity.

# H-Series A2L

## Maintenance and Service

### Annually

- Replace oil, liquid, and suction filter cores.
- Take an oil sample and analyze for acid or contamination.
- Clean condenser coils and verify refrigerant charge.
- Inspect pressure relief discharge lines.
- Verify alarm sequences and safety interlocks.

### Every Two Years

- Inspect protective coatings and repaint as needed.

### **Maintenance Documentation**

Keep a maintenance log recording the following information:

- Date, technician name, and unit serial number.
- Operating pressures, temperatures, and amperage readings.
- Components replaced or adjusted.
- Refrigerant or oil added and quantities.
- Alarms observed and corrective actions taken

# H-Series A2L

## Maintenance and Service

### Cleaning

For maximum efficiency, condensing units should be cleaned every 4 to 6 months maximum (more frequently if possible) so that airflow is not restricted. More frequent cleaning will be necessary under severe conditions.

#### Primary Coil Cleaning (remove gross debris, dry coil)

1. Remove power from the unit.
2. Carefully remove the coil guard(s) from the coil side of the unit (as well as the hail guards) and the screen from the opposite side.
3. Remove the bolts holding the upper panel on the coil side and swing open the top panel.
4. Carefully remove any large debris from the coil manually, making sure all proper safety equipment is used.
5. Utilize a 10" corn broom (reference ASTM F2367-04a) to remove dust and dirt from the outside of the coil. Repeat with an extended tool on the inside face of the coil. Gently sweep in vertical direction from the top to the bottom of the coil, without applying pressure to the surface. This will remove the majority of the dust and entrained debris.
6. Use an explosion-proof vacuum to clean the compressor side of the unit. Low pressure compressed air can also be used.
7. Close and re-secure the top panel and reinstall the removed guards/screens.
8. With the area safe and clear, apply power and turn the condenser fans back on.

In the majority of circumstances this will be sufficient to properly clean the coil, but if additional cleaning is needed, proceed to the following section.

#### Alternate Coil Cleaning (low pressure coil rinse)

1. Remove power from the unit.
2. Carefully remove the coil guard(s) from the coil side of the unit (as well as the hail guards) and the screen from the opposite side.
3. Remove the bolts holding the upper panel on the coil side and swing open the top panel.
4. Carefully remove any large debris from the coil manually if it has not been done already, making sure all proper safety equipment is used.
5. The coil should only be rinsed with potable water. No chemical cleaners should be used as this may damage the coil.
6. Using a hose with an adjustable, angled spray nozzle and water pressure of 50–100 PSI (3.5–6.9 bar), access the coil through the top. Rinse from top to bottom taking care not to directly spray the condenser motor, electrical connections, or wiring.
7. Close and re-secure the top panel and reinstall the removed guards/screens.
8. Check to ensure everything is reinstalled properly and the system is sufficiently dried, then restore power.

# H-Series A2L

## Maintenance and Service

### Troubleshooting

This section assumes that the technician has a basic understanding of electrical systems and safe diagnostic practices for refrigeration equipment. Make certain to observe all safety warnings and precautions listed in this manual during the troubleshooting process. Ensure all applicable wiring diagrams/schematics are available for use during troubleshooting before beginning.

During the troubleshooting process, it is important to follow all procedures carefully to identify whether a fault originates within the electrical system or from external components such as motors, sensors, or control circuits. Proper diagnostic technique will help to ensure a safe and accurate resolution.

Note: Analog meters (volt-ohm meters or VOMs) can draw excessive current that may permanently damage sensitive electrical or electronic components. Always use a digital multimeter (DMM) when measuring voltage, current, or resistance. If the selected range is exceeded, the DMM display will show "OL" (overload).

### General Refrigerant Side Troubleshooting

Issue	Troubleshooting Steps
High Suction Pressure	<ol style="list-style-type: none"><li>1. Check if superheat is high. If it is, the load on evaporator is too high.</li><li>2. Check if condensing pressure is high. If it is, check if condenser coil is clean. If it is not, clean the coil and re-check. If it is, the refrigerant charge is too high.</li><li>3. Check if expansion valve bulb is installed and insulated correctly</li></ol>
Low Suction Pressure	<ol style="list-style-type: none"><li>1. Check if the high side pressure drop is high. If yes, there is a liquid line restriction</li><li>2. Check liquid drier and for any closed valve(s).</li><li>3. Check if subcooling is low. If yes, refrigerant charge is too low.</li></ol>

# H-Series A2L

## Maintenance and Service

### Electrical Side Troubleshooting

Issue	Troubleshooting Steps
Compressor Does Not Start/Run	<ol style="list-style-type: none"> <li>1. Verify supply power. Check that the unit's main disconnect and compressor circuit breaker are in the ON position and that full supply voltage is present at the line side of the contactor.</li> <li>2. Check contactor operation. Observe whether the compressor contactor is being energized when the system calls for cooling. If the contactor energizes, proceed to Step 3. If the contactor does not energize, go to Step 6.</li> <li>3. Confirm compressor operation. If the contactor is energized, verify that the compressor is receiving power. Cycle the compressor circuit breaker OFF and ON—the compressor should stop and restart with the breaker. Alternatively, use a digital clamp-on ammeter to check for current draw on all three phase wires between the contactor and compressor. If no amperage is detected, continue to Step 4.</li> <li>4. Inspect compressor terminal connections. Turn the compressor circuit breaker OFF before opening the compressor terminal box. Check that all power leads inside the terminal box are secure and properly torqued. Loose terminals can cause open circuits or high-resistance faults. If connections are tight and power is present, but the compressor still does not start, the compressor may have an internal failure and require replacement.</li> <li>5. Check for mechanical or electrical damage. Examine the compressor body and wiring for any signs of overheating, short circuits, or insulation damage.</li> <li>6. Verify control circuit continuity. If the contactor does not energize, troubleshoot the control circuit wiring. Using the unit-specific wiring diagram and a digital multimeter, locate where the circuit is open. Typical components in this circuit include phase monitor, safety switches (high pressure, low pressure, oil level, and discharge line thermostat), and control transformer and interlocks.</li> <li>7. Check safety devices. Ensure all pressure and temperature safeties are within their operating range and not tripped. Verify that suction pressure is above 2 PSIG (0.14 bar) to avoid low-pressure lockout. Confirm that the system is not in a defrost or compressor lockout condition that temporarily prevents operation.</li> <li>8. After confirming that all wiring, safeties, and power connections are in good condition, reset the system and monitor operation. If the compressor still fails to start, component replacement may be necessary.</li> </ol>
Condenser Fan Malfunctioning	<ol style="list-style-type: none"> <li>1. Check line power. Verify L1–L2 voltage feeding the fan contactor.</li> <li>2. Confirm the control signal. The fan contactor coil should energize when head pressure rises above the fan cycling control setting.</li> <li>3. If the contactor energizes but fans do not run, check voltage at the motor terminals. Inspect wiring and confirm fan motor continuity and capacitor (if PSC motor).</li> <li>4. If intermittent operation is observed, inspect fan cycling switch for sticking contacts. Verify pressure sensor tubing (if used) is not plugged or leaking.</li> </ol>
Defrost Circuit Malfunctioning	<ol style="list-style-type: none"> <li>1. Check defrost timer. Confirm it is advancing and initiating defrost at scheduled intervals.</li> <li>2. When timer initiates defrost, verify that the defrost contactor coil energizes. Check for 208–230 VAC at the defrost heaters or solenoid valve.</li> <li>3. If no voltage, check continuity through the termination thermostat and safety devices. Ensure power is being supplied from the timer output contacts.</li> <li>4. If heaters or valve are energized but coil temperature does not rise, measure current draw of heaters. Inspect wiring, heater resistance, and any blown fuses.</li> <li>5. After defrosting, confirm the termination thermostat opens when coil temperature rises, ending the defrost cycle.</li> </ol>

# H-Series A2L

## Maintenance and Service

Issue	Troubleshooting Steps
Unit Cooler (Evaporator Fan) Malfunction	<ol style="list-style-type: none"> <li>1. Check control voltage to UCF contactor. It should energize once the fan delay thermostat closes (coil temperature above setpoint).</li> <li>2. If fans do not run, check the fan delay thermostat for continuity when coil is warm. Verify no defrost cycle is active—defrost keeps fans off until termination.</li> <li>3. If contactor is energized but fans are idle, verify line voltage at the fan motors, check motor windings for continuity, and inspect fan blades for obstruction or frost buildup.</li> <li>4. If fans cycle erratically, check fan delay thermostat calibration and inspect wiring for loose or corroded terminals.</li> </ol>
Pressure Transducer Malfunction	<ol style="list-style-type: none"> <li>1. Verify actual system pressure. Connect a calibrated service gauge to the corresponding suction or discharge port and compare the mechanical gauge reading to the pressure value indicated by the system display or diagnostic device. If the readings differ by more than 2 PSIG (0.14 bar), check for a transducer offset or calibration error.</li> <li>2. Confirm transducer range. Ensure the installed transducer is rated for the correct pressure range:               <ul style="list-style-type: none"> <li>• Suction side: 0–200 PSIG (0–13.8 bar)</li> <li>• Discharge side: 0–500 PSIG (0–34.5 bar)</li> </ul>               If the range is incorrect, replace the transducer with one of the proper specifications and recheck readings.             </li> <li>3. Check electrical signal. Using a digital voltmeter (DMM) set to DC volts and measure both the supply voltage to the transducer (typically 5 VDC or 10 VDC depending on the model) and the output signal voltage (generally 0.5–4.5 VDC proportional to pressure).</li> <li>4. Verify power supply stability. If the supply voltage is outside the specified range, inspect the control transformer or power circuit feeding the transducer. Correct any wiring or voltage irregularities.</li> <li>5. Evaluate transducer accuracy. If the voltage output corresponds correctly to the measured system pressure, the transducer is functioning properly. If the voltage signal does not correspond to the actual pressure reading, replace the transducer.</li> <li>6. Check control transformer voltage. With the DMM set to AC volts, measure the secondary output of the control transformer. The voltage should be between 20 and 27 VAC. If within limits, proceed to recheck the transducer connections and replace the transducer if necessary. If out of range, correct the transformer input supply before continuing diagnostics.</li> </ol>

# H-Series A2L

## Maintenance and Service

Issue	Troubleshooting Steps
Temperature Sensor Malfunction	<ol style="list-style-type: none"><li data-bbox="488 275 1365 359">1. Verify sensor placement. Confirm that the temperature probe is correctly located in the air stream at the evaporator outlet. Ensure the sensor is not touching coils, metal surfaces, or insulation, as direct contact can cause inaccurate readings.</li><li data-bbox="488 373 1365 457">2. Inspect wiring and connections. Examine all sensor wiring for loose, corroded, or damaged terminals. Using a digital multimeter, check for continuity between the sensor leads and terminal connections to confirm the circuit is intact.</li><li data-bbox="488 472 1365 556">3. Measure sensor resistance (out of circuit). Disconnect the sensor and measure resistance with a digital multimeter set to ohms (<math>\Omega</math>) at ambient temperature. Record both the measured resistance and the surrounding air temperature.</li><li data-bbox="488 571 1365 655">4. Compare to the manufacturer's resistance-temperature data. For example, a 10 k<math>\Omega</math> NTC thermistor should measure approximately 10,000 <math>\Omega</math> at 77 °F (25 °C). If readings deviate significantly, the sensor may be out of calibration.</li><li data-bbox="488 669 1365 779">5. Check sensor response. Simulate temperature changes by gently warming the sensor (e.g., with your hand) or cooling it (e.g., placing in ice water). The resistance should decrease as temperature rises and increase as temperature falls. If resistance remains unchanged, the sensor is likely defective.</li><li data-bbox="488 793 1365 877">6. Check sensor voltage (in circuit). Reconnect the sensor and power the system. Using a voltmeter, measure the voltage across the sensor terminals while in operation. Confirm that the voltage fluctuates within the expected range as temperature changes.</li><li data-bbox="488 892 1365 976">7. Evaluate input circuit configuration. If resistance and voltage readings are correct but the displayed temperature remains inaccurate, verify that the input circuit or monitoring device is properly configured for the sensor type and resistance curve.</li><li data-bbox="488 991 1365 1033">8. Replace the sensor if it shows an open circuit, short circuit, or resistance values that are far from expected at known temperatures.</li></ol>

# H-Series A2L

## Maintenance and Service

### Refrigerant Removal, Evacuation, and Recovery

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:

- a. Safely remove refrigerant following local and national regulations
- b. Purge the circuit with inert gas
- c. Evacuate
- d. Purge with inert gas
- e. Open the circuit by cutting or brazing

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. 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.

Refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.

### Recovery Procedure

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely. When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. 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 (i.e., special cylinders for the recovery of refrigerant). 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.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, FLAMMABLE REFRIGERANTS. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

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 evacuation process shall be carried out prior to returning the compressor to the supplier. Only electric heating to the compressor body shall be employed to accelerate this process.

When oil is drained from a system, it shall be carried out safely.

# H-Series A2L

## Maintenance and Service

### Compressor Replacement

Make certain to observe all safety warnings and precautions listed in this manual during the service process.

Each installation environment is unique. Plan carefully to ensure the compressor can be moved safely without causing harm to personnel, equipment, or structures. Before removing the existing compressor, ensure the replacement unit is prepared for installation and that the following items are verified:

- Replacement compressor model and specifications
- Electrical requirements and connections
- Refrigerant application and capacity
- Piping layout, suction/discharge gaskets, and mounting configuration

Place the replacement compressor in an accessible area, uncrated, and ready for installation. Disconnect power from the condensing unit and control circuits. Open circuit breakers or remove fuses, tag all disconnected wires, and remove conduit from the compressor.

Front-seat the suction and discharge valves, and close oil supply and equalizing lines. Bleed pressure from both ports into an approved recovery vessel. Remove any reusable external components and plug all open ports per manufacturer specifications. Remove suction/discharge bolts and mounting hardware. When lifting, use approved lifting equipment such as a hoist or hydraulic lift—never use piping or structural panels for support.

Clean gasket surfaces on both the valves and the new compressor to bright metal. Avoid scoring or grooving these surfaces. Install the new compressor in reverse order, ensuring all connections are properly torqued and leak-tested before system evacuation and start-up.

### Drier and Filter Core Replacement

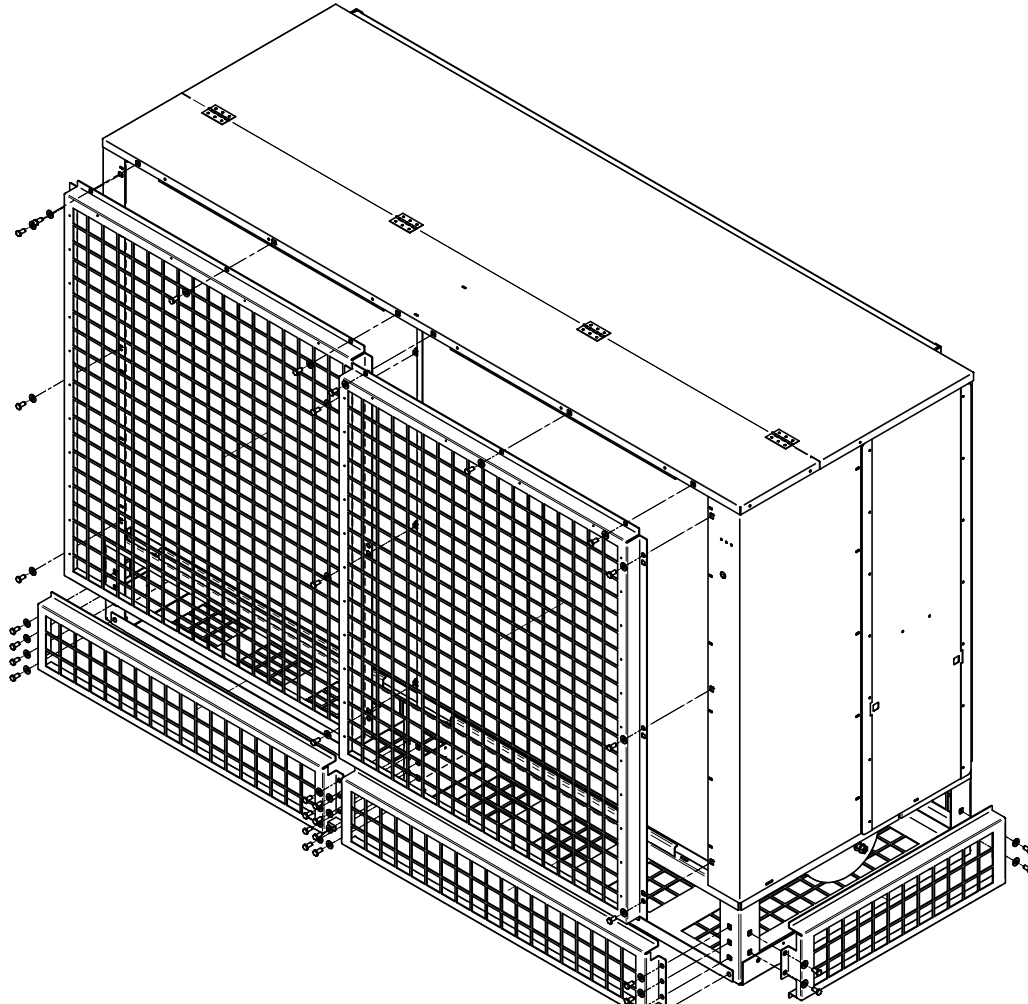
Shut down and isolate the system section containing the core to be replaced. Recover refrigerant and relieve pressure into an approved recovery cylinder. Open the housing, replace the core, close the assembly, charge the system, and perform a pressure test and leak inspection before returning the system to service.

# H-Series A2L

## Maintenance and Service

### Guard Screen Installation / Removal

Heavy-duty base shown. Standard base is similar, but without lower guard screens. Screens are attached with 3/8" screws and washers as shown. Ensure all screens are reinstalled before resuming operation if is necessary to remove them for maintenance or cleaning.



SCREW 3/8"-16 X 3/4" — 3/8" FLAT WASHER

# H-Series A2L

## Maintenance and Service

### Leak Detection

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used. 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 might not be adequate, or might need recalibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that 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 of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of 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 can react with the refrigerant and corrode the copper pipe-work.

Note: Examples of leak detection fluids are bubble method and fluorescent method agents.

If a leakage of refrigerant is found which requires brazing, all of the 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. Removal of refrigerant shall be according to the Refrigerant Recovery section provided.

# H-Series A2L

## Maintenance and Service

### Replacement Parts List

Item Number	Description		Hussmann/Krack Part Number	
1	Front Screen	Extra Large Unit	3235264	
		Large Unit	3235265	
		Medium Unit	3235266	
		Small Unit	3235267	
2	Leg	Small Unit	3236368	
		Medium Unit	3236369	
		Large/Extra Large Unit	3236370	
3	Guard Screen	Small Unit	Guard (Bottom)	3236289
			Guard (Rear)	3236290
			Guard (Left)	3236291
			Guard (Right)	3236292
		Medium Unit	Guard (Bottom)	3236293
			Guard (Rear)	3236294
			Guard (Left)	3236295
			Guard (Right)	3236296
		Large Unit	Guard (Bottom Left)	3236297
			Guard (Bottom Right)	3236298
			Guard (Rear 1)	3236299
			Guard (Rear 2)	3236300
		Extra Large Unit	Guard (Bottom Left)	3236301
			Guard (Bottom Right)	3236302
			Guard (Rear 1)	3236303
			Guard (Rear 2)	3236304

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## Maintenance and Service

Item Number	Description	Hussmann/Krack Part Number	
4	Compressor	Scroll Vertical 208V 3PH YF05KSE-TF5	3194120
		Scroll Vertical 208V 3PH YF06KSE-TF5	3194121
		Scroll Vertical 208V 3PH YF07KSE-TF5	3194122
		Scroll Vertical 208V 3PH YF09KSE-TF5	3194123
		Scroll Vertical 208V 3PH YF10KAE-TF5	3194124
		Scroll Vertical 208V 3PH YF13KAE-TF5	3194126
		Scroll Vertical 208V 3PH YF15KAE-TF5	3194127
		Scroll Vertical 208V 3PH YF19KAE-TF5	3194128
		Scroll Vertical 208V 3PH YB14KSE-TF5	3194134
		Scroll Vertical 208V 3PH YB15KSE-TF5	3194135
		Scroll Vertical 208V 3PH YB20KSE-TF5	3194136
		Scroll Vertical 208V 3PH YB23KSE-TF5	3194137
		Scroll Vertical 208V 3PH YB28KAE-TF5	3194138
		Scroll Vertical 208V 3PH YB34KAE-TF5	3194139
		Scroll Vertical 208V 3PH YB40KAE-TF5	3194141
		Scroll Vertical 208V 3PH YB44KAE-TF5	3194142
		Scroll Vertical 460V 3PH YF05KSE-TFD	3194419
		Scroll Vertical 460V 3PH YF06KSE-TFD	3194420
		Scroll Vertical 460V 3PH YF07KSE-TFD	3194425
		Scroll Vertical 460V 3PH YF09KSE-TFD	3194427
		Scroll Vertical 460V 3PH YF13KAE-TFD	3194429
		Scroll Vertical 460V 3PH YF15KAE-TFD	3194430
		Scroll Vertical 460V 3PH YF19KAE-TFD	3194431
		Scroll Vertical 460V 3PH YB14KSE-TFD	3194440
		Scroll Vertical 460V 3PH YB15KSE-TFD	3194441
		Scroll Vertical 460V 3PH YB20KSE-TFD	3194442
		Scroll Vertical 460V 3PH YB23KSE-TFD	3194444
		Scroll Vertical 460V 3PH YB28KAE-TFD	3194446
		Scroll Vertical 460V 3PH YB34KAE-TFD	3194447
		Scroll Vertical 460V 3PH YB40KAE-TFD	3194449
		Scroll Vertical 460V 3PH YB44KAE-TFD	3194450
		Scroll Vertical 460V 3PH YB50KAE-TFD	3194451
		Scroll Vertical 575V 3PH YF07KSE-TFE	3195067
		Scroll Vertical 575V 3PH YF09KSE-TFE	3195069
		Scroll Vertical 575V 3PH YF10KAE-TFE	3195072
		Scroll Vertical 575V 3PH YF13KAE-TFE	3195073
Scroll Vertical 575V 3PH YF15KAE-TFE	3195074		
Scroll Vertical 575V 3PH YF19KAE-TFE	3195080		
Scroll Vertical 575V 3PH YB20KSE-TFE	3195110		
Scroll Vertical 575V 3PH YB23KSE-TFE	3195111		
Scroll Vertical 575V 3PH YB28KAE-TFE	3195113		
Scroll Vertical 575V 3PH YB34KAE-TFE	3195114		
Scroll Vertical 575V 3PH YB40KAE-TFE	3195116		

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## Maintenance and Service

Item Number	Description	Hussmann/Krack Part Number	
4	Compressor	Scroll Vertical 575V 3PH YB44KAE-TFE	3195117
		Scroll Vertical 208V 1PH YF05KSE-PFV	3195124
		Scroll Vertical 208V 1PH YF06KSE-PFV	3195125
		Scroll Vertical 208V 1PH YF07KSE-PFV	3195126
		Scroll Vertical 208V 1PH YF09KSE-PFV	3195127
		Scroll Vertical 208V 1PH YF10KAE-PFV	3195128
		Scroll Vertical 208V 1PH YF13KAE-PFV	3195129
		Scroll Vertical 208V 1PH YB14KSE-PFV	3195140
		Scroll Vertical 208V 1PH YB15KSE-PFV	3195141
		Scroll Vertical 208V 1PH YB20KSE-PFV	3195142
		Scroll Vertical 208V 1PH YB23KSE-PFV	3195143
		Scroll Vertical 208V 1PH YB28KAE-PFV	3195145
		Scroll Vertical 208V 1PH YB34KAE-PFV	3195146
		Scroll Vertical 208V 1PH YS09KAE-PFV	3235556
		Scroll Vertical 208V 3PH YS09KAE-TF5	3235557
		Scroll Vertical 460V 3PH YS09KAE-TFD	3235558
		Scroll Vertical 208V 1PH YS11KAE-PFV	3235559
		Scroll Vertical 208V 3PH YS11KAE-TF5	3235560
		Scroll Vertical 460V 3PH YS11KAE-TFD	3235561
		Scroll Vertical 208V 1PH YS12KAE-PFV	3235562
		Scroll Vertical 208V 3PH YS12KAE-TF5	3235563
		Scroll Vertical 460V 3PH YS12KAE-TFD	3235564
		Scroll Vertical 575V 3PH YS12KAE-TFE	3235565
		Scroll Vertical 208V 1PH YB06KAE-PFV	3235566
		Scroll Vertical 208V 3PH YB06KAE-TF5	3235567
		Scroll Vertical 460V 3PH YB06KAE-TFD	3235568
		Scroll Vertical 208V 1PH YB07KAE-PFV	3235569
		Scroll Vertical 208V 3PH YB07KAE-TF5	3235570
		Scroll Vertical 460V 3PH YB07KAE-TFD	3235571
		Scroll Vertical 208V 1PH YB08KAE-PFV	3235572
		Scroll Vertical 208V 3PH YB08KAE-TF5	3235573
		Scroll Vertical 460V 3PH YB08KAE-TFD	3235574
		Scroll Vertical 208-230V 3PH YF26KAE-TFC	3235575
		Scroll Vertical 460V 3PH YF26KAE-TFD	3235576
Scroll Vertical 575V 3PH YF26KAE-TFE	3235577		
Scroll Vertical 208-230V 3PH YB51KAE-TFC	3235578		
Scroll Vertical 460V 3PH YB51KAE-TFD	3235579		
Scroll Vertical 575V 3PH YB51KAE-TFE	3235580		
Scroll Vertical 208-230V 3PH YB68KAE-TFC	3235581		
Scroll Vertical 460V 3PH YB68KAE-TFD	3235582		
Scroll Vertical 575V 3PH YB68KAE-TFE	3235583		
Scroll Vertical 460V 3PH YB100KAE-TFD	3235584		
Scroll Vertical 575V 3PH YB100KAE-TFE	3235585		

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## Maintenance and Service

Item Number	Description	Hussmann/Krack Part Number	
4	Compressor	Scroll Vertical 208-230V 3PH YB100KAE-TWC	3235586
		Scroll Vertical 460V 3PH YB83KAE-TFD	3235587
		Scroll Vertical 575V 3PH YB83KAE-TFE	3235588
		Scroll Vertical 208-230V 3PH YB83KAE-TWC	3235589
		Discus 208V 2YA3R82KE-TFC-C01	3242219
		Discus 208V 2YB3F18KE-TFC-C01	3242220
		Discus 208V 2YC3R51KE-TFC-C01	3242221
		Discus 208V 2YD3R59KE-TFC-C01	3242222
		Discus 208V 2YF3F13KE-TFC-C01	3242223
		Discus 208V 2YL3F15KE-TFC-C01	3242224
		Discus 208V 2YL3R73KE-TFC-C01	3242225
		Discus 208V 3YA3F21KE-TFC-C01	3242226
		Discus 208V 3YA3R99KE-TFC-C01	3242227
		Discus 208V 3YB3F24KE-TFC-C01	3242228
		Discus 208V 3YB3R11ME-TFC-C01	3242229
		Discus 208V 3YF3F29KE-TFC-C01	3242230
		Discus 208V 3YF3R14ME-TFC-C01	3242232
		Discus 208V 3YS3F33KE-TFC-C01	3242233
		Discus 208V 4YHNF46KE-TSK-C05	3242235
		Discus 208V 4YJNF59KE-TSK-C05	3242236
		Discus 460V 2YA3R82KE-TFD-C01	3242237
		Discus 460V 2YB3F18KE-TFD-C01	3242238
		Discus 460V 2YC3R51KE-TFD-C01	3242239
		Discus 460V 2YD3R59KE-TFD-C01	3242240
		Discus 460V 2YF3F13KE-TFD-C01	3242241
		Discus 460V 2YL3F15KE-TFD-C01	3242242
		Discus 460V 2YL3R73KE-TFD-C01	3242243
		Discus 460V 3YA3F21KE-TFD-C01	3242244
		Discus 460V 3YA3R99KE-TFD-C01	3242245
		Discus 460V 3YB3F24KE-TFD-C01	3242246
		Discus 460V 3YB3R11ME-TFD-C01	3242247
		Discus 460V 3YF3F29KE-TFD-C01	3242248
		Discus 460V 3YF3R14ME-TFD-C01	3242249
		Discus 460V 3YS3F33KE-TFD-C01	3242250
		Discus 575V 2YA3R82KE-TFE-C01	3242253
		Discus 575V 2YB3F18KE-TFE-C01	3242254
		Discus 575V 2YC3R51KE-TFE-C01	3242255
		Discus 575V 2YD3R59KE-TFE-C01	3242256
		Discus 575V 2YF3F13KE-TFE-C01	3242257
		Discus 575V 2YL3F15KE-TFE-C01	3242258
Discus 575V 2YL3R73KE-TFE-C01	3242259		
Discus 575V 3YA3F21KE-TFE-C01	3242260		
Discus 575V 3YA3R99KE-TFE-C01	3242261		

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## Maintenance and Service

Item Number	Description	Hussmann/Krack Part Number	
4	Compressor	Discus 575V 3YB3F24KE-TFE-C01	3242262
		Discus 575V 3YB3R11ME-TFE-C01	3242264
		Discus 575V 3YF3F29KE-TFE-C01	3242265
		Discus 575V 3YF3R14ME-TFE-C01	3242266
		Discus 575V 3YS3F33KE-TFE-C01	3242267
		Discus 575V 4YHNF46KE-TSE-C05	3242268
		Discus 575V 4YJNF59KE-TSE-C05	3242269
		Semi-Hermetic 2JES074SU-0D 460V	1H94627001
		Semi-Hermetic 2HES22DU-0D 208	0005518
		Semi-Hermetic 2HP 440-480V 60HZ	0005519
		Semi-Hermetic 2HP 575V 60HZ	0005520
		Semi-Hermetic 2FES32DU-0D 208	0005524
		Semi-Hermetic 3HP 440-480V 60HZ	0005525
		Semi-Hermetic 3HP 575V 60HZ	0005526
		Semi-Hermetic 2EES32DU-0D 208	0005527
		Semi-Hermetic 2EES34SU-0D 460	0005528
		Semi-Hermetic 3HP 575V 60HZ	0005529
		Semi-Hermetic 2DES32DU-0D 208	0005530
		Semi-Hermetic 2DES34SU-0D 460V	0005531
		Semi-Hermetic 3HP 575V 60HZ	0005532
		Semi-Hermetic 2CES42DU-0D 208	0005533
		Semi-Hermetic 2CES44SU-0D 460	0005534
		Semi-Hermetic 4HP 575V 60HZ	0005535
		Semi-Hermetic 4FES52DU-1D 208	0005536
		Semi-Hermetic 4FES54SU-1D 460	0005537
		Semi-Hermetic 4FES-5-5SU-1D 575	0005538
		Semi-Hermetic 4EES62DU-1D 208	0005539
		Semi-Hermetic 4EES64SU-1D 460	0005540
		Semi-Hermetic 4EES65SU-1D 575	0005541
		Semi-Hermetic 4DES72DU-1D 208	0005542
		Semi-Hermetic 4DES74SU-1D 460	0005543
		Semi-Hermetic 4DES75SU-1D 575	0005544
		Semi-Hermetic 4CES92DU-1D 208	0005545
		Semi-Hermetic 4CES95SU-1D 575	0005547
Semi-Hermetic 4VES102NU-1D 208/460	0005548		
Semi-Hermetic 4VES105PU-1D 575	0005549		
Semi-Hermetic 4TES122NU-1D 208/460	0005550		
Semi-Hermetic 12HP 575V 60HZ	0005551		
Semi-Hermetic 4PES152NU-1D 208/460	2H11969001		
Semi-Hermetic 4PES155PU-1D 575V	2H13131001		
Semi-Hermetic 4NES202NU-1D 208/460	0005554		
Semi-Hermetic 20HP 575V 60HZ	0005555		
Semi-Hermetic 22HP 208-480V 60HZ	0005556		

# H-Series A2L

## Maintenance and Service

Item Number	Description	Hussmann/Krack Part Number	
4	Compressor	Semi-Hermetic 22HP 575V 60HZ	0005557
		Semi-Hermetic 25HP 208-480V 60HZ	0005558
		Semi-Hermetic 25HP 575V 60HZ	0005559
		Semi-Hermetic 4GE302NU-1D 208/460	2H10347001
		Semi-Hermetic 30HP 575V 60HZ	0005561
		Semi-Hermetic 33HP 208-480V 60HZ	0005565
		Semi-Hermetic 33HP 575V 60HZ	0005567
		Semi-Hermetic 35HP 208-480V 60HZ	0005568
		Semi-Hermetic 35HP 575V 60HZ	0005569
		Semi-Hermetic 2KES052DU-0D 208V	1H94622001
		Semi-Hermetic 2KES054SU-0D 460V	1H94623001
		Semi-Hermetic 2KES055SU-0D 575V	1H94624001
		Semi-Hermetic 2JES072DU-0D 208V	1H94626001
		Semi-Hermetic 2JES075SU-0D 575V	1H94628001
		Semi-Hermetic 2HES12DU-0D 208V	1H94631001
		Semi-Hermetic 2HES14SU-0D 460V	1H94632001
		Semi-Hermetic 2FES22DU-0D 208V	1H94639001
		Semi-Hermetic 2FES24SU-0D 460V	1H94640001
		Semi-Hermetic 2EES22DU-0D 208V	1H94643001
		Semi-Hermetic 2EES24SU-0D 460V	1H94644001
		Semi-Hermetic 2DES22DU-0D 208V	1H94647001
		Semi-Hermetic 2DES24SU-0D 460V	1H94648001
		Semi-Hermetic 2CES32DU-0D 208V	1H94651001
		Semi-Hermetic 2CES34SU-0D 460V	1H94652001
		Semi-Hermetic 4FES32DU-1D 208V	1H94654001
		Semi-Hermetic 4FES34SU-1D 460V	1H94655001
		Semi-Hermetic 4FES35SU-1D 575V	1H94656001
		Semi-Hermetic 4EES42DU-1D 208V	1H94657001
		Semi-Hermetic 4EES44SU-1D 460V	1H94658001
		Semi-Hermetic 4DES52DU-1D 208V	1H94660001
		Semi-Hermetic 4DES54SU-1D 460V	1H94661001
		Semi-Hermetic 4DES55SU-1D 575V	1H94662001
		Semi-Hermetic 4CES62DU-1D 208V	1H94663001
		Semi-Hermetic 4CES64SU-1D 460V	1H94664001
Semi-Hermetic 4VES72NU-1D 208/460V	1H94668001		
Semi-Hermetic 4TES92NU-1D 208/460V	1H94672001		
Semi-Hermetic 4PES122NU-1D 208/460V	1H94676001		
Semi-Hermetic 4PES125PU-1D 575V	1H94677001		
Semi-Hermetic 4NES142NU-1D 208/460V	1H94680001		
Semi-Hermetic 4JE152NU-1D 208/460V	1H94682001		
Semi-Hermetic 4HE182NU-1D 208/460V	1H94684001		
Semi-Hermetic 4GE232NU-1D 208/460V	1H94686001		

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Item Number		Description	Hussmann/Krack Part Number
5	Receiver	6X23 C HORIZ VERT	3050236
		8.625X30 RH830F	3131691
		10.75X30 S-8690P VERT/HOR	1H62423001
		12.75X30 H/V S-8750B	1H81689001
		6X18 B HORIZ VERT	3050235
		6X18 LRA-C05153-901	3143414
		6X30 D HORIZ VERT	3050237
		10.75X38 G H/V S8691C	1H83605001
6	Fan Blade	16" XW160438	3099280
7	Transformer	500VA 480/240P 240/120S	E151494
8	Oil Separator	0.500 ODS 450 PSIG	3049793
		0.625 OS4-05C	3049795
		1.125 OS4-11C	3049796
		1.375 OS6-13C	3049797
		0.875 ODS 450 PSIG	3049801
9	Accumulator	0.625 P22101-901	3146411
		1.125 P25153-901	3146412
		1.375 P28153-901	3157198
		0.875 P21127-901	3143392
		1.625 A6-15	3049790
		2.125 S-7721	1H29802001
10	Liquid Filter Drier	FLTR DRIER DCL 607S 023Z0036	0709964
		DRIER LIQ .625 C485G	0365544
11	ORD Valve	VLV PRESS DIFF ORD420	0132109
		VLV PRESS DIFF ORD420	0132109
12	ORI Valve	VLV REG .625 ORI665/225	0309399
		VLV REG .875 ORI665/225	0224708
13	Sight Glass	111489	0111489
		319342	0319342
14	Solenoid Valve	0.625 ME14S250	0421600
		0.25 FL A3F1	0255050
		0.375 A3S1	0067449000
15	Fuse Block	600V LFUL60030C2SQ	3075219
		600V LFUL60030C3SQ	3075220
		M 2P 30312 6M30A2SQ	0324742001
		1423570	0149384001
16	Fuse	15A 600V ATDR15	0417484
		20A 600V ATDR20	0417485
		3A 500V ATQ3	0421800
		600V 15A LF KLKR015	3075214

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Item Number		Description	Hussmann/Krack Part Number
17	Suction Filter Drier	0.625 SF285T	0704743
		0.625 STAS485SV	0370279000
		0.625 TO 0.875	ALBR05
		0.625 RSF485T	0370277001
		0.875 SF287T	0365314001
		0.875 STAS487SV	0370280001
		0.875 BTAS27SV	0340857000
		0.875 RSF487T	0370278001
		0.875 3CFA14S	0417167
		1.125 SF289T	0427901000
		1.125 STAS489 053937	0340742000
		1.125 BTAS39SV	0328811000
		1.125 RSF489T	0340737001
		1.125 3CFA18S	0417168
		1.375 SF4811T	0113689001
		1.375 STAS4811SV	0340743000
		1.375 BTAS311SV	0328812000
		1.375 RSF4811T	0340738001
		1.375 3CFA22S	0103125000
		1.625 SF4813T	0113690001
		1.625 STAS4813SV	0340744000
		1.625 BTAS313SV	0328813000
		1.625 RSF4813T	0340739001
		1.625 3CFA26S	0149131000
		2.125 STAS4817SV	0340745001
		2.125 BTAS317SV	0421726000
2.125 RSF4817T	0340740000		
2.625 4CFA42S	0417173		
18	Breaker	15A 3P 240V	0144101001
		125A 3P 208V QBL32125	0316489000
		15A 2P 208V QOU215	0143868001
		15A 3P 460V FAZD15/3-NA	2H18232001
		20A 3P 208V QOU320	0322315001
		20A 3P 460V FAZ-D20/3-NA	2H18233001
		30A 3P 208V QOU330B	0322316001
		35A 3P 208V QOU335	0707134
		60A 3P 208V QOU360	0346171000
		90A 3P 208V QOU390	0346208000
		45A 3P 208V QOU345B	3000015

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Item Number		Description	Hussmann/Krack Part Number
19	Breaker Bracket	BRKT 2POLE QOUMF2	0365705000
		BRKT 3POLE QOUMF3B	0365706000
20	Capacitor	START 014006127	3086624
		RUN 35MFD 370VAC 12018	0703481
21	Coil	MKC-1 208-240/50-60	0324830
		208V 50 60H MKC2	0332046
22	Contactor	30A 3P 208V 8910DPA33V09	0369277000
		40A 3P 208V 8910DPA43V09	0369278000
		75A 3P 208V 8910DPA73RV09	3157406
23	Pressure Switch	HPC P77AAA-15500D	3054089
		HPC PSC-B6S 097998	1H78325001
		HPC SPDT 395 AUTO 097792	0404823002
		LPC P77AAA-13000D	3066619
		LPC P77AAA-15000D	3054083
24	Heater	LPC PSC-A1S 097799	3026281
		240V 40W 6D 1411320101	1H79902001
		240V 70W 7D 1411320302	1H79904002
		240V 90W 9.00D	1H79905002
25	Motor	40W/230V 9HT5400	3032220
		0.5 HP 460V	3016977
		0.5 HP 575V	3016978
		0.25HP PSC 208-230V	3086710
		0.25HP PSC 460V	3089885
26	Relay	0.25HP PSC 575V	3089886
		3PH VOLTAGE MONITOR 201A	0397726000
		BASE DPDT PTF08AE	0333202000
		CURR SNS ECSNOFSCY1	1H28448001
		GP LY2AC220/240	0333203
		POTENTIAL 040016637	3086625
		SOCKET OT08PC NEDCO 600V	0405301000
		OMCD240 066818	3025245
27	Toggle Switch	TIME DELAY 24V-240V SPDT TRL04	1H37401001
28	Thermostat	15A 125V 78120TQ	0103093001
		TSTAT -30/100 SPDT A19ABC24C	0324838001
		TSTAT -40/248 ELECT A421ABC02C	2H15672001
29	Transformer	TSTAT DISCH .875 998702205	1H78592001
		XFMR 480V/240V 500VA EXA050037	0704004

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## Decommissioning

### Decommissioning Process

Before carrying out this procedure, it is essential that the technician 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 should 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.

- a. Become familiar with the equipment and its operation.
- b. Isolate the system electrically.
- c. Before attempting the procedure, ensure:
  - i. Mechanical handling equipment is available, if required, for handling refrigerant cylinders.
  - ii. All personal protective equipment is available and being used correctly.
  - iii. The recovery process is supervised at all times by a qualified, competent person.
  - iv. Recovery equipment and cylinders conform to the appropriate standards.
- d. Pump down refrigerant system, if possible.
- e. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- f. Make sure that cylinder is situated on the scales before recovery takes place.
- g. Start the recovery machine and operate in accordance with instructions.
- h. Do not overfill cylinders (no more than 80% volume liquid charge).
- i. Do not exceed the maximum working pressure of the cylinder, even temporarily.
- j. 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.
- k. Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

Equipment shall be labeled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. For appliances or cylinders containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.



## Warranty

To obtain warranty information or other support, contact your Hussmann representative or visit:

<https://www.hussmann.com/services/warranty>.

Please include the model and serial number of the product.

For questions about your equipment, please contact our Technical Support Team at 1-866-785-8499

For general support or service calls, contact our Customer Support Call Center at 1-800-922-1919

For ordering aftermarket warranty parts, call 1-855-HussPrt (1-855-487-7778) or email the following address:

[Hussmann\\_part\\_warranty@hussmann.com](mailto:Hussmann_part_warranty@hussmann.com)

## SQUARED Hotline (tech support line)

Level one provides product initial tech support and can connect the caller to level two, if required.

888-SQUARED (888-778-2733)

## Sporlan

[www.sporlanonline.com](http://www.sporlanonline.com)

## Emerson (Fault Finder app)

[www.emersonclimate.com/en-us/Resources/Mobile\\_Apps/Pages/mobileapps.aspx](http://www.emersonclimate.com/en-us/Resources/Mobile_Apps/Pages/mobileapps.aspx)

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## Revision History

Revision A: (January 2026) Initial release



Scan the QR code on your mobile device to access additional product information or order parts using equipment serial number.

Parts may also be ordered at:

**[parts.hussmann.com](http://parts.hussmann.com)**

Call toll free: 1.855.487.7778