KOLDWAVE

HKW12M AIR CONDITIONING UNIT

INSTALLATION OPERATION AND MAINTENANCE MANUAL

KOLDWAVE
260 North Elm St. Westfield, MA 01085
Phone: 413-564-5520 Fax: 413-564-5815
www.**koldwave**.com

HKW12MGxASxx
REV — 1/24/20

Koldwave

MODEL NO.	HKW30G3ATA60-TR				
SERIAL NUMBER	1610057				
VOLTS	208/230	PHASE	3	CYCLE	60
COMP. LRA	351 EA	QTY	2	RLA	53.6 EA
EVAP. MOTOR HP	15.0			FLA	35
COND. MOTOR HP	3.0 EA	QTY	2	RLA	8.6 EA
ELEC. HEATER KW	60				
MCA	240.8				
MOP	250				
FACTORY CHARGE	R-410A	46 lb 0oz CKT1			
		46 lb 0oz CKT2			

TEST PRESS. HISIDE 500 PSIG - LOSIDE 250 PSIG

COMPRESSOR MOTOR AND FAN ARE THERMALLY PROTECTED

USE COPPER CONDUCTORS ONLY.

EXT. STATIC PRESS - 0.1 TO 1.0 IN. WC.

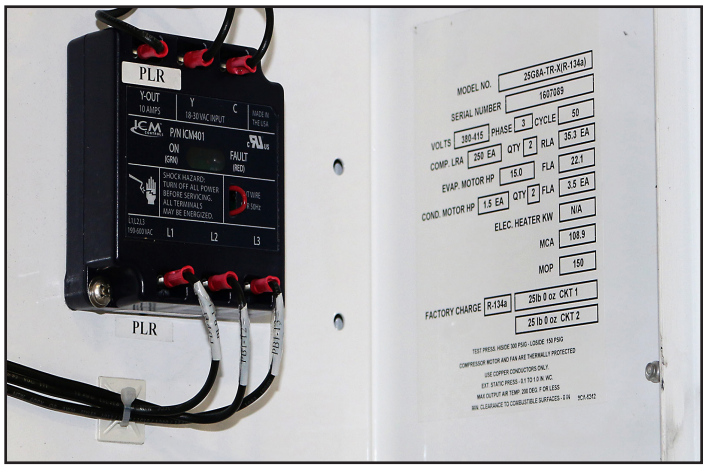
MAX OUTPUT AIR TEMP. 200 DEG. F OR LESS

MIN. CLEARANCE TO COMBUSTIBLE SURFACES - 0 IN

9CA-6242

IDENTIFICATION OF YOUR PORTABLE UNIT

The Data Tag contains important information on how identify your Koldwave Unit. See Figure 1 for more information on locating tag.



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DRAWINGS AND SCHEMATICS

Product Drawing: CA17476 C

Wiring Diagram: CA10261-B

WARNING: HIGH VOLTAGE – DISCONNECT POWER BEFORE SERVICING	
DISCONNECT POWER Failure to disconnect power before servicing could lead to severe personal injury or death.	**RE-CONNECT ALL GROUNDS** All parts of this product capable of conducting electrical current are grounded. If grounding wires, screws, straps, clips, nuts, or washers used to complete a path to ground are removed for servicing, they must be reconnected at their original location.

SPECIFICATIONS
HKW12MG3AS & HKW12MG3AS30 OR HKW12MG3AS15

COOLING MODE

Design Indoor Dry Bulb / Wet Bulb		95°F / 78°F
Design Outdoor Ambient Temperature		95°F
Total Cooling Capacity	BTU/HR	144,000
Sensible Cooling Capacity		103,000
Minimum Indoor Ambient Temperature		65°F
Approximate Supply Air Flow Rate		4400 CFM
Rated External Static Pressure		1.5” w.c

HEATING MODE

Total Heating Capacity	(kW)	30
Total Heating Capacity 15kW OPTION	(kW)	15

POWER REQUIREMENTS

Voltage / Phasing / Frequency		208-230/3/60
Minimum Capacity Ampacity	(Amps)	109.7
Minimum Capacity Ampacity For DeHum Option	(Amps)	158.0
Maximum Overcurrent Protection for 30KW Heat	(Amps)	110
Maximum Overcurrent Protection for 15KW Heat	(Amps)	110
Maximum Overcurrent protection for DeHum Option	(Amps)	175

COMPRESSOR

Type		12 Ton Scroll
Voltage / Phasing / Frequency		208-230/3/60
RLA	(Amps)	33.3
LRA	(Amps)	239

CONDENSER BLOWER MOTOR

Horsepower		4
Voltage / Phasing / Frequency		208-230/3/60
FLA	(Amps)	9
Speed	RPM	1690

EVAPORATOR BLOWER MOTOR

Horsepower		4
Voltage / Phasing / Frequency		208-230/3/60
FLA	(Amps)	9
Speed	RPM	1690

REFRIGERANT

R-410		12 lbs. 8 oz.
Low Pressure	70 PSIG Cutout	100 PSIG Reset
High Pressure	625 PSIG Cutout	Manual Reset
Suction Operating Pressure	104 PSIG Low[1]	145 PSIG High[1]
Discharge Operating Pressure	290 PSIG Low[1]	625 PSIG High[1]
Subcooling	@ approx. 80 °F ambient	10-12°F[1]

Subject to change without notice.

SPECIFICATIONS
HKW12MG4AS & HKW12MG4AS30 OR HKW12MG4AS15

COOLING MODE

Design Indoor Dry Bulb / Wet Bulb		95°F / 78°F
Design Outdoor Ambient Temperature		95°F
Total Cooling Capacity	BTU/HR	144,000
Sensible Cooling Capacity		103,000
Minimum Indoor Ambient Temperature		65°F
Approximate Supply Air Flow Rate		4400 CFM
Rated External Static Pressure		1.5” w.c.

HEATING MODE

Total Heating Capacity	(kW)	30
Total Heating Capacity 15kW OPTION	(kW)	15

POWER REQUIREMENTS

Voltage / Phasing / Frequency		460/3/60
Minimum Capacity Ampacity	(Amps)	52.1
Minimum Capacity Ampacity For DeHum Option	(Amps)	77.4
Maximum Overcurrent Protection for 30KW Heat	(Amps)	60
Maximum Overcurrent Protection for 15KW Heat	(Amps)	60
Maximum Overcurrent protection for DeHum Option	(Amps)	80

COMPRESSOR

Type		12 Ton Scroll
Voltage / Phasing / Frequency		460/3/60
RLA	(Amps)	17.9
LRA	(Amps)	125

CONDENSER BLOWER MOTOR

Horsepower		4
Voltage / Phasing / Frequency		460/3/60
FLA	(Amps)	4
Speed	RPM	1690

EVAPORATOR BLOWER MOTOR

Horsepower		4
Voltage / Phasing / Frequency		460/3/60
FLA	(Amps)	4
Speed	RPM	1690

REFRIGERANT

R-410		12 lbs. 8 oz.
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Subcooling	@ approx. 80 °F ambient	10-12°F[1]

Subject to change without notice.

GENERAL INFORMATION

The HKW12M is a portable air conditioning unit designed for air conditioning of spaces such as tents, construction sites and remote buildings. This unit has a narrow design for applications that will not permit wide 12 ton portable air conditioners.

IMPORTANT – Read this instruction manual carefully before attempting to install, operate, or perform maintenance on this unit. This unit must be installed and maintained by qualified service technicians.

WARNING: BODILY INJURY CAN RESULT FROM HIGH VOLTAGE ELECTRICAL COMPONENTS AND FAST MOVING FAN DRIVES. FOR PROTECTION FROM INHERENT HAZARDS DURING INSTALLATION AND SERVICING, THE ELECTRICAL SUPPLY MUST BE DISCONNECTED. IF CHECKS MUST BE PERFORMED WITH THE UNIT OPERATING, IT IS THE RESPONSIBILITY OF THE TECHNICIAN TO RECOGNIZE THESE HAZARDS AND PROCEED WITH EXTREME CAUTION.

NOTE: "Warnings and Cautions" appear at the appropriate places throughout this manual. Your personal safety and the proper operation of this unit require that you follow them carefully. The manufacturer assumes no liability for installations or servicing performed by non-qualified personnel.

UNIT INSPECTION

Upon receiving the unit, inspect for damage to the unit structural interior and exterior components that may have happened during transit. Immediately notify the carrier of damage to the unit. Verify the unit is the correct unit ordered by looking at the unit's data plate. Figure 1 – Data Plate is located on the right hand side of the electrical box section. The main power source must be capable of delivering the required amount of power to the unit. Refer to the installation instructions for connections.

Figure 1 – Data Plate

UNIT SETUP

Location and Clearances

Select a location that permits unobstructed airflow into the condenser coil and out of the condenser fan discharge air outlet.

Placement and Rigging

When using a forklift to set the portable air conditioning unit into place, ensure the forks are centered into the openings in the base frame of the equipment. Lock the casters before unit is operated to prevent unit from rolling during operation.

CAUTION: Never attempt to lift this unit using a Crane.

Pre-Installation Inspection

It is recommended that the following be inspected to insure internal components have not vibrated loose during shipment or transit from job site to job site.

1. Before operating the unit, open all quick access panels and check to ensure nothing vibrated loose during transportation.
2. Close and lock all panel doors.

ELECTRICAL CONNECTION

Refer to the unit data plate for main power requirements. Electrical wiring and grounding must be installed in accordance with The National Electrical Code NEC/NFPA Latest Revision. Refer to the electrical wiring diagram for Main Power connections also shown in Figure 3 – Camlock Power Connections which are located directly below the control panel.

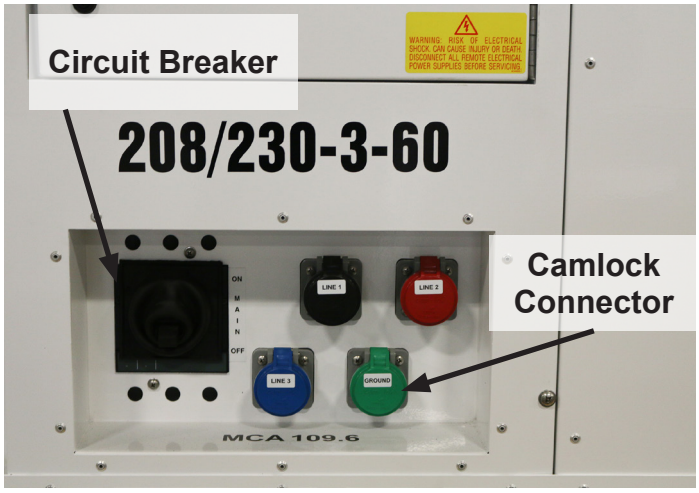


Figure 3 – Camlock Power Connections

CAUTION: Only qualified electrical technicians should perform the electrical installation.

1. An envelope containing the electrical schematic is located in the electrical control box section for reference.

208 – 230 Volt Applications

In a 208-230 Volt AC application, the most important function is to check the applied voltage from the main power source. **If the applied voltage from the main power source is less than 190 Volts AC or greater than 250 Volts AC, do not operate the unit until power is corrected at the main power source. Excessive over voltage>20% will explode the transformer and possible other components!**

2. Review the following steps to insure that electrical phasing and voltage setup is correct prior to initial start-up and unit operation.
3. Proper phasing of the electrical power wiring is critical for proper rotation of the motors and operation of the compressor. Electrical phase sequence monitors are standard on all three-phase 12 Ton A/C units.
   a. Connect the power cable to the correct power source as verified by the unit's data plate shown in Figure 1 or at the Camlock connection fittings.
   b. Turn **ON** the main power to the unit.
   c. As soon as power is applied to the unit, check the Red Out-of-Phase Indicator immediately.
   d. Verify the Red Out-of-Phase Indicator (OPI) located on the front of the control panel is **not illuminated**.
   e. If the Red OPI light is illuminated, **TURN OFF POWER** to the unit at the main power source.
   f. Switch any two leads of the three main power wires connected from the main power source.

CAUTION: Do not switch Green! Green is Ground.

   g. Turn main power ON again. When the Red OPI indicator light is off, the phase sequence is correct.
   h. Turn OFF main power at this point and lockout the disconnect switch until the supply and return air ducting is connected.

CAUTION:

4. IN 208 – 230 VOLT APPLICATIONS, DO NOT OPERATE THE UNIT IF THE APPLIED VOLTAGE IS LESS THAN 190 VAC OR GREATER THEN 250 VAC. DO NOT OPERATE A 460V UNIT LESS THAN 420 VOLTS AND HIGHER THAN 500 VOLTS.

1. These units will not operate if phase sequence is not correct.

DUCT CONNECTIONS

Supply Air Duct

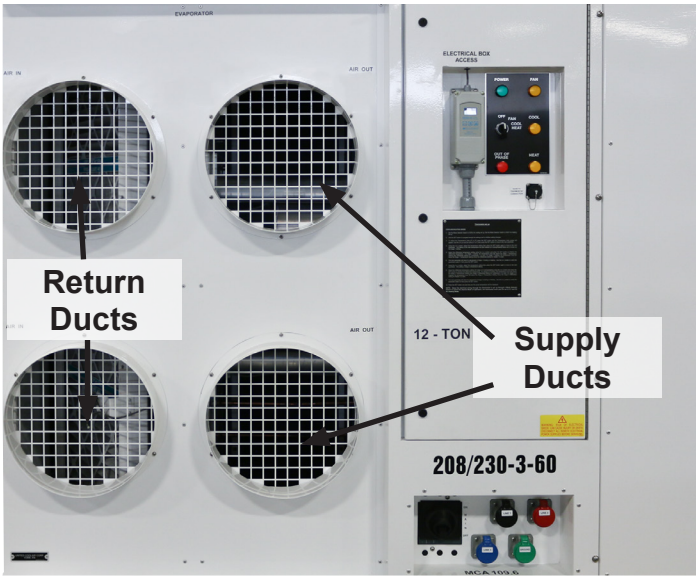
The supply air duct connections are labeled “AIR OUT”. The connection size is 14” in diameter. Connect the flexible air ducting as follows:

1. Attach the flexible air ducting to the unit’s duct collars making sure that air will not leak past the connection collar by using appropriate round flexible ducting clamps.
2. **Route the ducting as straight as possible to the space being conditioned avoiding excessive turns and pinches in the ducting.**
3. Terminate the ends of each duct to the space being conditioned making sure that supply air does not have the possibility of short cycling back into the return air.
4. Verify the termination points are not restricted meaning no objects are directly in front of the Supply Air Grille (termination).

Return Air Duct

The Return Air duct connections are labeled “AIR IN”. Follow the same procedures as the Supply Air Duct Connections. If outdoor air is required for specific applications use only one (1) Air In duct collar to pull in fresh outdoor air. The other must be ducted to the return air from the space being conditioned. Determine which Return Air Duct will be connected and terminate the return air ducts to that particular duct collars.

CAUTION: Do not operate the unit without-duct(s) attached to return and supply air duct collars. If operated without duct(s), the evaporator blower motor will cut out on thermal overload due to the motor operating higher than design Full Load Amperage.



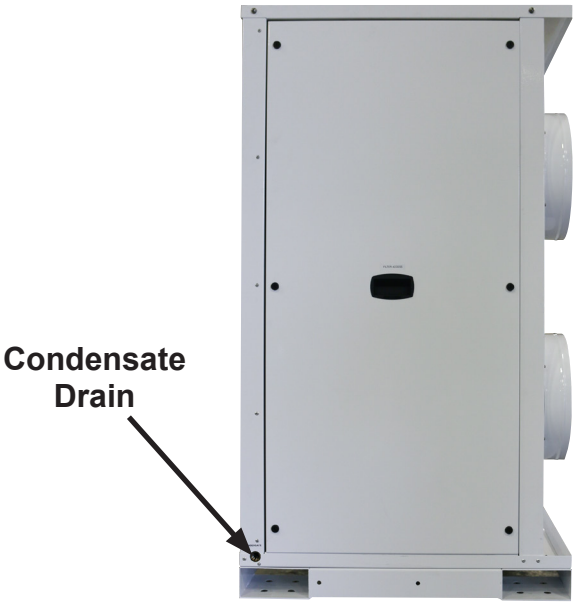
Condensate Drain

There is a condensate drain located below the filter access panel in the bottom left corner of the unit.

See

Figure 4 – Condensate Trap. The condensate trap must be installed on the condensate drain outlet.

The condensate trap is shipped loose within the unit.



See Figure 4 – Condensate Trap

SYSTEM OPERATION

Getting Started

1. Connect the 12 Ton Portable Air Conditioning unit to the correct power source.
2. Turn ON the main supply power at the main power source.
3. Verify the Red Out-of-Phase Indicator (OPI) is not illuminated and that the voltage is within the required range. Refer to the procedures under the Installation Instructions.

FAN Mode (Vent Mode)

Turn Selector Switch (SS) to the Fan position. The Evaporator Motor Contactor (CEM) will energize to start the Evaporator Motor (ME). The Evaporator Fan will operate continuously in the Fan and Cool modes of operation. It will also operate continuously during optional Heat Mode.

COOL Mode

Turn the Selector Switch (SS) to the Cool position. If the Return Air Temperature is greater than the Thermostat setting sensed by the thermostats temperature measuring bulb, the compressor contactor (CCR) will energize the Compressor (CR) and the Amber Cool Indicator light (CL) will illuminate. When the compressor energizes, condenser fan contactor (CCM) will energize and condenser fan motor (MC) will start. As soon as the return air temperature falls below the thermostat setting, the compressor and condenser motors are de-energized.

To stop the unit, turn Selector Switch (SS) to the OFF position.

HEAT Mode

Turn the Selector Switch (SS) to the Heat position. If the Return Air Temperature is lower than the Thermostat setting sensed by the thermostats temperature measuring bulb, the Heater contactor (CHT) will energize the Heater (HTR) and the Amber Heat Indicator light (HI), will illuminate when the heater energizes. As soon as the return air temperature climbs above the thermostat setting, the Heater(s) are de-energized. To stop the unit, turn Selector Switch (SS) to the OFF position.

Dehumidification Mode (manual control only)

Turn Selector Switch (SS) to the Fan position. The Evaporator Motor Contactor (CEM) will energize to start the Evaporator Motor (ME). The Evaporator Fan will operate continuously in the Dehumidification mode. Simply set the (SDH) dehumidification switch to DEHUM from OFF and the unit will energize both the Cool and Heat modes as specified in their operation descriptions. In dehumidification mode the unit will NOT control to temperature and will run indefinitely until manually switched to the OFF position. This option cannot be used with the remote thermostat option.

UNIT SAFETY DEVICES

Evaporator & Condenser Motor Overload

The evaporator and condenser motors are protected by thermal overloads. The evaporator blower motor protection is internal and automatically resets once the temperature inside the windings of the motor falls below the temperature trip point.

High Pressure Switch

The compressor system has a manual reset High Pressure Switch. If the unit is not providing cooling as evidenced by checking the Return Air Temperature inlet being approximately equal to the Supply Air Temperature outlet, the compressor system may have tripped on high refrigerant pressure. Disconnect power using the unit's circuit breaker. Remove the Access Panel to the Compressor Compartment and locate the Manual Reset High Pressure Switch. Press the button downward to verify if the switch tripped. If the button clicks the unit tripped on high pressure. Replace the access panel then reapply power using the unit's circuit breaker. Set the unit to Cool Mode. Refer to the Troubleshooting section for causes and corrective actions. It may require

a service technician to check system pressures if the switch trips more than 1-2 times.

Low Pressure Switch

The compressor system has an automatic reset low pressure safety switch. If the unit trips on low pressure, the compressor will shut down but automatically restart once the switch resets. The low pressure switch shuts down the compressor system if the refrigerant pressure falls below 70 psig and automatically restarts the compressor once the pressure rises above 100 psig.

Compressor Internal Overload

Each compressor has an internal motor overload switch. This switch opens to protect the compressor motor when the temperature within the windings of the compressor motor exceeds the high temperature trip point. When this switch opens, the compressor motor will continue to operate but the compressor pumping mechanism “scroll” will become disconnected. To reset this condition, the power must be disconnected from the compressor contactor. Set the unit back to the FAN position and allow the unit to operate in the FAN position for approximately 30-45 minutes. This should be enough time to cool the windings of the compressor motor which will allow the switch to reset (re- engaging the scroll). Set the Selector Switch back to COOL mode and the compressor should re-start. If this compressor goes out on internal overload condition, check the voltage. Since the compressor motor windings are cooled by the refrigerant gas as it enters the compressor, the unit may also be low on refrigerant.

UNIT COMPONENTS

Electrical Components Contactors

Contactors are used to energize the evaporator and compressor motor. Contactors have a set of high current carrying contacts for conducting line voltage to the load (device) and a magnetic holding coil which closes the line voltage contacts whenever control voltage of 24 VAC is applied by the control panel devices.

High Pressure Safety Switch

The high-pressure switch is designed to protect the compressor circuit from unusually high refrigerant pressures. If the refrigerant pressure rises above 600 PSIG, the pressure switch will open causing the compressor to shut off and the switch prevents it from re-starting until the manual reset button is pressed. Refer to the troubleshooting section for resolutions to the problem.

Low Pressure Safety Switch

The low-pressure switch is designed to protect the compressor circuit from unusually low refrigerant pressures. If the refrigerant pressure falls below 70 PSIG, the switch will open causing the compressor to shut off. As the pressure starts to rise above 100 PSIG, the switch will reset and allow the compressor to restart.

Heater High Limit Switch

The heating system has an automatic reset high temperature cut out switch. If the unit trips on high supply air temperature, the heating elements will shut down. The heating elements will turn on again once the air is cooled inside the evaporator section. The Heat high limit switch(s) are inside of the heater elements electrical conduit.

Heater Circuit Breaker

The heating system has its own circuit breaker, to protect against grounding and short circuiting. These breakers (CB#) are placed before the (CHT) contactors and will prevent the high voltage to pass to the heating elements. These breakers will not affect the heater indicator light or the contactor control voltage. The breaker will be in fact visibly tripped. If found to be tripped, shut down unit and inspect wiring. Return power back to the unit and measure the amp draw of the heaters.

Thermostat

The unit has an electronic temperature controller. Refer to the Appendix or quick start instructions for setting this thermostat.

REFRIGERATION SYSTEM COMPONENTS

Compressor

The compressor is scroll hermetic type. The function of the compressor is to create a differential in refrigerant pressure. It converts low pressure, low temperature refrigerant vapor entering the suction side of the compressor into a high pressure, high temperature gas at the discharge side of the compressor. The function of the compressor also pumps the refrigerant through the piping and components within the refrigeration system.

Evaporator Coil

As the liquid refrigerant passes through the expansion valve, the liquid refrigerant's pressure is regulated downward. This significant change in pressure causes a drop in temperature of the refrigerant. When the warmer ambient air is drawn over the cooler evaporator coil, the warmer or latent heat is exchanged. As the heat is being exchanged, the exchange of heat energy causes the liquid refrigerant to boil into a vapor and greatly reducing the temperature of the air on the outlet side of the coil. The liquid refrigerant is converted into the lower temperature, lower pressure refrigerant causing it to changing into a vapor state.

Filter Drier

The filter drier, filters loose particles, moisture and possible brazing residue from the system. If the unit starts tripping on low pressure cutout and the refrigerant line is frosted up to the outlet of the filter drier, check the refrigerant pressure drop across the filter drier and replace the filter drier if necessary.

Sight Glass

A liquid sight glass is located before the liquid line solenoid valve. During the cooling mode of operation, total liquid should flow through the liquid sight glass. The liquid refrigerant will appear clear enough to see the back of the inside of the sight glass. Flashing (bubbles) will appear in the sight glass during the first minute or two of operation until the expansion valve fully adjusts. If flashing is constant during the cooling mode, it may be an indication the unit is short of refrigerant. There may also be some flashing during hot gas bypass operation. See the Troubleshooting Chart for further details.

Thermostatic Expansion Valve

The expansion valve regulates the amount of liquid refrigerant entering into the evaporator. As the liquid enters into the expansion valve, the valve will start to change the state by changing the pressure of the liquid refrigerant as it passes through and starts to enter the evaporator coil. When the environments load conditions start to change, the bulb recognizes a change in temperature at the outlet piping of the evaporator to the suction side of the compressor and automatically adjusts the valve to maintain the correct flow into the evaporator coil.

ROUTINE MAINTENANCE

To keep the Portable Air Conditioner operating safely and efficiently, it is recommended that a qualified service technician check the entire system at least once a year. Check the system more frequently depending on use and surrounding conditions.

Filters

It is very important to keep the air filters clean. Be sure to inspect them at least once each month when the system is in constant operation. The unit is equipped with disposable type air filters, replace them with the same type and size.

Note: Do not attempt to clean disposable air filters

CONDENSER COIL

Inspect the condenser coil. If the condenser coil is dirty, clean with a stream of cold water, or pressurized air not exceeding 50 psig, or vacuum cleaner. Do not use hot water or steam, which can cause excessive high pressure in the refrigerant system. Clean the condenser coil in the opposite direction of the airflow.

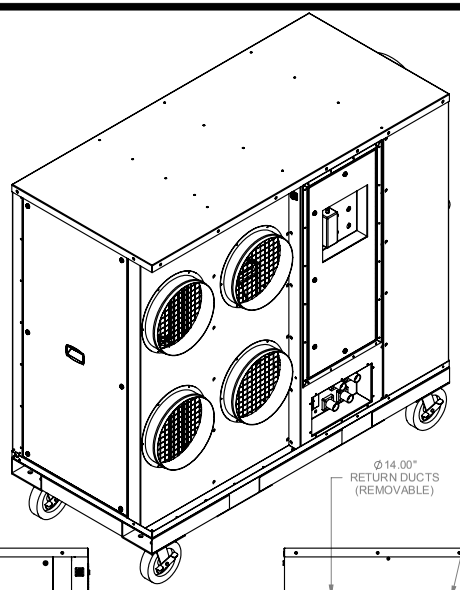
TROUBLESHOOTING GUIDE

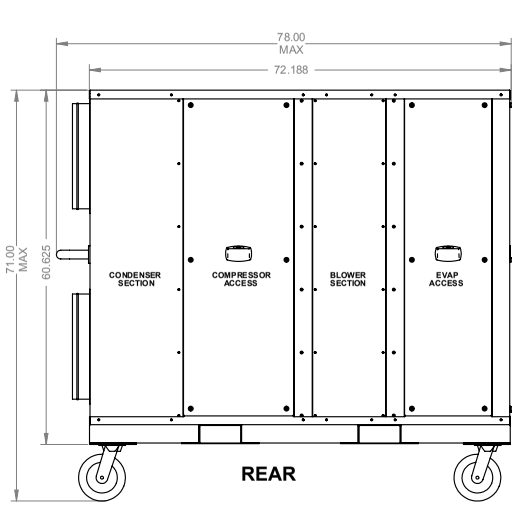
WARNING: BE AWARE OF HIGH POWER SITUATIONS WHILE TROUBLESHOOTING. THERE ARE ALSO MOVING BELTS, BLOWERS, AND MOTORS WHILE POWER IS CONNECTED TO THE UNIT. WHEN REACHING INTO ANY OF THE UNIT SECTIONS TO MAKE ADJUSTMENTS TO THE UNIT. PLEASE DISCONNECT POWER FROM THE UNIT.

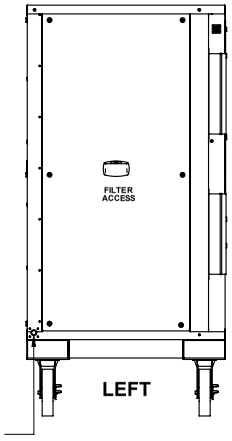
PROBLEM	CAUSE	DESCRIPTION
Power Lamp (PL) OFF	**1.** No voltage to unit.	**1.** Check voltage at power supply and check for broken power wires.
Power Lamp (PL) ON	**1.** No cooling or no blower.	**1.** Check and/or replace defective selector switch. **2.** Check phase indicator light for correct phasing. **3.** Check for defective phase monitor.
Unit Locked in Cooling Mode	**1.** Thermostat incorrectly set. **2.** Defective thermostat. **3.** Defective compressor contactor CCR.	**1.** Check thermostat setting and selector switch mode. **2.** Replace thermostat. **3.** Replace compressor contactor CCR.
No Cooling	**1.** Dirty air filter. **2.** Check thermostat setting and mode selector switch. **3.** Defective power wiring to compressor. **4.** Defective compressor contactor CCR. **5.** Defective compressor motor **6.** Compressor won't start. **7.** Compression pressures almost equalized. **8.** Condenser motor tripped on overload may have also caused high pressure trip.	**1.** Clean or replace air filters in front of evaporator coil. **2.** Reset thermostat setting or mode selector switch. **3.** Check continuity of power wiring. **4.** Replace compressor contactor CCR. **5.** Check motor windings for shorts or opens and/or replace compressor if necessary. **6.** Internal overload opened up. Wait one hour to see if it resets and starts. **7.** Defective compressor valves. Replace compressor. **8.** Reset the overload and also check and reset the high pressure switch if required.
No Heating	**1.** Dirty air Filter. **2.** Evap blower not running. **3.** High temp cutout tripped **4.** Heat breakers tripped	**1.** Clean or replace air filters. **2.** Check voltage to motor and overload to be closed **3.** Check to see if contactors are pulled in, check to make sure airflow is not short cycling. **4.** Check all high voltage wires make sure there are no possibilities for short circuits or groundings.
High Pressure Trips	**1.** Condenser air inlet and/or outlets are restricted. **2.** High-pressure switch open but doesn't reset. **3.** Defective condenser blower motor. **4.** Defective condenser blower motor contactor CCR. **5.** System is over-charged or has non-condensibles. **6.** Condenser blower v-belts loose, slipping, or broken.	**1.** Re-locate unit to a place with unobstructed airflow. **2.** Replace high-pressure switch. **3.** Replace condenser blower motor. **4.** Replace defective condenser blower motor contactor CCR. **5.** Remove some refrigerant. If the high side pressure doesn't start to drop, recover the refrigerant and re-charge with fresh R-410a to correct system charge. **6.** Re-tighten or replace v-belts.

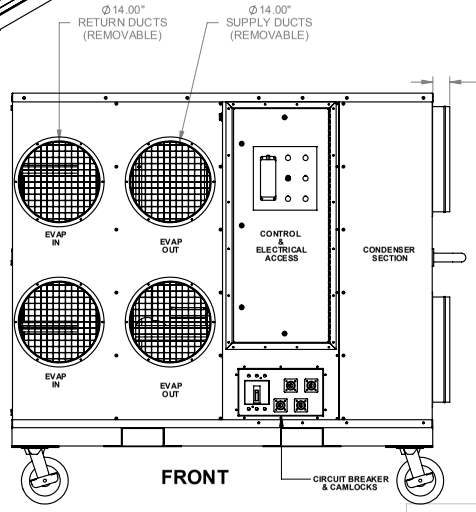
Continued on Next Page

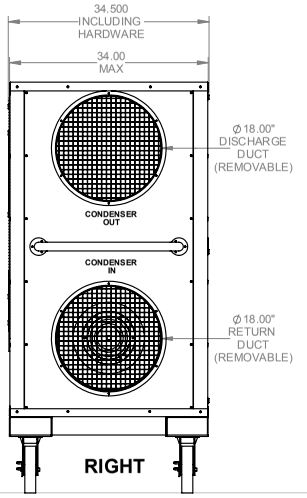
Low Pressure Trips	**1.** Supply and return air grills in space are restricted. **2.** Dirty return air filter. **3.** Low-pressure switch open and does not reset. **4.** Defective evaporator blower motor **5.** Defective evaporator blower motor contactor CEM. **6.** System might be under charged check sight glass and perform leak checks. **7.** Expansion valve is sticking or binding. **8.** Filter drier is dirty or plugged. **9.** Evaporator blower v-belts loose, slipping, or broken.	**1.** Re-locate objects in front of air grills or re-locate supply and return air grills in space. **2.** Clean or replace air filter. **3.** Replace low-pressure switch. **4.** Replace evaporator blower motor. **5.** Replace defective evaporator blower motor contactor CEM. **6.** Recover refrigerant, repair leaks, re-leak check, evacuate and re-charge to system operating charge **7.** Replace expansion valve. **8.** Replace filter drier. **9.** Re-tighten or replace v-belts.
No Condenser Blower Operation	**1.** Tripped Condenser Motor Contactor Overload.	**1.** Condenser blower motor moving too much air due to no blower ducting attached. Close off damper slide plate. **2.** If access panels are off of unit, replace access panels.











SUBJECT TO CHANGE WITHOUT NOTICE

KOLDWAVE

YORK, PA U.S.A.

TITLE: PORTABLE 12 TON (HKW12)

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:
FRACTIONAL ± 1/16
ANGLES ± 1°
TWO PLACE DECIMAL ± .063
THREE PLACE DECIMAL ± .031

REV	DESCRIPTION	BY	ECN #	DATE
C	UPDATED TO REFLECT FINAL DESIGN	HWB		03/26/2014
B	UPDATED TO REFLECT CURRENT DESIGN DIMENSIONS	HWB		2/10/2014
A	RELOCATED COND DISCHARGE TO TOP OF UNIT	JTP		12/02/2013
-	NEW	JTP		11/25/2013

DRWN BY:	APPR BY:	MATERIAL:	
JTP		NOT TO SCALE	
DATE:	DATE:	DWG. NO.	REV
11/25/13		CA17476	C