Operating Instructions & Service Manual

ICS™ BY EVERIDGE®

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Every step of the way®

INDEX

REFRIGERATION BASICS

You have purchased an outside refrigerated storage unit from International Cold Storage to maintain your product at a low temperature. It may be important, therefore, to under -stand the basics of how your ICS walk-in accomplishes this function. The first thing to understand is that the refrigeration system does not make things cold. Instead the refrigeration system removes heat from your prod -uct and the air inside your walk-in. This may seem like a trivial distinction, but it actually is quite important. The less heat that is added to your walk-in, the easier (and more economical) it is to refrigerate your product. We will talk more about the sources of heat in the sec -tion titled “Product Loads.”

But first, let’s look at the major components of your ICS walk-in. There are four major components in your freezer or cooler. These components are the compressor, the condenser, the evaporator, and the structure of the walk -in itself. The compressor is the “heart” of the system. It pumps refrigerant throughout the system. The compressor is usually located outside on the roof of the walk-in and is part of the condensing unit. The other main component of the condensing unit is the condenser, which is the aluminum-finned coil also located on the roof. The condenser is the component that rejects or discards heat into the outside air. The heat that is rejected by the condenser was picked up in the evaporator, which is the blower coil located inside the refrigerated space.

Finally, there is the structure of the walk-in itself. The structure of your ICS walk-in is essentially a one-piece, urethane foam enve -lope (without seams in the urethane foam) that insulates the refrigerated space from the air and heat that surround your walk-in.

From Warm To Less Warm

So, how do these components work to keep your product at storage temperature? Let’s start by understanding that heat always moves from a warm to a less warm place. The compressor moves refrigerant to the evaporator where it is reduced to a pressure that makes the refrigerant very cold. The evaporator fans pull the interior air of the walk-in (warm) across the refrigerant inside the evaporator (less warm) and the heat is transferred to the refrigerant. The refrigerant then moves back to the compressor where it is compressed to a pressure that makes the refrigerant very hot.

The refrigerant goes from the compressor and through the condenser coil where it transfers the heat removed from the interior of the walk-in to the ambient air. The refrigerant is now ready to start the cycle all over again and remove more heat from the air inside the walk-in. The diagram below illustrates this process.

OPERATION INFORMATIO N

Thermostat - Temperature Control

ICS units are equipped with either Heatcraft Quick Response Controller (QRC) or HTPG EcoNet factory installed evaporator control systems, each is equipped with integrated electric expansion valve (EEV) resulting in faster pull downs and temperatures that are consistently more stable. The controllers are located in the evaporator electrical panel and controls the room temperature, fans and defrost cycles.

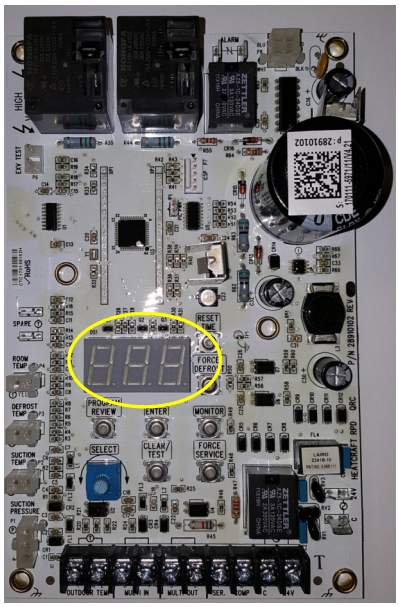
The controllers are factory preset to maintain room operating condition of either +35° to +38° F for cooler compartments, or 0° to -10°F for freezer compartments. Temperature settings can be adjusted on the control board if required. Each evaporator shipped is supplied with an operation and technical manual. The manual details the steps to change factory temperature settings.

Lowering the controllers setpoint does not make the air from the evaporator any colder it simply turns the refrigeration system on and off at different temperatures.

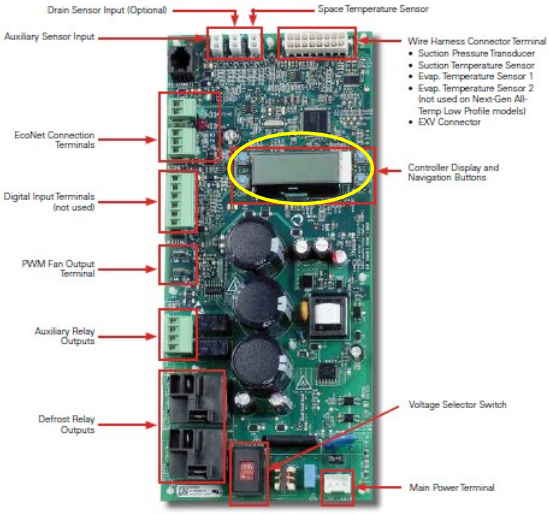
Room Thermometer

The thermometer is integrated into the room lighting switch, accurate to ±0.5°F. Calibration of the thermometer is not required. An additional room thermometer is located on each QRC controller board.

QRC Controller Board



EcoNet Board



Defrost Cycle

All refrigerated compartments must be defrosted daily. The factory, will preset each units defrost. The defrost cycle will have a maximum time duration of 30 minutes. Unlike evaporators controlled by mechanical time clocks the QRC and EcoNet controllers utilize continual evaluation of the system parameters, such as operating pressures, temperature and EEV valve position to determine if a defrost is needed. When a defrost is required the controller will execute a defrost cycle only when the right frost conditions exist on the fin surface of the evaporator. Skipping unnecessary defrost cycles results in reducing energy cost and more consistent product temperature. During the first few defrosts you may experience some smoke inside the unit. DO NOT BE ALARMED; the heat rods are new and the pre -servative coating is burning off. You should also not be alarmed if the air temperature of the freezer rises by 20 degrees during defrost. This is a rise in air temperature only. Your actual product temperature will not rise more than one or two degrees unless it is stacked too close to the evaporator. The air temperature will return to normal shortly after the defrost cycle is complete. Coolers require defrosting also. Cooler defrost is usually accomplished through an air defrost system unless otherwise specified. Cooler defrost happens when the compressor is in an off-cycle, and the air inside the cooler (which is above 32°) is pulled across the frosted evaporator, melting the frost. It is, therefore, important to keep you cooler thermostat set above 34°.

Defrost Terminator

Electric defrost evaporators are equipped with a time and temperature defrost termination. The defrost termination is built into the electronic controller and will terminate the defrost before the timed cycle if the evaporator coil has warmed enough to ensure complete defrost. This prevents wasteful overheating and saves energy. A routine inspection of the evaporator coil for frost accumulation ensures a complete defrost without wasted energy. The defrost cycle is also equipped with a fan delay to delay the evaporator fan after defrost. This allows any remaining moisture to refreeze on the evaporator, preventing water droplets from being blown onto your product and the floor of your walk-in.

Fused Disconnect Switch

All ICS units are equipped with a fused disconnect switch which is mounted on the rooftop, beside the condensing unit. The disconnect switch, which provides overcurrent protection, must be in the “ON” position and should not be used as an on-off switch. Units with pump-down MUST be allowed to pump down before they are shut off. Serious damage to the compressor may result if this procedure is not followed.

For More Information

If you need more information or have questions regarding any of the above items, please call our Customer Service Department. We will be happy to answer any questions you may have.

Our toll free number is 1-800-333-5653.

PROPER USAGE PROCEDURES

Heat Load

As we mentioned earlier, your refrigeration system does not make things cold. Instead, the refrigeration system removes heat from the interior of the walk-in. The obvious question then is, “Where does the heat come from that must be removed by the refrigeration process?” Heat comes from a variety of sources, but the two most important sources you can control are door opening and product load. These are discussed later.

Other sources we will not discuss include solar load, defrost heat load, lighting heat load and other miscellaneous loads, which are compensated for in the design of the walk-in. Many of these loads are fairly obscure. (Did you know your body generates approximately 1,000 BTUs per hour inside a walk-in freezer?)

Product Load

One of the main heat sources in your walk-in is product load. Heat must be removed from your product until it reaches storage temperature. If you want to store 1,000 pounds of product at 0° to -10°, and that product enters the walk-in freezer at 0°, there will be very little heat to remove. Therefore, your system will operate at a very low cost. If that same 1,000 pounds of product is delivered from your supplier at +20, then you must pay to run the refrigeration system while it removes heat from each and every pound of your product.

Obviously, your utility bill looks better if you let the supplier remove heat from the product instead of paying to do it yourself. Remember that your unit is designed as either a holding unit (little or no product load) or has been specifically designed to compensate for known product load. If significantly different product load than what the system is designed to handle is introduced, serious temperature problems may result.

Product Deliveries & Stacking

Again, you can save money when you receive product from the supplier. What good does it do to receive your product at 0° only to let it sit in your kitchen for 20 minutes (picking up heat) before you transfer it to your freezer? ALWAYS MOVE PRODUCT INTO YOUR FREEZER OR COOLER IMMEDIATELY. The longer you wait, the more money it will cost your store in operating costs.

As you transfer product into your walk-in, stack it so that there is plenty of air flow around the product. Good air flow around the product will decrease the amount of time it takes to remove heat.

The quality of your product and the efficiency of your walk-in operation will therefore be easier to maintain. One more thing to keep in mind is that you should never stack product closer than one foot from your evaporator. Remember that the evaporator is hot during defrost and can thaw product that is stacked too close. Of course, it also makes sense that if you want good air flow around your product, you must have good air flow around and through the evaporator.

Product Retrieval & Staging

Just as there are ways to save money transferring product into your walk-in, there are ways to save money when you retrieve product from the walk-in. Taking one item at a time from your walk-in costs you both utility dollars and labor dollars. It is much more efficient to anticipate your needs and remove product in larger quantities. Not only are you saving money by having the product where you need it when you need it, you are also not adding as much heat to the walk-in from multiple door opening.

Doors: Usage, Closers, Curtains

When you open and shut an interior door at home, not much happens. This is not true for the walk-in door. When the walk-in door opens, cold, dense air literally falls out of the bottom of the opening. Warm, moist air (heat load) then rushes in through the top of the opening to replace the lost cold air. In a typical walk-in, as much as 75 percent of the air can be replaced in a single door opening. This, by the way, is why you may experience difficulty opening the door after it has just been shut.

The new warm air in the walk-in "shrinks" as it cools, causing a slight vacuum to form, making the door hard to open. DO NOT BE ALARMED. This is simply a sign of how tight the foamed envelope of your ICS walk-in is.

The pressure will equalize in a few seconds, and you can again open the door easily. Obviously, your refrigeration system will operate less if you limit the number of door openings through the use of bulk transfers. You can further reduce your utility bills by using door closers or door curtains (available on request). Door curtains can reduce your electrical consumption by as much as 15 per -cent. These overlapping vinyl strips that hang in the door opening inhibit the cycle of cold air falling out of the bottom of the opening and warm air rushing in the top. And, of course, always make sure your door is completely closed.

Air Temperature vs. Product Temperature

Whenever your door is opened or the system goes through a defrost cycle, the air temperature inside the walk-in rises. How does this affect your product temperature? Door openings will seldom affect any product except the product near the door.

If the door is not left standing open (which should never happen), the product temperature will only rise one or two degrees. The same thing is true of defrost cycles. Product temperature will only change by one or two degrees while the air temperature might rise 30 to 40 degrees.

Remember, do not stack product near the evaporator. Air temperature changes constantly during the normal operating cycle. Product temperature changes very little. See the chart for typical operation patterns.

Slippery Floor Conditions

Walk-in floors can, under certain conditions, be extremely slippery. Cooler floors quite often have condensation and product spillage. Freezer floors can develop a thin layer of frost, creating slippery conditions. **All Walk-In Users Should Wear Shoes With Non-Skid Soles.** Be sure to inform all users of these potentially slippery conditions. Use caution when entering your walk-in and NEVER REMOVE THE AISLE MATS OR NON-SKID STRIPS that were delivered with your unit.

MAINTENANCE & CLEANING

Operator Maintenance

Operator maintenance is very simple. Daily maintenance should include a check of operating temperature, plus checks to make sure the refrigeration system is operating again after defrost periods. (If the evaporator fan is operating and the temperature is at or approaching the desired range, everything is operating correctly). Weekly checks should require no more than a minute or two. Look at the fins on the back of the evaporator. They should be free of lint, debris and clear of any ice build-up. A light snowy frost is acceptable on the fins as long as there is no heavy or clear ice.

A monthly check of the walk-in door seals should catch any door problems that you may have before they have a chance to grow into something serious. It is also a good idea to visually inspect the walk-in once a month (both inside and outside) for anything unusual, such as ice build-up, cuts in exterior metal, sticks or debris in the outside condenser fans, etc. Finally, an annual cleaning of the inside evaporator coil and the outside condenser coil will help you maintain maximum efficiency from your ICS cooler or freezer. It is wise to check the roof at this time for build -up of debris around the roof trim or cuts in the roof metal. (Even the best service technicians occasionally drop a wrench or heavy tool.) The money you spend on maintenance will come back to you in lower operating costs.

Cleaning

Sometimes the metal finish of the walk-in This may be due to fingerprints from handling, water staining, or chemicals used during building construction. Cleaning should be preformed immediately after the installation is completed and every 60 days thereafter. Some stains, such as water marks, may develop into white rust if not cleaned properly. Before cleaning, remove all food stuffs from the area to prevent contamination.

Normal Cleaning

Normal cleaning requires only a mild detergent followed by a sanitizing solution. Check with the local authorities for specifics. After cleaning, apply lemon oil to the cleaned surface.

Heavy Stains

Aluminum/Stainless Steel Panels

1. Use a cleaner/polisher, such as Sheila Shine or Lookin' Good, and a medium fine steel wool on the affected area. Gently rub the area until the stain is removed.
2. Clean the affected area with a mild detergent, rinse well, and allow it to totally air dry.
3. Apply Sheila Shine, Lookin' Good or lemon oil to the cleaned surface. Note: this procedure will normally make the metal finish shiny. Therefore, for best results, clean and polish the entire panel or surface for an even appearance.

Galvanized Steel Panels

1. Heavy stains, such as water marks and white rust, can be removed using a cleaner/polisher, such as Sheila Shine, Bon-Ami cleanser, or LPS-1 oil.
2. Spray or wipe the cleaner/polisher on the affected areas.
3. Clean the area with a mild detergent, rinse the area well, and allow it to totally air dry.
4. Apply lemon oil to the cleaned surface. Note: If stains or white rust are severe, some discoloration may be permanent.

Please Don't Hesitate To Call

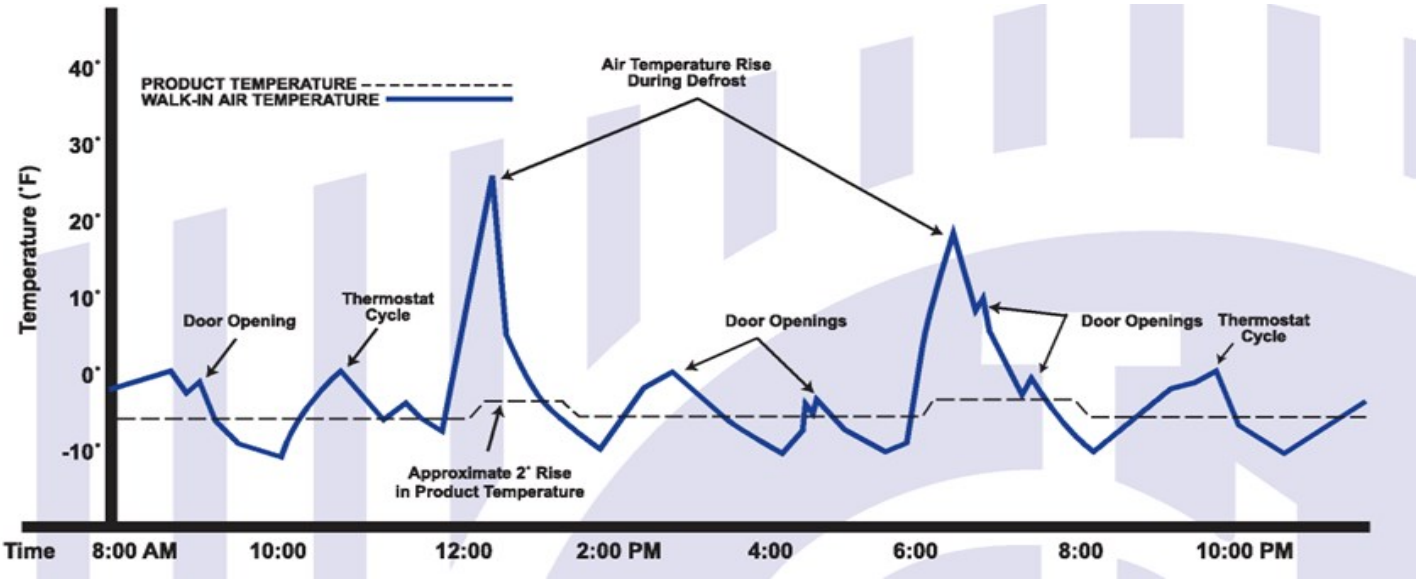
You should always feel free to contact the ICS Customer Service Department if you have any questions at all. Someone is available 24 hours a day, 365 days a year to give advice and answer questions no matter how large or small. We're glad to help you out.

OPERATION & MAINTENANCE CHECKS

FOR LOWEST OPERATING COSTS

***DO** make sure doors are always latched.*

***DON'T** leave doors open while unloading.*



***DO** minimize trips into your unit. (fewer door openings add less heat).*

***DON'T** stack product near evaporator.*

***DO** use a door curtain. (We recommend them).*

***DON'T** leave lights on unnecessarily.*

***DO** load delivered product quickly.*

***DON'T** turn off/on with circuit breakers.*

***DO** leave space for airflow around product.*

***DON'T** use running water or buckets of water for cleaning.*

***DO** maintain a clean ice-free evaporator.*

***DO** use non-skid shoes and rubber mats; floor may be slippery under some conditions.*

IF YOU HAVE A PROBLEM CHECKLIST:

***DO** make sure power is on.*

***DON'T** call a service company until you have followed the checklist.*

***DO** make sure unit is not in defrost cycle. Heat in drain pan indicates defrosting*

***DON'T** alow problems to go unattended.*

***DO** make sure thermometer is accurate.*

***DON'T** panic. ICS Customer Service is on call 24 hours a day.*

TO CORRECT A PROBLEM

1. Review the items on your checklist before calling your service company.
2. After the service technician has diagnosed the problem, he or she must call ICS before the repairs are made to obtain an authorization number if the cost of repairs will exceed $100.00.
3. Any warranty repairs costing less than $100.00 can be billed directly to ICS without an authorization number.

Remember, all repairs over $100.00 require an authorization number before the work can be done. A work authorization number can be obtained, in minutes, by simply calling the ICS Customer Service Department 24 hours a day, 365 days a year. Warranty claims in excess of $100.00 submitted without prior authorization are subject to adjustment.

	DAILY	WEEKLY	MONTHLY	SEMI-ANUNUAL	ANNUAL
Temperature	●				
Evaporator Icing* (abnormal ice build upon Rear of coil)		●			
Door Gaskets (Clean and check for damage)			●		
†Door Jamb Heat Tape			●		
Door Hardware (general operation and Secure attachment)				●	
†Door Closer Operation				●	
Door Sweep (check for wear)				●	
Clean Condenser Coil					●
Clean Roof Of Debris					●

*Evaporator units should be checked once a month or more often for proper defrosting because the Amount and pattern of frosting can vary greatly. It is dependent on the temperature of the room, the Type of product being stored, how often new product is brought into the room and the percentage of Time the door to the room is open. It may be necessary to periodically change the number of defrost cycles or adjust the duration of defrost

†Optional Equipment—You unit may not include this feature

FOR THE SERVICE TECHNICIANS

ICS units use refrigerant R404A or R448A. If you are unfamiliar with the units, check the nameplate on the condensing unit for the type of refrigerant required. If unsure, your individual system specifications are available by calling our Customer Service Department at 1-800-333-5653.

All ICS low-temperature and medium-temperature refrigeration systems use a head pressure regulator control to maintain proper head pressure during low ambient conditions. The control used has a 190-pound pressure setting. The refrigerant charge shown represents the

Heatcraft 2020 Refrigeration Systems AWEF Compliant

Unit Model #	Compressor Model	AWEF	Volts/Phase	Compressor Run Load Amps	Condensing Unit Fan Load Amps	Evaporator Coil Model #	System Capacity (BTU/HR) @ 100° F Ambient	System T. D.	Min. Circuit Amps (MCA)	Evaporator Fan Load Amps (FLA)	Calc. MOPD (AMP)	Max Circuit Breaker or Fuse Size	Max. Defrost Amps	Ref. LBS
Med Temp. (+35 F), R-404a systems designed for a +25 F suction temperature														
LCH0005MBACZ	ZB06KAE-PFV	7.6	208-230/1	5.4	0.5	LCA662	6,896	13.1	9.4	0.60	15	15	0.0	9.00
LCH0005MCACZ	ZB06KAE-TF5	7.6	208-230/3	4.3	0.5	LCA662	6,896	13.1	8.0	0.60	12	15	0.0	9.00
LCH0008MBACZ	ZB07KAE-PFV	7.6	208-230/1	5.6	0.5	LCA672	8,111	11.1	10.1	1.10	16	15	0.0	9.00
LCH0008MCACZ	ZB07KAE-TF5	7.6	208-230/3	4.7	0.5	LCA672	8,111	11.3	9.0	1.10	14	15	0.0	9.00
LCH0009MBACZ	ZB08KAE-PFV	7.6	208-230/1	7.2	0.5	LCA690	9,136	12.2	12.1	1.10	19	15	0.0	9.00
LCH0009MCACZ	ZB08KAE-TF5	7.6	208-230/3	4.7	0.5	LCA690	9,136	12.2	9.0	1.10	14	15	0.0	9.00
LCH0010MBACZ	ZS09KAE-PFV	7.6	208-230/1	9.0	0.5	LCA6110	11,219	11.1	14.4	1.10	23	20	0.0	9.00
LCH0010MCACZ	ZS09KAE-TF5	7.6	208-230/3	7.2	0.5	LCA6110	11,219	11.1	12.1	1.10	19	15	0.0	9.00
LCH0015MBACH	CS10K6E-PFV	7.6	208-230/1	11.1	1.0	LCA6135	13,220	13.0	18.0	1.60	29	25	0.0	14.00
LCH0015MCACH	CS10K6E-TF5	7.6	208-230/3	7.2	1.0	LCA6135	13,220	12.3	13.1	1.60	20	15	0.0	14.00
LCH0020MBACH	CS12K6E-PFV	7.6	208-230/1	9.8	1.0	LCA6135	14,871	13.0	16.4	1.60	26	20	0.0	14.00
LCH0020MCACH	CS12K6E-TF5	7.6	208-230/3	9.6	1.0	LCA6135	14,871	13.0	16.1	1.60	26	15	0.0	14.00
LCH0015MBACZ	ZS13KAE-PFV	7.6	208-230/1	10.8	1.0	LCA6135	15,707	13.6	17.6	1.60	28	25	0.0	14.00
LCH0015MCACZ	ZS13KAE-TF5	7.6	208-230/3	8.7	1.0	LCA6135	15,707	13.6	15.0	1.60	24	20	0.0	14.00
LCH0015MBALZ	MPA013KAA	7.6	208-230/1	10.3	1.0	LCA6135	15,707	13.6	17.0	1.60	27	20	0.0	14.00
LCH0015MCALZ	MPA013RAA	7.6	208-230/3	6.4	1.0	LCA6135	15,707	13.6	12.1	1.60	19	15	0.0	14.00
LCH0025MBACH	CS14K6E-PFV	7.6	208-230/1	12.4	1.0	LCA6160	16,912	12.6	19.6	1.60	32	25	0.0	14.00
LCH0025MCACH	CS14K6E-TF5	7.6	208-230/3	8.5	1.0	LCA6160	16,912	12.6	14.7	1.60	23	20	0.0	14.00
LCH0020MBACZ	ZS15KAE-PFV	7.6	208-230/1	14.1	1.0	LCA6160	18,542	13.6	21.7	1.60	36	30	0.0	14.00
LCH0020MCACZ	ZS15KAE-TF5	7.6	208-230/3	9.6	1.0	LCA6160	18,542	13.6	16.1	1.60	26	20	0.0	14.00
LCH0020MBALZ	MPA015KAA	7.6	208-230/1	11.5	1.0	LCA6160	18,542	13.6	18.5	1.60	30	25	0.0	14.00
LCH0020MCALZ	MPA015RAA	7.6	208-230/3	7.1	1.0	LCA6160	18,542	13.6	13.0	1.60	20	15	0.0	14.00
LCH0025MBACZ	ZS19KAE-PFV	7.6	208-230/1	16.2	1.0	LCA6185	20,644	13.2	24.9	2.10	41	25	0.0	14.00
LCH0025MCACZ	ZS19KAE-TF5	7.6	208-230/3	12.3	1.0	LCA6185	20,644	13.2	20.0	2.10	32	20	0.0	14.00
LCH0025MBALZ	MPA019KAA	7.6	208-230/1	12.8	1.0	LCA6185	20,644	13.2	20.6	2.10	33	25	0.0	14.00
LCH0025MCALZ	MPA019RAA	7.6	208-230/3	7.7	1.0	LCA6185	20,644	13.2	14.2	2.10	22	15	0.0	14.00
LCH0030MBACH	CS18K6E-PFV	7.6	208-230/1	14.4	3.5	LCA6215	23,257	12.8	25.1	2.10	40	35	0.0	20.00
LCH0030MCACH	CS18K6E-TF5	7.6	208-230/3	9.4	3.5	LCA6215	23,257	12.8	18.9	2.10	28	20	0.0	20.00
LCH0032MBACH	CS20K6E-PFV	7.6	208-230/1	17.9	3.5	LCA6215	25,178	13.7	29.5	2.10	47	40	0.0	20.00
LCH0032MCACH	CS20K6E-TF5	7.6	208-230/3	13.3	3.5	LCA6215	25,178	13.7	23.7	2.10	37	30	0.0	20.00
LCH0030MBACZ	ZS21KAE-PFV	7.6	208-230/1	20.8	3.5	LCA6260	28,879	13.1	33.6	2.60	54	50	0.0	20.00
LCH0030MCACZ	ZS21KAE-TF5	7.6	208-230/3	13.7	3.5	LCA6260	28,879	13.1	24.7	2.60	38	30	0.0	20.00
LCH0030MBALZ	MBA021KAA	7.6	208-230/1	17.9	3.5	LCA6260	28,879	13.1	30.0	2.60	48	40	0.0	20.00
LCH0030MCALZ	MBA021RAA	7.6	208-230/3	12.2	3.5	LCA6260	28,879	13.1	22.9	2.60	35	30	0.0	20.00
LCH0035MBACZ	ZS26KAE-PFV	7.6	208-230/1	21.2	3.5	LCA6310	32,250	12.4	34.6	3.10	56	50	0.0	20.00
LCH0035MBALZ	MBA026KAA	7.6	208-230/1	19.2	3.5	LCA6310	32,250	12.4	32.1	3.10	51	45	0.0	20.00
LCH0035MCALZ	MBA026RAA	7.6	208-230/3	11.5	3.5	LCA6310	32,250	12.4	22.5	3.10	34	25	0.0	20.00
LCH0045MBACZ	ZS29KAE-PFV	7.6	208-230/1	23.4	3.5	LCA6310	35,451	13.4	37.4	3.10	61	50	0.0	20.00
LCH0045MCACZ	ZS29KAE-TF5	7.6	208-230/3	18.4	3.5	LCA6310	35,451	13.4	31.1	3.10	50	40	0.0	20.00
LCH0045MBALZ	MBA029KAA	7.6	208-230/1	22.4	3.5	LCA6310	35,451	13.4	36.1	3.10	59	50	0.0	20.00
LCH0050MBACZ	ZS33KAE-PFV	7.6	208-230/1	23.0	3.5	LCA6350	38,726	13.1	36.9	3.10	60	50	0.0	20.00
LCH0050MCACZ	ZS33KAE-TF5	7.6	208-230/3	20.0	3.5	LCA6350	38,726	13.1	33.1	3.10	53	45	0.0	20.00
LCH0050MBALZ	MBA033KAA	7.6	208-230/1	21.8	3.5	LCA6350	38,726	13.1	35.4	3.10	57	50	0.0	20.00
LCH0050MCALZ	MBA033RAA	7.6	208-230/3	12.2	3.5	LCA6350	38,726	13.1	23.4	3.10	36	30	0.0	20.00
LCH0055MBACZ	ZS38K4E-PFV	7.6	208-230/1	28.5	3.5	LCA6350	40,243	13.5	43.7	3.10	72	60	0.0	20.00
LCH0055MCACZ	ZS38K4E-TF5	7.6	208-230/3	19.2	3.5	LCA6350	40,243	13.5	32.1	3.10	51	45	0.0	20.00
LCH0055MBALZ	MRA038KAA	7.6	208-230/1	25.1	3.5	LCA6350	40,243	13.5	39.5	3.10	65	50	0.0	20.00
LCH0055MCALZ	MRA038RAA	7.6	208-230/3	18.3	3.5	LCA6350	40,243	13.5	31.0	3.10	49	40	0.0	20.00
LCH0060MCACZ	ZS45K4E-TF5	7.6	208-230/3	21.5	3.5	MMT6450	47,508	12.6	36.1	4.20	58	50	0.0	20.00
LCH0060MCALZ	MRA045RAA	7.6	208-230/3	18.7	3.5	MMT6450	47,508	12.6	32.6	4.20	51	45	0.0	20.00
Low Temp. (-10 F), R-404a systems designed for a -20 F suction temperature														
LCH0006LBACZ	ZF03KAE-PFV	2.88	208-230/1	5.4	0.50	LCE643	3,048	9.1	9.4	0.60	15	20	3.9	9.00
LCH0006LCACZ	ZF03KAE-TF5	2.88	208-230/3	3.7	0.50	LCE643	3,048	9.1	7.2	0.60	11	20	3.9	9.00
LCH0008LCACZ	ZF04KAE-TF5	2.93	208-230/3	6.0	0.50	LCE643	3,844	10.9	10.1	0.60	16	20	3.9	9.00
LCH0011LBACH	CF04K6E-PFV	2.90	208-230/1	8.6	0.50	LCE643	3,889	11.0	13.4	0.60	22	20	3.9	9.00
LCH0011LCACH	CF04K6E-TF5	2.89	208-230/3	5.7	0.50	LCE643	3,889	11.0	9.7	0.60	15	20	3.9	9.00
LCH0010LBACZ	ZF05KAE-PFV	2.98	208-230/1	7.8	0.50	LCE665	4,842	9.4	12.9	1.10	21	20	7.8	9.00
LCH0010LCACZ	ZF05KAE-TF5	2.98	208-230/3	6.6	0.50	LCE665	4,842	9.4	11.4	1.10	18	20	7.8	9.00
LCH0014LBACH	CF06K6E-PFV	3.00	208-230/1	10.3	0.50	LCE676	6,246	10.2	16.0	1.10	26	25	7.8	9.00
LCH0014LCACH	CF06K63-TF5	2.99	208-230/3	6.3	0.50	LCE676	6,246	10.2	11.0	1.10	17	20	7.8	9.00
LCH0022LBACZ	ZF07KAE-PFV	3.09	208-230/1	12.4	0.50	LCE694	7,245	9.7	18.6	1.10	31	30	7.8	9.00
LCH0022LCACZ	ZF07KAE-TF5	3.09	208-230/3	7.8	0.50	LCE694	7,245	9.7	12.9	1.10	21	20	7.8	9.00
LCH0025LBACZ	ZF08K4E-PFV	3.15	208-230/1	14.7	1.00	LCE6120	9,351	9.8	22.5	1.60	37	40	11.7	14.00
LCH0025LCACZ	ZF08K4E-TF5	3.15	208-230/3	8.7	1.00	LCE6120	9,351	9.8	15.0	1.60	24	30	11.7	14.00
LCH0025LCACH	CF09K6E-TF5	3.15	208-230/3	9.2	1.00	LCE6120	9,902	10.3	15.6	1.60	25	30	11.7	14.00
LCH0030LCACZ	ZF09K4E-TF5	3.15	208-230/3	9.9	1.00	LCE6120	10,337	9.4	16.5	1.60	26	30	11.7	14.00
LCH0035LBACZ	ZF11K4E-PFV	3.15	208-230/1	16.3	1.00	LCE6160	12,603	9.9	25.0	2.10	41	45	15.7	14.00
LCH0035LCACZ	ZF11K4E-TF5	3.15	208-230/3	12.2	1.00	LCE6160	12,603	9.9	19.9	2.10	32	35	15.7	14.00
LCH0031LCACH	CF12K6E-TF5	3.15	208-230/3	11.0	1.00	LCE6160	12,621	9.9	18.4	2.10	29	30	15.7	14.00
LCH0045LBACZ	ZF13K4E-PFV	3.15	208-230/1	24.0	3.50	LCE6200	14,985	9.5	37.6	2.60	62	60	19.6	20.00
LCH0045LCACZ	ZF13K4E-TF5	3.15	208-230/3	11.9	3.50	LCE6200	14,985	9.5	21.4	1.50	33	40	19.6	20.00
LCH0055LBACZ	ZF15K4E-PFV	3.15	208-230/1	24.7	3.50	LCE6240	18,164	9.6	37.7	1.80	62	60	23.5	20.00
LCH0055LCACZ	ZF15K4E-TF5	3.15	208-230/3	17.0	3.50	LCE6240	18,164	9.6	28.1	1.80	45	50	23.5	20.00
LCH0060LCACZ	ZF18K4E-TF5	3.15	208-230/3	21.5	3.50	LCE6270	21,660	10.0	33.5	1.60	55	60	23.5	20.00

Heatcraft 2020 Refrigeration Systems AWEF Compliant

Unit Model #	Compressor Model	AWEF	Volts/Phase	Compressor Run Load Amps	Condensing Unit Fan Load Amps	Evaporator Coil Model #	System Capacity (BTU/HR) @ 100° F Ambient	System T. D.	Min. Circuit Amps (MCA)	Evaporator Fan Load Amps (FLA)	Calc. MOPD (AMP)	Max Circuit Breaker or Fuse Size	Max. Defrost Amps	Ref. LBS
Med Temp. (+35 F), R-448 systems designed for a +25 F suction temperature														
LCH0005MCACZ	ZB06KAE-TF5	7.6	208-230/3	4.3	0.5	LCA651	6,434	12.5	8.0	0.60	12	15	0.0	9.00
LCH0008MCACZ	ZB07KAE-TF5	7.6	208-230/3	4.7	0.5	LCA672	7,666	12.4	8.5	0.60	13	15	0.0	9.00
LCH0009MBACZ	ZB08KAE-PFV	7.6	208-230/1	7.2	0.5	LCA672	8,866	12.4	12.1	1.10	19	15	0.0	9.00
LCH0009MCACZ	ZB08KAE-TF5	7.6	208-230/3	4.7	0.5	LCA672	8,866	12.4	9.0	1.10	14	15	0.0	9.00
LCH0010MBACZ	ZS09KAE-PFV	7.6	208-230/1	9.0	0.5	LCA672	8,904	12.5	14.4	1.10	23	15	0.0	9.00
LCH0010MCACZ	ZS09KAE-TF5	7.6	208-230/3	7.2	0.5	LCA672	8,904	12.5	12.1	1.10	19	20	0.0	9.00
LCH0010MBALZ	MPA010KAA	7.6	208-230/1	7.3	0.5	LCA672	8,904	12.5	12.2	1.10	20	15	0.0	9.00
LCH0010MCALZ	MPA010RAA	7.6	208-230/3	4.8	0.5	LCA672	8,904	12.5	9.1	1.10	14	15	0.0	9.00
LCH0015MBACZ	ZS13KAE-PFV	7.6	208-230/1	10.8	1.0	LCA690	12,485	13.8	17.1	1.10	28	25	0.0	14.00
LCH0015MCACZ	ZS13KAE-TF5	7.6	208-230/3	8.7	1.0	LCA690	12,485	13.8	14.5	1.10	23	20	0.0	14.00
LCH0015MBALZ	MPA013KAA	7.6	208-230/1	10.3	1.0	LCA690	12,485	13.8	16.5	1.10	27	20	0.0	14.00
LCH0015MCALZ	MPA013RAA	7.6	208-230/3	6.4	1.0	LCA690	12,485	13.8	11.6	1.10	18	15	0.0	14.00
LCH0015MBACH	CS10K6E-PFV	7.6	208-230/1	11.1	1.0	LCA690	12,666	13.9	17.5	1.10	29	25	0.0	14.00
LCH0015MCACH	CS10K6E-TF5	7.6	208-230/3	7.2	1.0	LCA690	12,666	13.9	12.6	1.10	15	15	0.0	14.00
LCH0020MBACH	CS12K6E-PFV	7.6	208-230/1	9.8	1.0	LCA690	12,208	13.5	15.9	1.10	26	20	0.0	14.00
LCH0020MCACH	CS12K6E-TF5	7.6	208-230/3	6.7	1.0	LCA690	12,208	13.5	12.0	1.10	19	15	0.0	14.00
LCH0025MBACH	CS14K6E-PFV	7.6	208-230/1	12.4	1.0	LCA6110	14,317	12.8	19.1	1.10	32	25	0.0	14.00
LCH0025MCACH	CS14K6E-TF5	7.6	208-230/3	8.5	1.0	LCA6110	14,317	12.8	14.2	1.10	23	20	0.0	14.00
LCH0020MCACZ	ZS15KAE-TF5	7.6	208-230/3	9.6	1.0	LCA6110	14,897	13.3	15.6	1.10	25	20	0.0	14.00
LCH0020MBALZ	MPA015KAA	7.6	208-230/1	11.5	1.0	LCA6110	14,897	13.3	18.0	1.10	29	25	0.0	14.00
LCH0020MCALZ	MPA015RAA	7.6	208-230/3	7.1	1.0	LCA6110	14,897	13.3	12.5	1.10	20	15	0.0	14.00
LCH0025MBACZ	ZS19KAE-PFV	7.6	208-230/1	16.2	1.0	LCA6135	16,720	12.5	24.4	1.60	41	35	0.0	14.00
LCH0025MCACZ	ZS19KAE-TF5	7.6	208-230/3	12.3	1.0	LCA6135	16,720	12.5	19.5	1.60	32	25	0.0	14.00
LCH0025MBALZ	MPA019KAA	7.6	208-230/1	12.8	1.0	LCA6135	16,720	12.5	20.1	1.60	33	25	0.0	14.00
LCH0025MCALZ	MPA019RAA	7.6	208-230/3	7.7	1.0	LCA6135	16,720	12.5	13.7	1.60	21	15	0.0	14.00
LCH0030MBACH	CS18K6E-PFV	7.6	208-230/1	14.4	1.0	LCA6135	17,300	12.8	22.1	1.60	37	35	0.0	20.00
LCH0030MCACH	CS18K6E-TF5	7.6	208-230/3	9.4	1.0	LCA6135	17,300	12.8	15.9	1.60	20	20	0.0	20.00
LCH0030MBACZ	ZS21KAE-PFV	7.6	208-230/1	20.8	3.5	LCA6185	24,907	13.4	33.1	2.10	54	50	0.0	20.00
LCH0030MCACZ	ZS21KAE-TF5	7.6	208-230/3	13.7	3.5	LCA6185	24,907	13.4	24.2	2.10	38	30	0.0	20.00
LCH0030MBALZ	MBA021KAA	7.6	208-230/1	17.9	3.5	LCA6185	24,907	13.4	29.5	2.10	47	40	0.0	20.00
LCH0030MCALZ	MBA021RAA	7.6	208-230/3	12.2	3.5	LCA6185	24,907	13.4	22.4	2.10	35	30	0.0	20.00
LCH0032MBACH	CS20K6E-PFV	7.6	208-230/1	17.9	3.5	LCA6185	23,047	12.5	29.5	2.10	47	40	0.0	20.00
LCH0032MCACH	CS20K6E-TF5	7.6	208-230/3	13.3	3.5	LCA6185	23,047	13.4	23.7	2.10	37	30	0.0	20.00
LCH0035MBACZ	ZS26KAE-PFV	7.6	208-230/1	21.2	3.5	LCA6215	29,362	13.2	33.6	2.10	55	50	0.0	20.00
LCH0035MCACZ	ZS26KAE-TF5	7.6	208-230/3	13.9	3.5	LCA6215	29,362	13.2	24.5	2.10	38	30	0.0	20.00
LCH0035MBALZ	MBA026KAA	7.6	208-230/1	19.2	3.5	LCA6215	29,362	13.2	31.1	2.10	50	45	0.0	20.00
LCH0035MCALZ	MBA026RAA	7.6	208-230/3	11.5	3.5	LCA6215	29,362	13.2	21.5	2.10	33	25	0.0	20.00
LCH0045MBACZ	ZS29KAE-PFV	7.6	208-230/1	23.5	3.5	LCA6215	30,694	13.8	36.5	2.10	60	50	0.0	20.00
LCH0045MCACZ	ZS29KAE-TF5	7.6	208-230/3	18.4	3.5	LCA6215	30,694	13.8	30.1	2.10	49	40	0.0	20.00
LCH0045MBALZ	MBA029KAA	7.6	208-230/1	22.4	3.5	LCA6215	30,694	13.8	35.1	2.10	58	50	0.0	20.00
LCH0045MCALZ	MBA029RAA	7.6	208-230/3	12.2	3.5	LCA6215	30,694	13.8	22.4	2.10	35	30	0.0	20.00
LCH0050MBACZ	ZS33KAE-PFV	7.6	208-230/1	23.0	3.5	LCA6260	33,798	13.0	36.4	2.60	59	50	0.0	20.00
LCH0050MCACZ	ZS33KAE-TF5	7.6	208-230/3	20.0	3.5	LCA6260	33,798	13.0	32.6	2.60	53	45	0.0	20.00
LCH0050MBALZ	MBA033KAA	7.6	208-230/1	21.8	3.5	LCA6260	33,798	13.0	34.9	2.60	57	50	0.0	20.00
LCH0050MCALZ	MBA033RAA	7.6	208-230/3	12.2	3.5	LCA6260	33,798	13.0	22.9	2.60	35	30	0.0	20.00
LCH0055MCACZ	ZS38K4E-TF5	7.6	208-230/3	19.2	3.5	LCA6310	38,653	12.6	31.0	2.00	50	60	0.0	20.00
LCH0055MCALZ	MBA038RAA	7.6	208-230/3	13.8	3.5	LCA6310	38,653	12.6	25.4	3.10	39	40	0.0	20.00
LCH0060MCACZ	ZS45K4E-TF5	7.6	208-230/3	21.5	3.5	LCA6350	44,704	12.6	35.0	3.10	56	50	0.0	20.00
LCH0060MCALZ	MRA045RAA	7.6	208-230/3	18.7	3.5	LCA6350	44,704	12.6	31.5	3.10	50	45	0.0	20.00
Low Temp. (-10 F), R-448 systems designed for a -20 F suction temperature														
LCH0006LBACZ	ZF03KAE-PFV	2.87	208-230/1	5.4	0.5	LCE635	2,808	9.2	9.4	0.60	15	20	3.9	9.00
LCH0006LCACZ	ZF03KAE-TF5	2.87	208-230/3	3.7	0.5	LCE635	2,808	9.2	7.2	0.60	11	20	3.9	9.00
LCH0008LCACZ	ZF04KAE-TF5	2.91	208-230/3	6.0	0.5	LCE643	3,623	9.4	10.1	0.60	16	20	3.9	9.00
LCH0010LBACZ	ZF05KAE-PFV	2.94	208-230/1	7.8	0.5	LCE665	4,397	8.1	12.9	1.10	21	20	7.8	9.00
LCH0010LCACZ	ZF05KAE-TF5	2.94	208-230/3	6.6	0.5	LCE665	4,397	8.1	11.4	1.10	18	20	7.8	9.00
LCH0022LBACZ	ZF07KAE-PFV	3.04	208-230/1	12.4	0.5	LCE676	6,359	9.5	18.6	1.10	31	30	7.8	9.00
LCH0022LCACZ	ZF07KAE-TF5	3.04	208-230/3	7.8	0.5	LCE676	6,359	9.5	12.9	1.10	21	20	7.8	9.00
LCH0025LBACZ	ZF08K4E-PFV	3.14	208-230/1	14.7	1.0	LCE694	8,079	9.8	22.0	1.10	37	40	7.8	14.00
LCH0025LCACZ	ZF08K4E-TF5	3.12	208-230/3	8.7	1.0	LCE694	8,079	9.8	14.5	1.10	23	30	7.8	14.00
LCH0030LBACZ	ZF09K4E-PFV	3.15	208-230/1	12.8	1.0	LCE6120	9,126	8.8	20.1	1.60	33	40	11.7	14.00
LCH0030LCACZ	ZF09K4E-TF5	3.15	208-230/3	9.9	1.0	LCE6120	9,126	8.8	16.5	1.60	26	30	11.7	14.00
LCH0035LBACZ	ZF11K4E-PFV	3.15	208-230/1	16.3	1.0	LCE6140	11,148	9.0	24.5	1.60	41	45	11.7	14.00
LCH0035LCACZ	ZF11K4E-TF5	3.15	208-230/3	12.2	1.0	LCE6140	11,148	9.0	19.4	1.60	32	35	11.7	14.00
LCH0045LBALZ	ZF13K4E-PFV	3.15	208-230/1	24.0	3.5	LCE6160	13,140	9.3	37.1	2.10	61	60	15.7	20.00
LCH0045LCALZ	ZF13K4E-TF5	3.15	208-230/3	11.9	3.5	LCE6160	13,140	9.3	22.0	2.10	34	40	15.7	20.00
LCH0055LBACZ	ZF15K4E-PFV	3.15	208-230/1	24.7	3.5	LCE6180	15,850	9.9	38.0	2.10	63	60	15.7	20.00
LCH0055LCACZ	ZF15K4E-TF5	3.15	208-230/3	17.0	3.5	LCE6180	15,850	9.9	28.4	2.10	45	50	15.7	20.00
LCH0060LCACZ	ZF18K4E-TF5	3.15	208-230/3	21.5	3.5	LCE6240	19,174	9.1	35.0	3.10	56	60	23.5	20.00

HTPG 2020 Refrigeration Systems AWEF Compliant

Unit Model #	Compressor Model	AWEF	Volts/Phase	Compressor Run Load Amps	Condensing Unit Fan Load Amps	Evaporator Coil Model #	System Capacity (BTU/HR) @ 100° F Ambient	System T. D.	Min. Circuit Amps (MCA)	Evaporator Fan Load Amps (FLA)	Calc. MOPD Amps.	Max Circuit Breaker or Fuse Size	Max. Defrost Amps	Ref. LBS
Med Temp. (+35 F), R-404a systems designed for a +25 F suction temperature														
RFO060M4SDANT	ZB06KAE-PFV	7.60	208-230/1	5.4	0.5	RL6A066	6,433	11.7	9.3	0.5	15	15	0.0	5.90
RFO060M4SEANT	ZB06KAE-TFV	7.60	208-230/3	3.1	0.5	RL6A066	6,433	11.7	6.4	0.5	9	15	0.0	5.90
RFO080M4SDANT	ZB07KAE-PFV	7.60	208-230/1	5.9	0.5	RL6A073	7,885	12.8	10.4	1.0	16	15	0.0	5.90
RFO080M4SEANT	ZB07KAE-TFV	7.60	208-230/3	3.4	0.5	RL6A073	7,885	12.8	7.3	1.0	11	15	0.0	5.90
RFH100E4SDBNT	RST70C1E-PFV	7.60	208-230/1	6.9	1.0	RL6A073	8,104	13.1	12.1	1.0	19	15	0.0	5.90
RFH100E4SEBNT	RST70C1E-PFV	7.60	208-230/3	4.9	1.0	RL6A073	8,104	13.1	9.6	1.0	15	15	0.0	5.90
RFO100M4SDANT	ZB08KAE-PFV	7.60	208-230/1	7.2	0.5	RL6A094	8,723	11.3	12.0	1.0	19	15	0.0	5.90
RFO100M4SEANT	ZB08KAE-TFV	7.60	208-230/3	3.6	0.5	RL6A094	8,723	11.3	7.5	1.0	11	15	0.0	5.90
RFO130E4SDANT	ZB09KAE-PFV	7.60	208-230/1	9.0	0.5	RL6A094	9,639	12.3	14.3	1.0	23	20	0.0	5.90
RFO130E4SEANT	ZB09KAE-TFV	7.60	208-230/3	7.2	0.5	RL6A094	9,639	12.3	12.0	1.0	19	15	0.0	5.90
RFH125E4SDBNT	RST97C1E-PFV	7.60	208-230/1	9.0	0.5	RL6A117	11,470	11.8	14.3	1.0	23	20	0.0	11.00
RFH125E4SEBNT	RST97C1E-TFV	7.60	208-230/3	5.4	0.5	RL6A117	11,470	11.8	9.8	1.0	15	15	0.0	11.00
RFO150E4SDANT	ZB11KAE-PFV	7.60	208-230/1	9.8	1.0	RL6A117	12,425	12.6	15.8	1.0	26	25	0.0	11.00
RFO150E4SEANT	ZB11KAE-TFV	7.60	208-230/3	6.7	1.0	RL6A117	12,425	12.6	11.9	1.0	19	15	0.0	11.00
RFO180E4SDANT	ZB13KAE-PFV	7.60	208-230/1	10.8	1.0	RL6A130	13,897	12.7	17.0	1.0	28	25	0.0	11.00
RFO180E4SEANT	ZB13KAE-TFV	7.60	208-230/3	8.7	1.0	RL6A130	13,897	12.7	14.4	1.0	23	20	0.0	11.00
RFO200E4SDANT	ZB15KAE-PFV	7.60	208-230/1	14.1	1.0	RL6A161	17,391	12.8	21.6	1.5	36	30	0.0	13.60
RFO200E4SEANT	ZB15KAE-TFV	7.60	208-230/3	9.6	1.0	RL6A161	17,391	12.8	16.0	1.5	26	20	0.0	13.60
RFO250E4SDANT	ZB19KAE-PFV	7.60	208-230/1	16.2	1.0	RL6A181	19,145	12.6	24.3	1.5	40	35	0.0	13.60
RFO250E4SEANT	ZB19KAE-TFV	7.60	208-230/3	12.3	1.0	RL6A181	19,145	12.6	19.4	1.5	32	25	0.0	13.60
RFH300E4SDANT	CS18K6E-PFV	7.60	208-230/1	14.4	1.0	RL6A195	20,688	12.6	22.5	2.0	37	30	0.0	13.60
RFH300E4SEANT	CS18K6E-TFV	7.60	208-230/3	9.4	1.0	RL6A195	20,688	12.6	16.3	2.0	26	20	0.0	13.60
RFH325E4SDANT	CS20K6E-PFV	7.60	208-230/1	16.7	3.1	RL6A235	25,652	12.9	27.5	2.0	44	40	0.0	28.00
RFH325E4SEANT	CS20K6E-TFV	7.60	208-230/3	10.2	3.1	RL6A235	25,652	12.9	19.4	2.0	30	25	0.0	28.00
RFO300E4SDANT	ZB21KAE-PFV	7.60	208-230/1	20.8	3.1	RL6A260	26,739	12.3	32.6	2.0	53	50	0.0	28.00
RFO300E4SEANT	ZB21KAE-TFV	7.60	208-230/3	13.7	3.1	RL6A260	26,739	12.3	23.7	2.0	37	30	0.0	28.00
RFO350E4SDANT	ZB26KAE-PFV	7.60	208-230/1	21.2	3.1	RL6A295	29,618	12.0	33.6	2.5	55	50	0.0	28.00
RFO350E4SEANT	ZB26KAE-TFV	7.60	208-230/3	13.9	3.1	RL6A295	29,618	12.0	24.5	2.5	38	35	0.0	28.00
RFO400E4SDANT	ZB29KAE-PFV	7.60	208-230/1	23.4	3.1	RL6A330	33,203	12.1	36.9	3.0	60	50	0.0	28.00
RFO400E4SEANT	ZB29KAE-TFV	7.60	208-230/3	18.4	3.1	RL6A330	33,203	12.1	30.6	3.0	49	45	0.0	28.00
RFO450E4SDANT	ZB33KAE-PFV	7.60	208-230/1	23.0	3.1	RL6A330	36,652	13.1	36.4	3.0	59	50	0.0	28.00
RFO450E4SEANT	ZB33KAE-TFV	7.60	208-230/3	20.0	3.1	RL6A330	36,652	13.1	32.6	3.0	53	45	0.0	28.00
RFO500E4SDANT	ZB38KAE-PFV	7.60	208-230/1	24.7	3.1	RL6A390	40,808	12.5	38.5	3.0	63	60	0.0	28.00
RFO500E4SEANT	ZB38KAE-TFV	7.60	208-230/3	19.2	3.1	RL6A390	40,808	12.5	31.6	3.0	51	45	0.0	28.00
Low Temp. (-10F), R-404a systems designed for a -20 F suction temperature														
RFH150E4SDANT	CS10K6E-PFV	[ ]	208/230-1	9.8	1.0	RL6E035	2480	9.1	15.3	0.50	25	30	4.9	11.00
RFH150E4SEANT	CS10K6E-TFV	[ ]	208/230-3	6.7	1.0	RL6E035	2480	9.1	0.50	0.50	18	20	4.9	11.00
RFH100L44DANT	CF04K6E-PFV	N/C	208/203-1	8.6	0.5	RL6E035	2560	9.3	0.50	0.50	22	20	4.9	5.90
RFH100L44EANT	CF04K6E-TFV	N/C	208/203-3	5.7	0.5	RL6E035	2560	9.3	0.50	0.50	15	20	4.9	5.90
RFO100L4SDANT	ZB03KAE-PFV	2.89	208/230-1	5.8	0.5	RL6E042	2715	8.5	0.50	0.50	16	20	4.9	5.90
RFO100L4SEANT	ZB03KAE-TFV	2.89	208/230-3	3.7	0.5	RL6E042	2715	8.5	0.50	0.50	11	20	4.9	5.90
RFH200E4SDANT	CS12K6E-PFV	[ ]	208/230-1	9.8	1.0	RL6E042	2914	8.9	0.50	0.50	25	40	4.9	13.60
RFH200E4SEANT	CS12K6E-TFV	[ ]	208/230-3	6.7	1.0	RL6E042	2914	8.9	0.50	0.50	18	30	4.9	13.60
RFH125E4SDANT	RST97C1E-PFV	[ ]	208/230-1	8.6	0.5	RL6E049	3524	9.2	0.50	0.50	22	25	4.9	11.00
RFH125E4SEANT	RST97C1E-TFV	[ ]	208/230-3	5.7	0.5	RL6E049	3524	9.2	0.50	0.50	15	20	4.9	11.00
RFO130L4SDANT	ZF04KAE-PFV	2.94	208/230-1	6.6	0.5	RL6E049	3586	9.3	0.50	0.50	17	20	4.9	5.90
RFO130L4SEANT	ZF04KAE-TFV	2.94	208/230-3	6.0	0.5	RL6E049	3586	9.3	0.50	0.50	16	20	4.9	5.90
RFO130E4SDANT	ZS09KAE-PFV	[ ]	208/230-1	9.0	0.5	RL6E049	3869	9.9	0.50	0.50	23	25	4.9	5.90
RFO130E4SEANT	ZS09KAE-PFV	[ ]	208/230-3	7.2	0.5	RL6E049	3869	9.9	0.50	0.50	19	20	4.9	5.90
RFO160L4SDANT	ZF05KAE-PFV	2.98	208/230-1	7.8	0.5	RL6E066	4500	8.8	1.00	1.00	21	25	9.8	5.90
RFO160L4SEANT	ZF05KAE-TFV	2.98	208/230-3	6.7	0.5	RL6E066	4500	8.8	1.00	1.00	18	20	9.8	5.90
RFH250E4SDANT	CS14K6E-PFV	[ ]	208/230-1	11.2	1.0	RL6E066	4524	8.9	1.00	1.00	29	35	9.8	13.60
RFH250E4SEANT	CS14K6E-TFV	[ ]	208/230-3	8.2	1.0	RL6E066	4524	8.9	1.00	1.00	22	30	9.8	13.60
RFH150E4SDANT	CS10K6E-PFV	[ ]	208/230-1	9.8	1.0	RL6E066	4735	9.2	1.00	1.00	26	30	9.8	11.00
RFH150E4SEANT	CS10K6E-TFV	[ ]	208/230-3	6.7	1.0	RL6E066	4735	9.2	1.00	1.00	19	20	9.8	11.00
RFO150E4SDANT	ZS11KAE-PFV	[ ]	208/230-1	11.3	1.0	RL6E066	4877	9.4	1.00	1.00	29	30	9.8	11.00
RFO150E4SEANT	ZS11KAE-TFV	[ ]	208/230-3	9.3	1.0	RL6E066	4877	9.4	1.00	1.00	24	25	9.8	11.00
RFH300E4SDANT	CS18K6E-PFV	[ ]	208/230-1	14.4	1.0	RL6E066	5022	9.6	1.00	1.00	36	40	9.8	13.60
RFH300E4SEANT	CS18K6E-TFV	[ ]	208/230-3	9.4	1.0	RL6E066	5022	9.6	1.00	1.00	25	30	9.8	13.60
RFO180E4SDANT	ZS13KAE-PFV	[ ]	208/230-1	10.8	1.0	RL6E077	5567	9.2	1.00	1.00	28	30	9.8	11.00
RFO180E4SEANT	ZS13KAE-TFV	[ ]	208/230-3	8.7	1.0	RL6E077	5567	9.2	1.00	1.00	23	25	9.8	11.00
RFH325E4SDANT	CS20K6E-PFV	[ ]	208/230-1	16.7	3.1	RL6E077	5940	9.7	1.00	1.00	43	50	9.8	28.00
RFH325E4SEANT	CS20K6E-TFV	[ ]	208/230-3	10.2	3.1	RL6E077	5940	9.7	1.00	1.00	29	35	9.8	28.00
RFO200E4SDANT	ZF15KAE-PFV	[ ]	208/230-1	14.1	1.0	RL6E090	6739	9.5	1.00	1.00	35	40	9.8	13.60
RFO200E4SEANT	ZF15KAE-TFV	[ ]	208/230-3	9.6	1.0	RL6E090	6739	9.5	1.00	1.00	25	30	9.8	13.60
RFO230L4SDANT	ZF07KAE-PFV	3.14	208/230-1	12.4	1.0	RL6E090	6991	9.8	1.00	1.00	31	35	9.8	11.00
RFO230L4SEANT	ZF07KAE-TFV	3.14	208/230-3	7.8	1.0	RL6E090	6991	9.8	1.00	1.00	21	25	9.8	11.00
RFH200L44DANT	CF09K6E-PFV	[ ]	208/230-1	15.0	1.0	RL6E105	7518	9.2	1.00	1.00	37	40	9.8	11.00
RFH200L44EANT	CF09K6E-TFV	[ ]	208/230-3	9.2	1.0	RL6E105	7518	9.2	1.00	1.00	24	25	9.8	11.00
RFO250E4SDANT	ZS19KAE-PFV	[ ]	208/230-1	16.2	1.0	RL6E105	7539	9.2	1.00	1.00	40	45	9.8	13.60
RFO250E4SEANT	ZS19KAE-TFV	[ ]	208/230-3	12.3	1.0	RL6E105	7539	9.2	1.00	1.00	31	35	9.8	13.60
RFO250L4SDANT	ZF08KAE-PFV	3.15	208/230-1	14.7	1.0	RL6E121	8803	9.3	1.50	1.50	37	45	14.3	13.60
RFO250L4SEANT	ZF08KAE-TFV	3.15	208/230-3	8.7	1.0	RL6E121	8803	9.3	1.50	1.50	24	30	14.3	13.60
RFO300L4SDANT	ZF09K4E-PFV	3.15	208/230-1	16.0	3.1	RL6E121	9604	9.9	1.50	1.50	42	45	14.3	13.60
RFO300L4SEANT	ZF09K4E-TFV	3.15	208/230-3	8.7	3.1	RL6E121	9604	9.9	1.50	1.50	26	30	14.3	13.60
RFH300L44DA	CF12K6E-PFV	[ ]	208/230-1	18.4	1.0	RL6E142	10241	9.2	1.50	1.50	45	40	14.3	13.60
RFH300L44EA	CF12K6E-TFV	[ ]	208/230-3	11.0	1.0	RL6E142	10241	9.2	1.50	1.50	29	35	14.3	13.60
RFO300E4SDANT	ZS21KAE-PFV	[ ]	208/230-1	20.8	3.1	RL6E142	10244	9.2	1.50	1.50	53	60	14.3	28.00
RFO300E4SEANT	ZS21KAE-TFV	[ ]	208/230-3	13.7	3.1	RL6E142	10244	9.2	1.50	1.50	37	45	14.3	28.00
RFO350E4SDANT	ZS26KAE-PFV	[ ]	208/230-1	21.2	3.1	RL6E142	11208	9.9	1.50	1.50	54	60	14.3	28.00
RFO350E4SEANT	ZS26KAE-TFV	[ ]	208/230-3	13.9	3.1	RL6E142	11208	9.9	1.50	1.50	37	45	14.3	28.00
RFO350L4SDANT	ZF11K4E-PFV	3.15	208/230-1	18.6	1.0	RL6E162	11751	9.3	2.00	2.00	46	50	19.2	13.60
RFO350L4SEANT	ZF11K4E-TFV	3.15	208/230-3	10.9	1.0	RL6E162	11751	9.3	2.00	2.00	29	35	19.2	13.60
RFO400E4SDANT	ZS29KAE-PFV	[ ]	208/230-1	23.4	3.1	RL6E162	12723	9.9	2.00	2.00	59	60	19.2	28.00
RFO400E4SEANT	ZS29KAE-TFV	[ ]	208/230-3	18.4	3.1	RL6E162	12723	9.9	2.00	2.00	48	45	19.2	28.00
RFO400L4SDANT	ZF13K4E-PFV	3.15	208/230-1	22.4	3.1	RL6E182	13834	9.6	2.00	2.00	57	60	19.2	28.00
RFO400L4SEANT	ZF13K4E-TFV	3.15	208/230-3	11.9	3.1	RL6E182	13834	9.6	2.00	2.00	33	45	19.2	28.00
RFO450E4SDANT	ZS33KAE-PFV	[ ]	208/230-1	23.4	3.1	RL6E182	14094	9.7	2.00	2.00	59	60	19.2	28.00
RFO450E4SEANT	ZS33KAE-TFV	[ ]	208/230-3	18.4	3.1	RL6E182	14094	9.7	2.00	2.00	48	60	19.2	28.00
RFO500E4SDANT	ZS38K4E-PFV	[ ]	208/230-1	28.5	3.1	RL6E244	16823	8.9	3.00	3.00	72	60	29.0	28.00
RFO500E4SEANT	ZS38K4E-TFV	[ ]	208/230-3	19.2	3.1	RL6E244	16823	8.9	3.00	3.00	51	50	29.0	28.00
RFO500L4SDANT	ZF15K4E-PFV	3.15	208/230-1	24.7	3.1	RL6E244	17208	9.1	3.00	3.00	63	60	29.0	28.00
RFO500L4SEANT	ZF15K4E-TFV	3.15	208/230-3	17.0	3.1	RL6E244	17208	9.1	3.00	3.00	46	50	19.0	28.00
RFO600L4SEANT	ZF18K4E-TFV	3.15	208/230-3	19.6	3.1	RL6E281	19854	9.1	3.00	3.00	52	60	29.0	28.00
RFO600E4SEANT	ZS45K4E-TFV	3.15	208/230-3	21.5	3.1	RL6E281	20589	9.3	3.00	3.00	56	60	29.0	28.00

HTPG 2020 Agency Compliant Refrigeration Systems W/AWEF														
Unit Model #	Compressor Model	AWEF	Volts/Phase	Compressor Run Load Amps	Condensing Unit Fan Load Amps	Evaporator Coil Model #	System Capacity (BTU/HR) @ 100° F Ambient	System T. D.	Min. Circuit Amps (MCA)	Evaporator Fan Load Amps (FLA)	Calc. MOPD Amps.	Max Circuit Breaker or Fuse Size	Max. Defrost Amps	Ref. LBS
Med Temp. (+35 F), R-448a systems designed for a +25 F suction temperature														
RFH055E4SDBNT	RST45C1E-PFV	7.60	208/230-1	5.1	0.5	RL6A041	5,156	12.7	8.9	0.5	14	15	0.0	6.1
RFO060M4SDANT	ZB06KAE-PFV	7.60	208/230-1	5.4	0.5	RL6A052	6,036	12.1	9.3	0.5	15	15	0.0	6.1
RFO060M4SEANT	ZB06KAE-TFV	7.60	208/230-3	3.1	0.5	RL6A052	6,036	12.1	6.4	0.5	9	15	0.0	6.1
RFH080E4SDBNT	RST70C1E-PFV	7.60	208/230-1	9.8	0.5	RL6A052	6,315	12.5	14.8	0.5	25	20	0.0	6.1
RFO080M4SDANT	ZB07KAE-PFV	7.60	208/230-1	5.9	0.5	RL6A052	6,859	13.4	9.9	0.5	16	15	0.0	6.1
RFO080M4SEANT	ZB07KAE-TFV	7.60	208/230-3	3.4	0.5	RL6A052	6,859	13.4	6.8	0.5	10	15	0.0	6.1
RFH100E4SDBNT	RST70C1E-PFV	7.60	208/230-1	9.8	0.5	RL6A066	7,898	12.1	15.3	1.0	25	20	0.0	6.1
RFH100E4SEBNT	RST70C1E-TFV	7.60	208/230-3	9.8	0.5	RL6A066	7,898	12.1	15.3	1.0	25	20	0.0	6.1
RFO100M4SDANT	ZB08KAE-PFV	7.60	208/230-1	7.2	0.5	RL6A066	8,457	12.8	12.0	1.0	19	15	0.0	6.1
RFO100M4SEANT	ZB08KAE-TFV	7.60	208/230-3	3.6	0.5	RL6A066	8,457	12.8	7.5	1.0	11	15	0.0	6.1
RFH150E4SDANT	CS10K6E-PFV	7.60	208/230-1	9.8	1.0	RL6A073	9,993	13.8	15.8	1.0	26	25	0.0	11.6
RFH150E4SEANT	CS10K6E-TFV	7.60	208/230-3	6.7	1.0	RL6A073	9,993	13.8	11.9	1.0	19	15	0.0	11.6
RFH125E4SDBNT	RST97C1E-PFV	7.60	208/230-1	9.0	0.5	RL6A094	10,913	12.0	14.3	1.0	23	20	0.0	11.6
RFH125E4SEBNT	RST97C1E-TFV	7.60	208/230-3	5.4	0.5	RL6A094	10,913	12.0	9.8	1.0	15	15	0.0	11.6
RFO150E4SDANT	ZS11KAE-PFV	7.60	208/230-1	11.3	1.0	RL6A094	11,164	12.2	17.6	1.0	29	25	0.0	11.6
RFO150E4SEANT	ZS11KAE-TFV	7.60	208/230-3	9.3	1.0	RL6A094	11,164	12.2	15.1	1.0	24	20	0.0	11.6
RFH200E4SDANT	CS12K6E-PFV	7.60	208/230-1	9.8	1.0	RL6A094	11,552	12.6	15.8	1.0	26	25	0.0	11.6
RFH200E4SEANT	CS12K6E-TFV	7.60	208/230-3	6.7	1.0	RL6A094	11,552	12.6	11.9	1.0	19	15	0.0	11.6
RFO180E4SDANT	ZS13KAE-PFV	7.60	208/230-1	10.8	1.0	RL6A094	12,307	13.3	17.0	1.0	28	25	0.0	11.6
RFO180E4SEANT	ZS13KAE-TFV	7.60	208/230-3	8.7	1.0	RL6A094	12,307	13.3	14.4	1.0	23	20	0.0	11.6
RFH250E4SDANT	CS14K6E-PFV	7.60	208/230-1	11.2	1.0	RL6A094	12,953	13.9	17.5	1.0	29	25	0.0	14.3
RFH250E4SEANT	CS14K6E-TFV	7.60	208/230-3	8.2	1.0	RL6A094	12,953	13.9	13.8	1.0	22	20	0.0	14.3
RFO200E4SDANT	ZS15KAE-PFV	7.60	208/230-1	14.1	1.0	RL6A117	15,182	13.2	21.1	1.0	35	35	0.0	14.3
RFO200E4SEANT	ZS15KAE-TFV	7.60	208/230-3	9.6	1.0	RL6A117	15,182	13.2	15.5	1.0	25	20	0.0	14.3
RFO250E4SDANT	ZS19KAE-PFV	7.60	208/230-1	16.2	1.0	RL6A130	16,951	13.1	23.8	1.0	40	40	0.0	14.3
RFO250E4SEANT	ZS19KAE-TFV	7.60	208/230-3	12.3	1.0	RL6A130	16,951	13.1	18.9	1.0	31	30	0.0	14.3
RFH300E4SDANT	CS18K6E-PFV	7.60	208/230-1	14.4	1.0	RL6A130	17,080	13.2	21.5	1.0	36	35	0.0	14.3
RFH300E4SDANT	CS18K6E-PFV	7.60	208/230-1	9.4	1.0	RL6A130	17,080	13.2	15.3	1.0	25	20	0.0	14.3
RFH325E4SDANT	CS20K6E-PFV	7.60	208/230-1	16.7	3.1	RL6A181	23,380	13.0	27.0	1.5	44	40	0.0	29.4
RFH325E4SEANT	CS20K6E-TFV	7.60	208/230-3	10.2	3.1	RL6A181	23,380	13.0	18.9	1.5	29	25	0.0	29.4
RFO300E4SDANT	ZS21KAE-PFV	7.60	208/230-1	20.8	3.1	RL6A195	25,245	13.2	32.6	2.0	53	50	0.0	29.4
RFO300E4SEANT	ZS21KAE-TFV	7.60	208/230-3	13.7	3.1	RL6A195	25,245	13.2	23.7	2.0	37	35	0.0	29.4
RFO350E4SDANT	ZS26KAE-PFV	7.60	208/230-1	21.2	3.1	RL6A195	26,372	13.7	33.1	2.0	54	50	0.0	29.4
RFO350E4SEANT	ZS26KAE-TFV	7.60	208/230-3	13.9	3.1	RL6A195	26,372	13.7	24.0	2.0	38	35	0.0	29.4
RFO400E4SDANT	ZS29KAE-PFV	7.60	208/230-1	23.4	3.1	RL6A235	31,550	13.3	35.9	2.0	59	50	0.0	29.4
RFO400E4SEANT	ZS29KAE-TFV	7.60	208/230-3	18.4	3.1	RL6A235	31,550	13.3	29.6	2.0	48	45	0.0	29.4
RFO450E4SDANT	ZS33KAE-PFV	7.60	208/230-1	23.0	3.1	RLA6260	35,130	13.6	35.4	2.0	58	50	0.0	29.4
RFO450E4SEANT	ZS33KAE-TFV	7.60	208/230-3	20.0	3.1	RLA6260	35,130	13.6	31.6	2.0	52	50	0.0	29.4
RFO500E4SDANT	ZS38K4E-PFV	7.60	208/230-1	28.5	3.1	RLA6295	39,006	12.8	42.7	2.5	71	70	0.0	29.4
RFO500E4SEANT	ZS38K4E-TFV	7.60	208/230-3	19.2	3.1	RLA6295	39,006	12.8	31.1	2.5	50	45	0.0	29.4
RFO600E4SEANT	ZS45K4E-TFV	7.60	208/230-3	21.5	3.1	RLA6330	43,568	13.2	34.5	3.0	56	50	0.0	29.4
Low Temp. (-10F), R-448a systems designed for a -20 F suction temperature														
RFO100L4SDANT	ZF03KAE-PFV	2.89	208/230-1	5.8	0.5	RL6E035	2,577	8.4	9.8	0.5	16	20	4.9	6.10
RFO100L4SEANT	ZF03KAE-TFV	2.89	208/230-3	3.7	0.5	RL6E035	2,577	8.4	7.1	0.5	11	20	4.9	6.10
RFO130L4SDANT	ZF04KAE-PFV	2.94	208/230-1	6.6	0.5	RL6E035	3,225	10.1	10.8	0.5	17	20	4.9	6.10
RFO130L4SEANT	ZF04KAE-TFV	2.94	208/230-3	6.0	0.5	RL6E035	3,225	10.1	10.0	0.5	16	20	4.9	6.10
RFO160L4SDANT	ZF05KAE-PFV	2.98	208/230-1	7.8	0.5	RL6E042	3,871	9.9	12.3	0.5	20	25	4.9	6.10
RFO160L4SEANT	ZF05KAE-TFV	2.98	208/230-3	6.7	0.5	RL6E042	3,871	9.9	10.9	0.5	18	20	4.9	6.10
RFO230L4SDANT	ZF07KAE-PFV	3.14	208/230-1	12.4	1.0	RL6E066	6,105	10.0	19.0	1.0	31	35	9.8	11.60
RFO230L4SEANT	ZF07KAE-TFV	3.14	208/230-3	7.8	1.0	RL6E066	6,105	10.0	13.3	1.0	21	25	9.8	11.60
RFO250L4SDANT	ZF08K4E-PFV	3.15	208-230-1	14.7	1.0	RL6E077	7,598	10.6	21.9	1.0	37	45	9.8	14.30
RFO250L4SEANT	ZF08K4E-TFV	3.15	208/230-3	8.7	1.0	RL6E077	7,598	10.6	14.4	1.0	23	30	9.8	13.60
RFO300L4SDANT	ZF09K4E-PFV	3.15	208/230-1	16.0	3.1	RL6E090	8,673	10.2	25.6	1.0	42	45	9.8	13.60
RFO300L4SEANT	ZF09K4E-TFV	3.15	208/230-3	8.7	3.1	RL6E090	8,673	10.2	16.5	1.0	25	30	9.8	13.60
RFO350L4SDANT	ZF11K4E-PFV	3.15	208/230-1	18.6	3.1	RL6E121	10,878	9.7	29.4	1.5	48	50	14.3	13.60
RFO350L4SEANT	ZF11K4E-TFV	3.15	208/230-3	10.9	3.1	RL6E121	10,878	9.7	19.7	1.5	31	35	14.3	13.60
RFO400L4SDANT	ZF13K4E-PFV	[ ]	208/230-1	22.4	3.1	RL6E142	13,382	9.6	34.1	1.5	57	60	14.3	28.00
RFO400L4SEANT	ZF13K4E-TFV	[ ]	208/230-3	11.9	3.1	RL6E142	13,382	9.6	21.0	1.5	33	40	14.3	28.00
RFO500L4SDANT	ZF15K4E-PFV	3.15	208/230-1	24.7	3.1	RL6E182	15,645	9.4	37.5	2.0	62	60	19.2	28.00
RFO500L4SEANT	ZF15K4E-TFV	3.15	208/230-3	17.0	3.1	RL6E182	15,645	9.4	27.9	2.0	45	50	19.2	28.00
RFO600L4SEANT	ZF18K4E-TFV	3.15	208/230-3	19.6	3.1	RL6E200	18,667	10.2	31.6	2.5	51	60	24.1	28.00

REPLACEMENT PARTS

ICS maintains complete stock of replacement doors, hardware, gaskets and refrigeration parts for your convenience. Also available is optional equipment including door curtains, light switches/digital thermometers, floor mats and shelving designed to enhance the performance of your ICS unit.

TO ORDER PARTS, PLEASE CALL TOLL FREE 1-800-333-5653

Your ICS walk-in is identified by a serial number located on the nameplate by the main entrance door. When calling for parts or service, please refer to this number for faster service and to insure accuracy in handling your request.

Improve the Performance and Safety of your Walk-in

We can bring your old walk-in back to "better-than-new" condition:

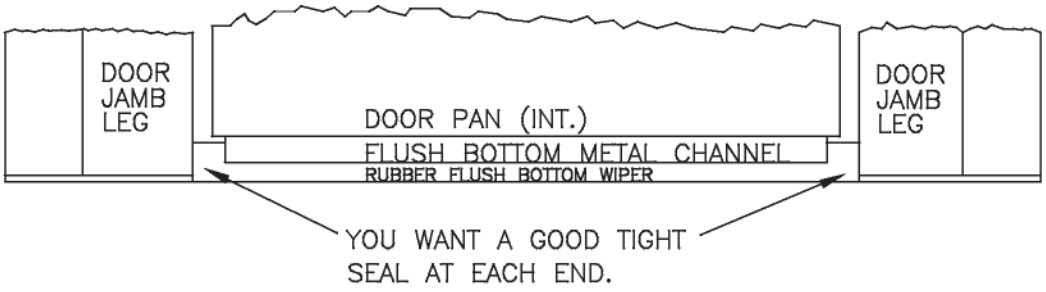
After

- **New Door and Jamb to Protect the Food**
- **New Safety-tread Flooring to Protect Employees**
- **New Controls to Maintain Temperatures Efficiently**

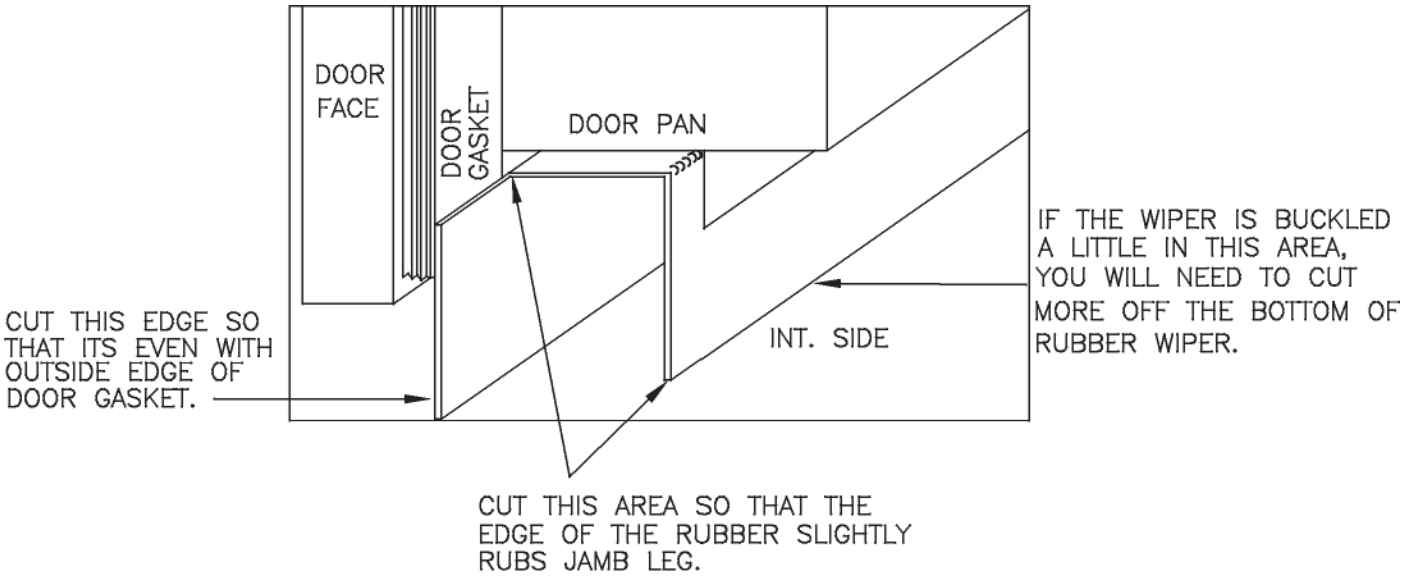
Before

- **Reconditioned Interior or Exterior to Enhance Appearance**
- **New Mechanical Equipment to Reduce Maintenance**
- **and More**

REPLACING AND FITTING DOOR WIPERS
CHANGING AND TRIMMING



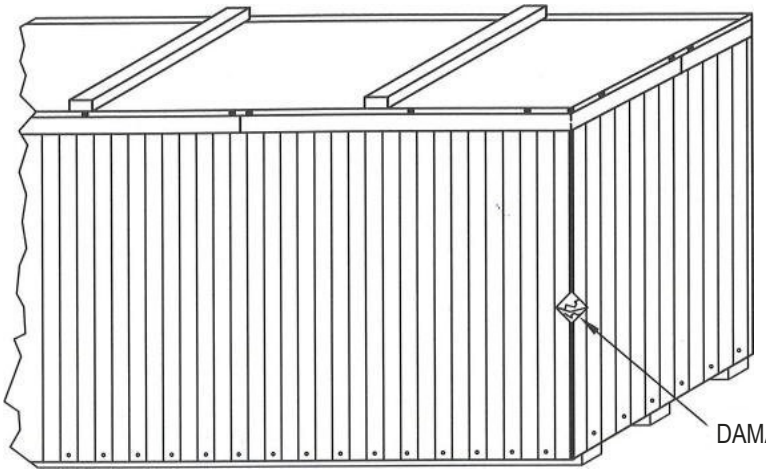
TO CHECK INSTALLATION, TURN ON LIGHTS, CLOSE DOOR AND CHECK FOR LIGHT. LIGHT SEEN FROM INSIDE THE FREEZER/COOLER INDICATES AN AIR LEAK.



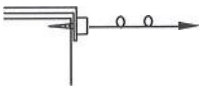
REPAIRING PATCHING DAMAGED CORNERS

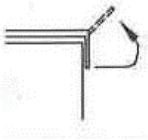
NOTE: DO NOT REMOVE EXISTING SIDING.

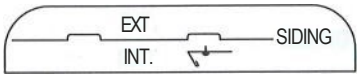
REMOVE ROOF TRIM BY REMOVING PHILLIPS HEAD SCREWS FROM TRIM RETAINER AND TRIM.



REMOVE 5/16" SCREWS FROM ROOF METAL IN AREA TO BE PATCHED, GENTLY BEND ROOF METAL UP.





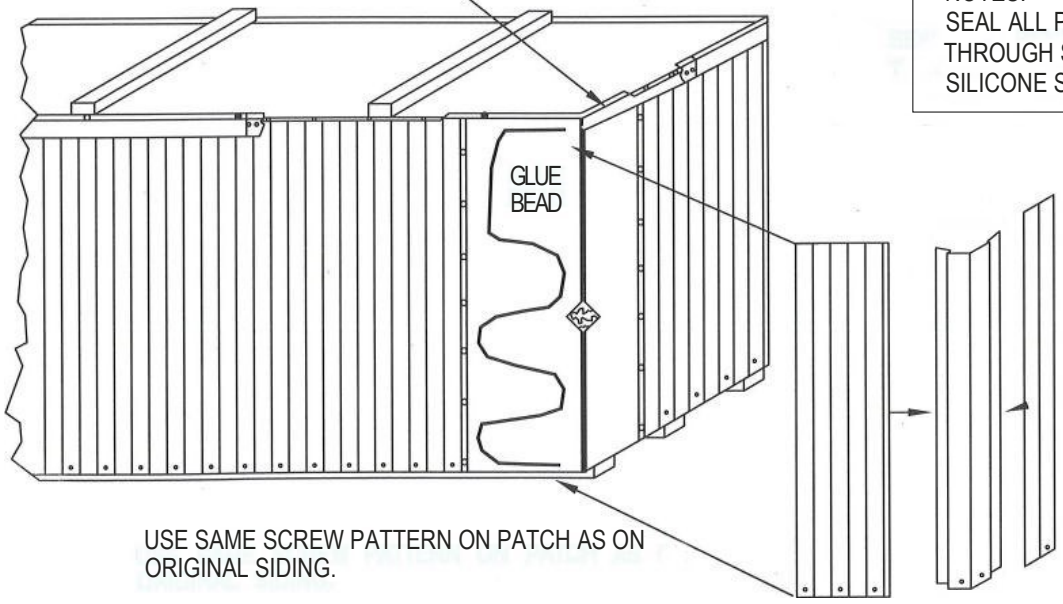


YOU MAY ALSO HAVE TO REMOVE ROOF TRIM CLIPS IF THEY ARE IN AREA TO BE PATCHED.

TO DETERMINE AREA TO BE PATCHED, GO BEYOND AREA THAT IS DAMAGED,GO TO THE BOTTOM OF THE PROTRUDING SIDING RIDGE AND USE IT AS A STRAIGHT EDGE TO LOCATE PATCH TRIM. (SEE EXAMPLE)

DO NOT DAMAGE SEALANT, PEEL IT UP OFF ORIGINAL SIDING AND REUSE ON NEW SIDING.

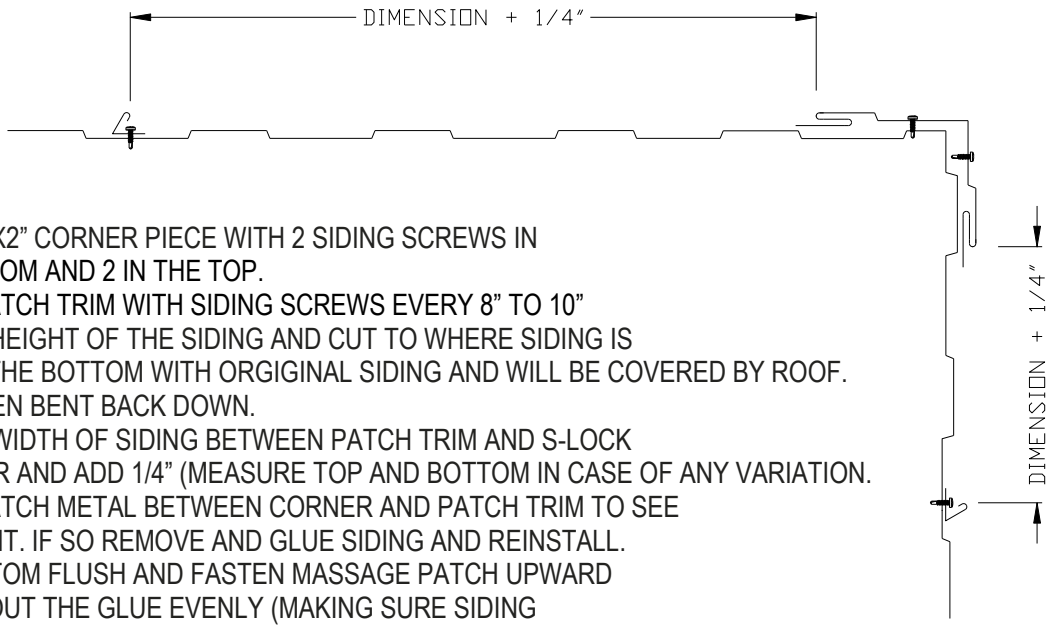
NOTES:
SEAL ALL PENETRATIONS THROUGH SIDING WITH SILICONE SEALANT.



USE SAME SCREW PATTERN ON PATCH AS ON ORIGINAL SIDING.

2” x 2” 90° CORNER

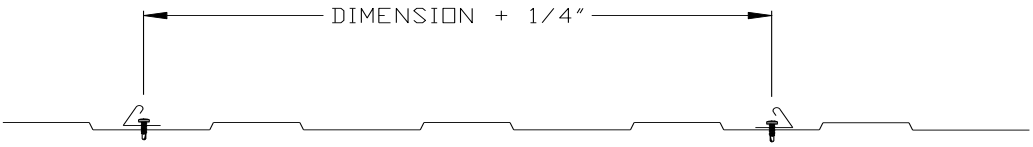
REPAIRING PATCHING DAMAGED CORNERS



1. INSTALL 2"X2" CORNER PIECE WITH 2 SIDING SCREWS IN THE BOTTOM AND 2 IN THE TOP.
2. INSTALL PATCH TRIM WITH SIDING SCREWS EVERY 8" TO 10"
3. MEASURE HEIGHT OF THE SIDING AND CUT TO WHERE SIDING IS FLUSH AT THE BOTTOM WITH ORGIGINAL SIDING AND WILL BE COVERED BY ROOF. METAL WHEN BENT BACK DOWN.
4. MEASURE WIDTH OF SIDING BETWEEN PATCH TRIM AND S-LOCK ON CORNER AND ADD 1/4" (MEASURE TOP AND BOTTOM IN CASE OF ANY VARIATION.
5. INSTALL PATCH METAL BETWEEN CORNER AND PATCH TRIM TO SEE IF IT WILL FIT. IF SO REMOVE AND GLUE SIDING AND REINSTALL. MAKE BOTTOM FLUSH AND FASTEN MASSAGE PATCH UPWARD TO WORK OUT THE GLUE EVENLY (MAKING SURE SIDING IS STILL AN TRIM AND S-LOCK.
6. PUT A FEW SCREWS IN TOP OF SIDING, FLATTEN PATCH GENTLY SO ORGINIAL SCREW HEADS DONN'T SHOW THROUGH PATCH.
7. BEND ROOF METAL DOWN, SCREW IT BACK IN PLACE, REPLACE ROOF TRIM CLIPS AND THEN ROOF TRIM.

DO NOT REMOVE EXISTING SIDING

WALL REPAIR



DIRECTIONS: SAME AS CORNER PATCH BUT WITH 2 PIECES OF PATCH TRIM INSTEAD OF ONE BEING A PREMADE CORNER.

SAFETY TIPS

Floors

Since walk-in floors can become slippery, all smooth floors should be equipped with mats or non-skid strips. Appropriate foot wear is required for all employees.

Cleaning the Blower Coil

All electrical power should be disconnected before cleaning the blower coil. Make certain that all breakers or disconnects are in the "off" position, including those located in the ICS control panel(s).

Dry Ice

If dry ice is used in a walk-in, it is important to have at least two employees on hand to transfer the product. Dry ice replaces oxygen in the air with carbon dioxide and can be dangerous in an enclosed space. Do not enter a walk-in containing dry ice without someone standing by.

Interior-Release Handles

Every door on an ICS walk-in is equipped with an inside release mechanism to prevent employees from accidentally being locked in. Periodically check each door to be certain that the release mechanism is working properly. If inside release is not working properly, call for service immediately.

Covers & Guards

Electrical box covers, light globes and fan guards should be in place at all times except when the unit is being serviced by a qualified maintenance technician. The absence of these items can result in serious injury or death. Immediately replace any covers, globes or guards that are loose or missing.

SERVICE PROCEDURE FOR WARRANTY CLAIMS

If you think you have a potential warranty claim Or unit malfunction, you should review the following checklist before contacting you refrigeration technician:

A. If there is an "on/off" switch, is it in the "ON" position?
B. Is there heat in the drain pan of the evaporator coil? If so, the unit may be in a defrost cycle
C. Is the thermometer broken?
D. Is there power to the unit? (The circuit breakers may be tripped.)

Then:

1. Contact your refrigeration service company and request them to inspect the unit.
2. When such repairs are authorized, ICS will issue a work order number to you service company by telephone and written work order shall be sent by mail or fax to the service company.
3. All invoices for warranty service claims should be itemized as to date, name of customer, location of unit, description of work performed, materials and parts repaired or replaced, hours of labor and the serial number of the unit. The work order number should also be shown on the warranty claim, or it will not be honored or paid by ICS.
4. When requested, all defective parts are to be returned to ICS at 215 E. 13th Street, Andover Kansas 67002, motor freight, collect.
5. All warranty service claim invoices should be returned to ICS within 30 days of date of the work performed. Claims over 60days old will not be honored or paid by ICS.
6. If immediate repairs cannot be made and there is danger of product loss die to mechanical malfunction caused by a defect in materials or labor, alternate storage should be arranged, to preserve the product. ICS will pay for ice or other storage required to preserve your product in the same manner as it pays for warranty service claims above set out.

This service procedure should be made available and explained to your key operators. If you call a service company and the equipment does not require warranty service repairs caused by defects in materials or workmanship, ICS will not pay for the service call, so you should follow carefully the previous checklist procedure.

To obtain warranty service authorization for units in the United States, Canada, and Mexico please call 24 hours:

Ph. 1-800-333-5653

Fax 1-316-733-2434

Customers outside of the United State, Canada, or Mexico call:

1-316-733-1385

QRC Quick Response Controller Troubleshooting Guide

PROBLEM	Step ACTION ITEM	IF OK	IF NOT OK
LED is not lit.	1. Check Primary Power supply Disconnect 2. Check Voltage to Evaporator Transformer 3. Check Transformer Secondary Output Volts 4. Check Voltage Control Board (24V and C) 5. Replace Control Board	Go to next step	1. Check fuses and circuit breakers 2. Check Field wiring for breaks 3. Replace if necessary 4. Check factory wiring and connections
LED shows **Coo,** but compressor will not run	1. Check Compressor internal overloads 2. Check Compressor Contactor Coil Voltage 3. Check Compressor Contactor "pulled in"	Go to next step	1. Wait for reset 2. Check internal condensing unit wiring 3. Replace as needed
ERROR Codes: E1 Room Sensor E2 Defrost Sensor E3 Suction Sensor E4 Suction Transducer E5 Outdoor Sensor	 Check Sensor and Board Connection Check Sensor and Board Connection Check Sensor and Board Connection Check Transducer and Board Connection Check Sensor, Wiring and Board Connection		 Replace as needed Replace as needed Replace as needed Replace as needed Replace or Remove
E6 Low Superheat During Cooling (0°F for 2 minutes)	1. Check Refrigerant Type 2. Check coil for ice 3. Check Control Board step position from board LED 4. Check Electric Expansion Valve Closure 5. Compressor Not Operating 6. Check Suction Temperature Sensor 7. Check Suction Pressure Transducer	Go to next step	1. Compare board setpoint and refrigerant 2. Defrost coil and check defrost cycle settings/ setpoints, defrost sensor and heater amps. 3. Replace board if EEV steps not at 2. 4. Pumpdown system see if LPS opens of if it times out (EEV is bad or LPS is set incorrectly, if times out) - See Pumpdown) 5. Check overloads and contactor. 6. Compare board sensor reading against actual suction line temperature. 7. Compare pressure reading against gauges.
E9 Multi-out to Multi-in Communication Wiring (only shows after initial successful connection)	1. Check for 24 volts power to the board 2. Check for crossed communication wiring (Multi-out not wired to multi-in terminals) 3. Check for broken communication wiring	Go to next step	1. If no voltage, see "LED is not lit" above for low voltage, see"88888 LED displayed" 2. Correct wiring from "Master" unit Multi-out to Multi-in of "Slave" unit, etc. to all Slaves and return Master. (See wiring Diagrams) 3. Correct wiring between first Slave with error to previous board in the sequence.
888 LED display (power is below 18V and Appears at initial power)	1. Check board for proper ground on mounting screws 2. Check Voltage to Evaporator Transformer 3. Check Transformer Secondary Output Volts 4. Check Voltage at Control Board (24 and C)	Go to next step	1. Replace/tighten screws 2. Check field wiring for breaks or shorts 3. Replace if necessary 4. Check factory wiring and connections
LED displays dLY hen oFF With not displayed errors	1. Check board for proper grounding on mounting screws 2. Check for low voltage 3. Check for short in field wiring from "comp" on board to condensing unit terminal connection 4. Replace defective contactor (holding coil)	Go to next step	1. Replace/tighten screws 2. Check all steps for "888 LED display" Voltage could drop off too fast to show. 3. Check internal factory wiring to compressor contactor.

QRC Quick Response Controller Troubleshooting Guide

PROBLEM	Step ACTION ITEM	IF OK	IF NOT OK
Cannot get to box temperature	1. Check system operation: Is it running? 2. Check system charge 3. Check for proper operating superheat 4. Check for high superheat and EEV wide open 5. Check Low Pressure Safety Switch 6. Compare equipment capacity with requirements 7. Check box temperature setpoint 8. Check compressor performance 9. Check condenser coil for dirt/debris 10. Check condenser of non-condensables 11. Check condenser fan operation 12. Check for correct refrigerant type 13. Check for iced evaporator coil 14. Check defrost parameters 15. Check superheat setpoint (too high?) 16. Check display values (°F or °C)	Go to next step	1. Check power to condensing unit Check position of Service Mode switches Check compressor overloads and contractor 2. Add or remove refrigerant to proper charge 3. Check EEV operation Check control board EEV signal Check suction sensor and transducer 4. Check EEV inlet screen and restrictions Check liquid line sizing Check head pressure transducer 5. Correctly set or replace if bad 6. Add or replace with more/larger equipment 7. Correct setpoint to proper value 8. Check compressor application limitations Check integrity of compressor operation (impaired, worn or damaged components) 9. Clean condenser coil 10. Remove all non-condensables 11. Replace/repair fan blade, motor, cycling switch or make corrective adjustments 12. Compare board setpoint and refrigerant 13. Defrost coil and check defrost cycles settings/setpoints and defrost sensor 14. Correct defrost setpoints in program (frequency and termination of defrost) 15. Correct setpoint for more cooling surface 16. Correct setpoint for proper display values
	Placing system into **SERVICE MODE**		Terminating **SERVICE MODE**
Service Mode (**SEr** is displayed)	1. Use Remote Service Switch in condensing unit 2. Pressing “Force Service” button board* twice 3. Connection between “Ser” and “C” on board (all are wired in parallel; all will activate mode) *ONLY Master board on multiple evaporators systems	Go to next step	1. Must terminate using same switch 2. Press “Clear” button on board 3. Open connection between “Ser” and “C” (Note: If multiple switches were placed in Service Mode, all must be “open” to terminate the mode)

EcoNet Test & Service Diagnostic Guide

Test/Service Mode

If the user desires to temporarily disable the system without disconnecting power to the unit, at the controller display select
Settings ⟹ *System Enabled* ⟹ *No.*

This function forces system pump down (EXV closes) and the fans turn off. The sensor inputs (temperatures, pressure, etc.) are still functional and can be viewed on the display.
To restart the system and enable cooling again, at the display select
Settings ⟹ *System Enabled* ⟹ *Yes.*

The following sensors are continuously monitored and an alarm is generated in case of failure. A red LED at the controller board will light up to indicate active alarms. The active alarm automatically clears once the sensor is re-paired or replaced.

Currently active alarms can be viewed on the display by selecting
Service ⟹ *Current Alarms.*

Any previously active alarms can be viewed in the display by selecting
Service ⟹ *Current History.*

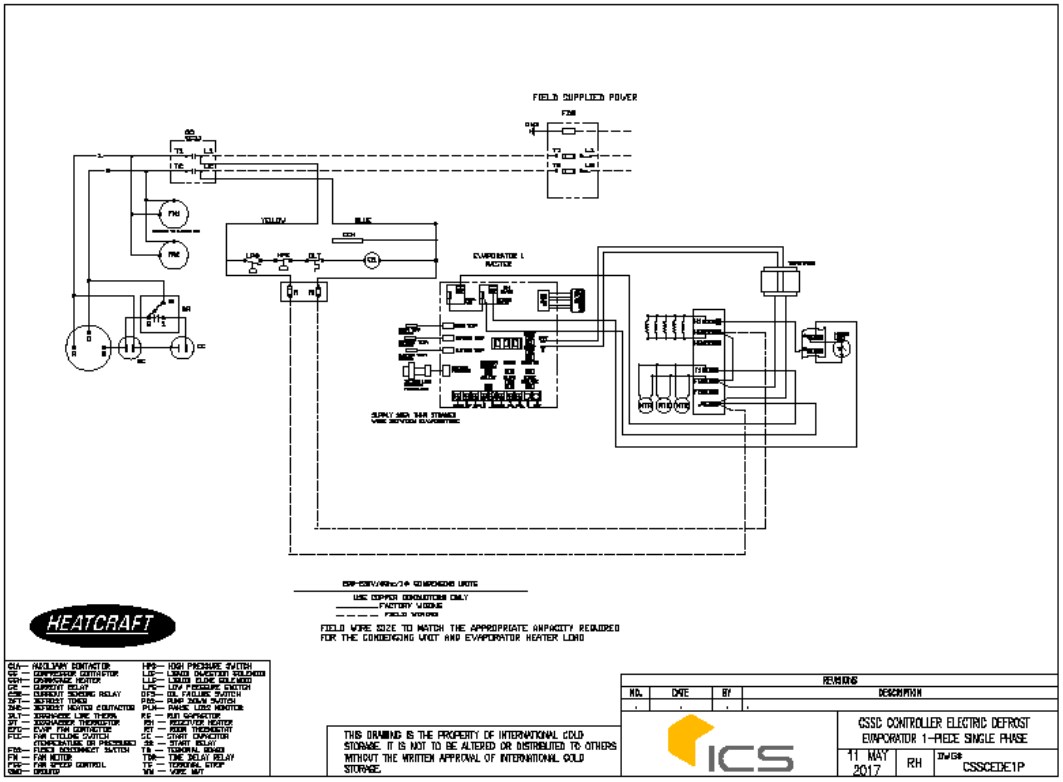
Diagnostics

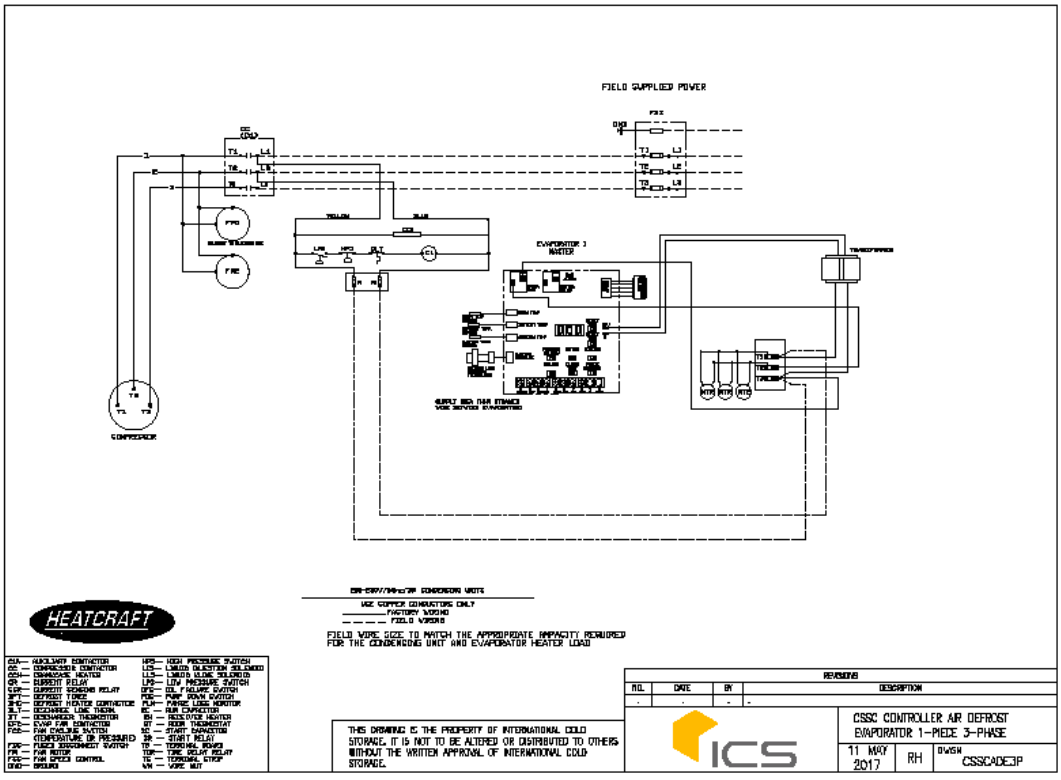
1. Space Temp
   a. On failure, Cooling ON and OFF periods are run based on previous cycle averages.
2. Evap Temp
   a. On failure, defrost cycle will run until max defrost time (60 minutes) has elapsed.
3. Evap Temp 2 (Not applicable on Low Profile Evaporators)
   a. Same as Evap Temp 1, but only if Evap Coil Type = Dual
4. Suction Temp
   a. On failure, EXV remains open at a fixed position. No superheat calculation is available.
5. Suction Pressure
   a. On failure, Evap Temp will be used with Suction Temp to obtain approximate superheat calculation. If Evap Temp sensor input has also failed, EXV to remain open at a fixed position.
6. Drain Temp (if applicable)

Diagnostics Operational Limits

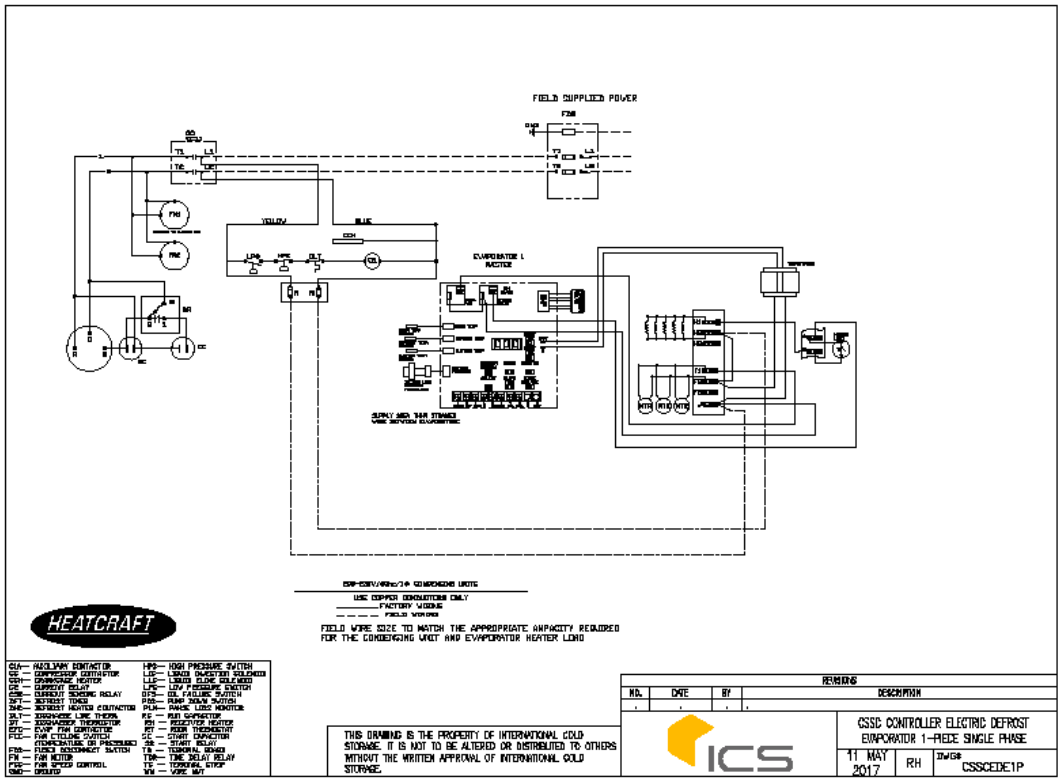
1. Voltage: 115V/230V
2. Operating Temp range: -40°F to 122°F 3
3. Operating Humidity range: 0% to 97% RH condensing
4. Groups/Leaders/Members: 32 devices max on daisy chain; 1000 ft. max length from first device to last device on daisy chain
5. Defrost Relay #1: 24A at 240VAC
6. Defrost Relay #2: 24A at 240VAC
7. Aux Relay #1: 3A at 120VAC 8

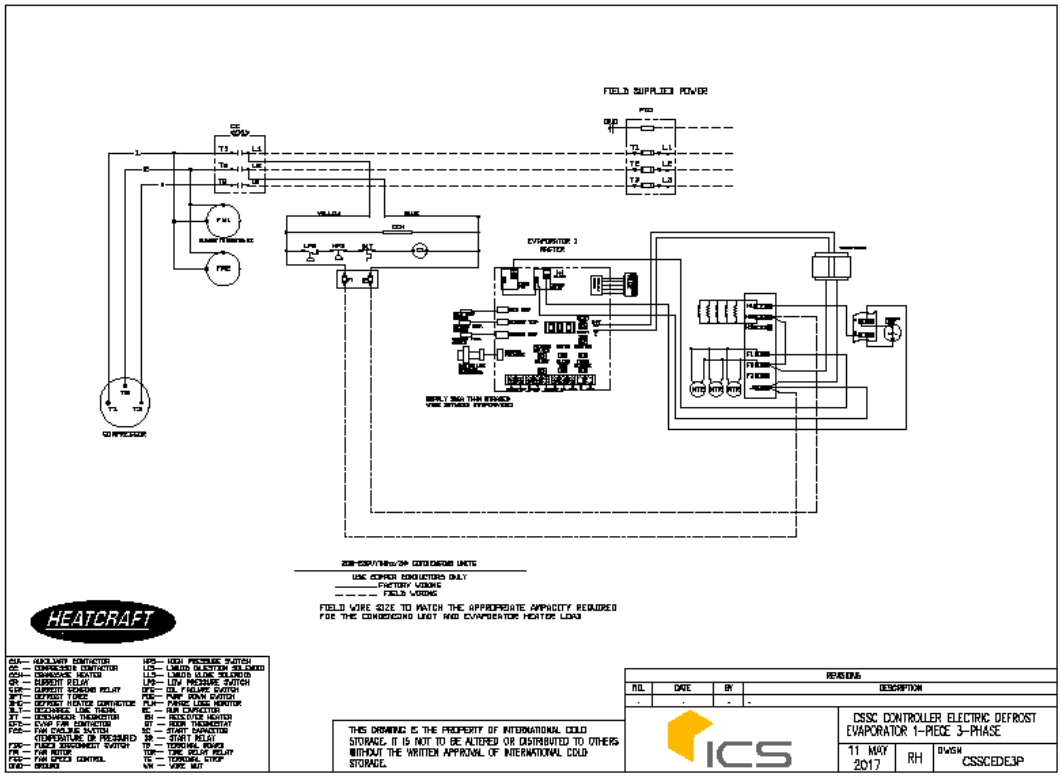
QRC Quick Response Controller Wiring Diagrams



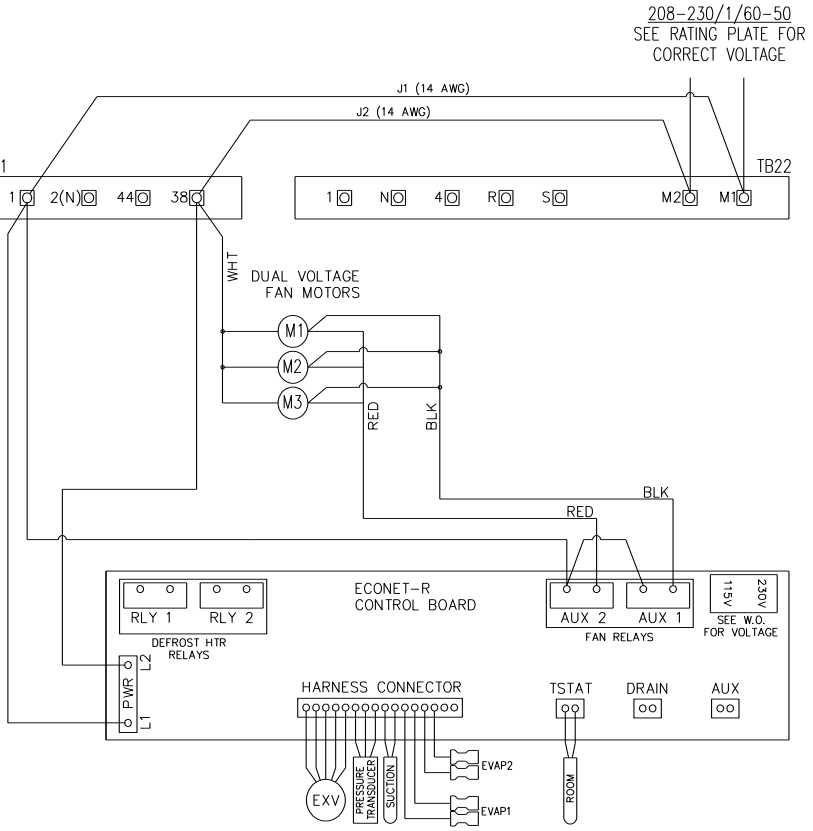


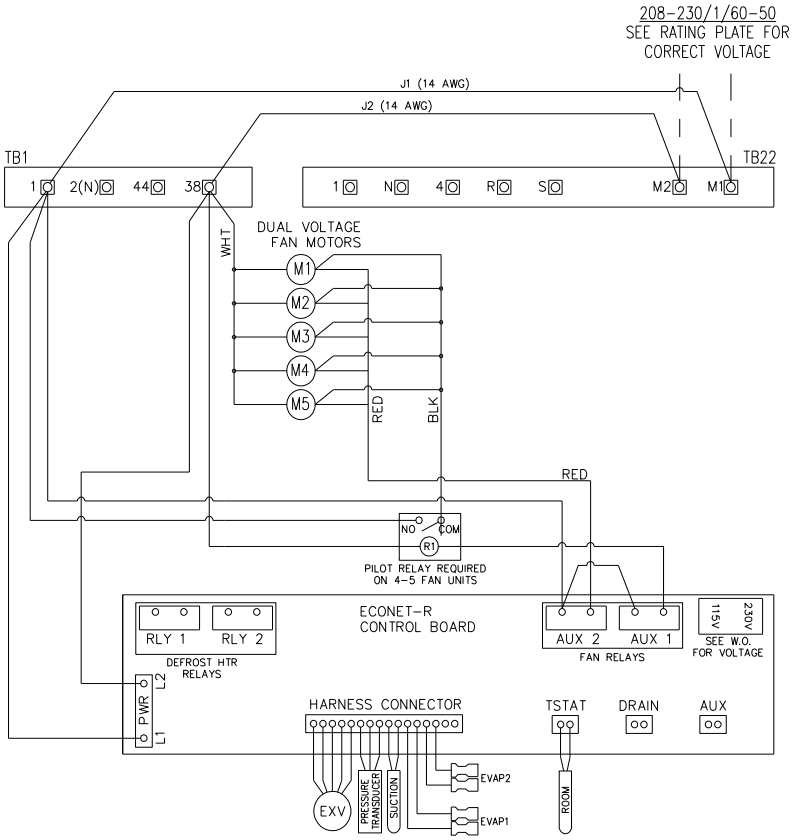
QRC Quick Response Controller Wiring Diagrams



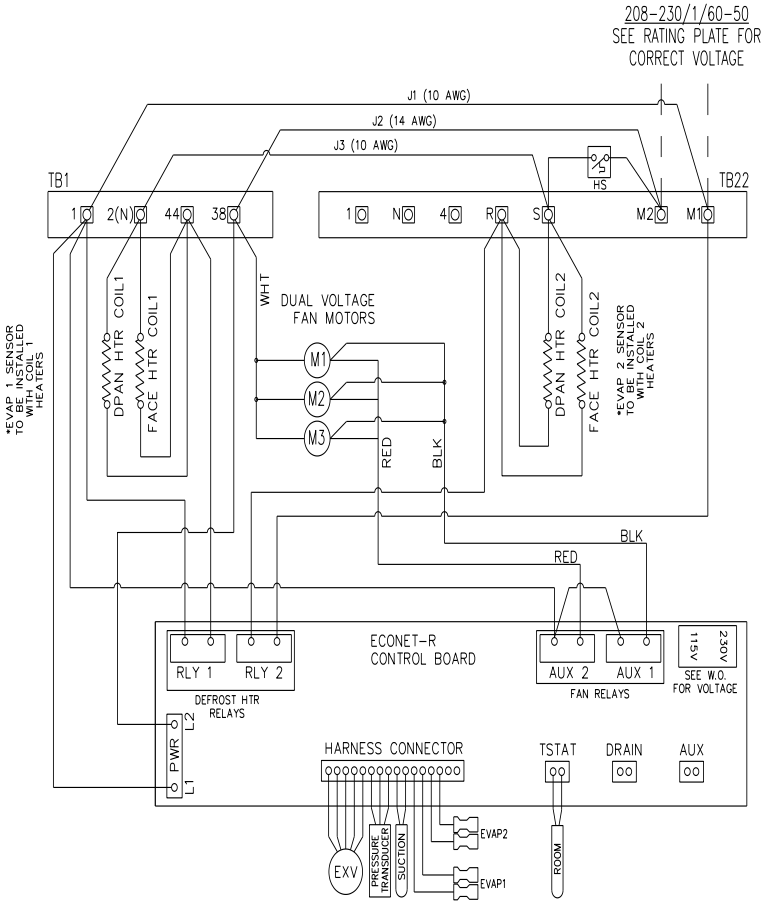


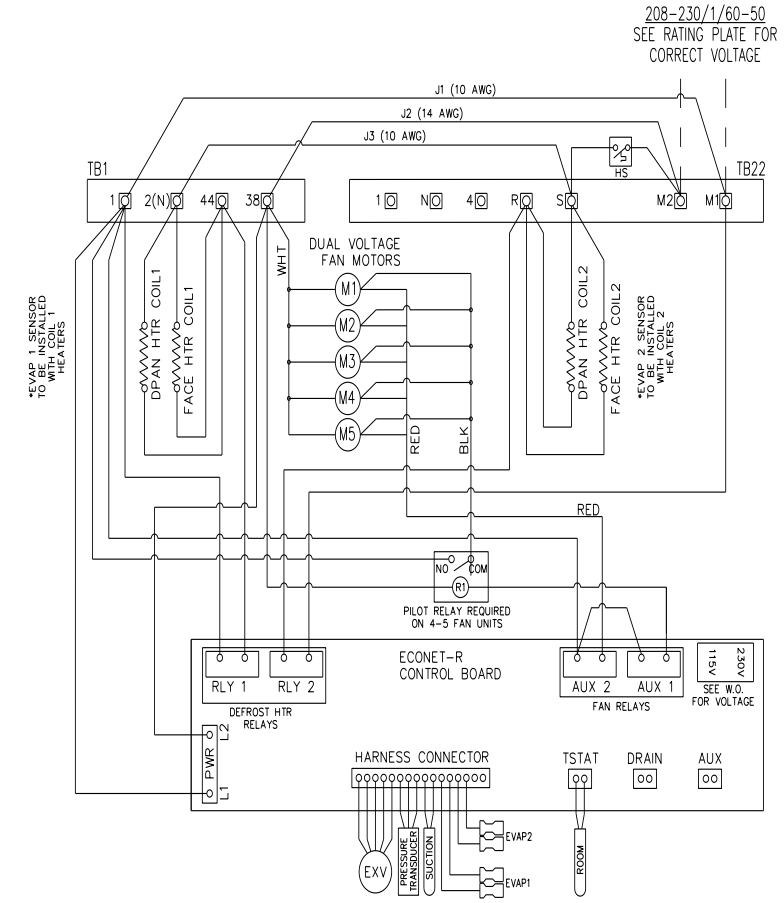
EcoNet Evaporator Wiring Diagrams Air Defrost





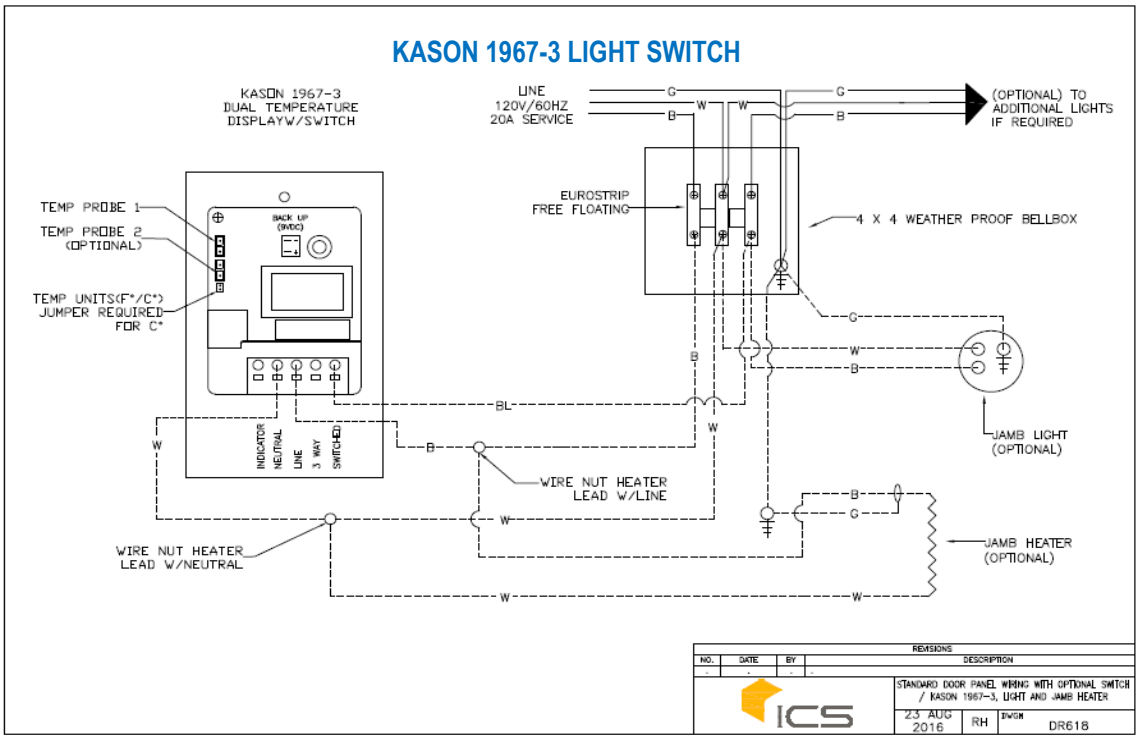
EcoNet Evaporator Wiring Diagrams Electric Defrost



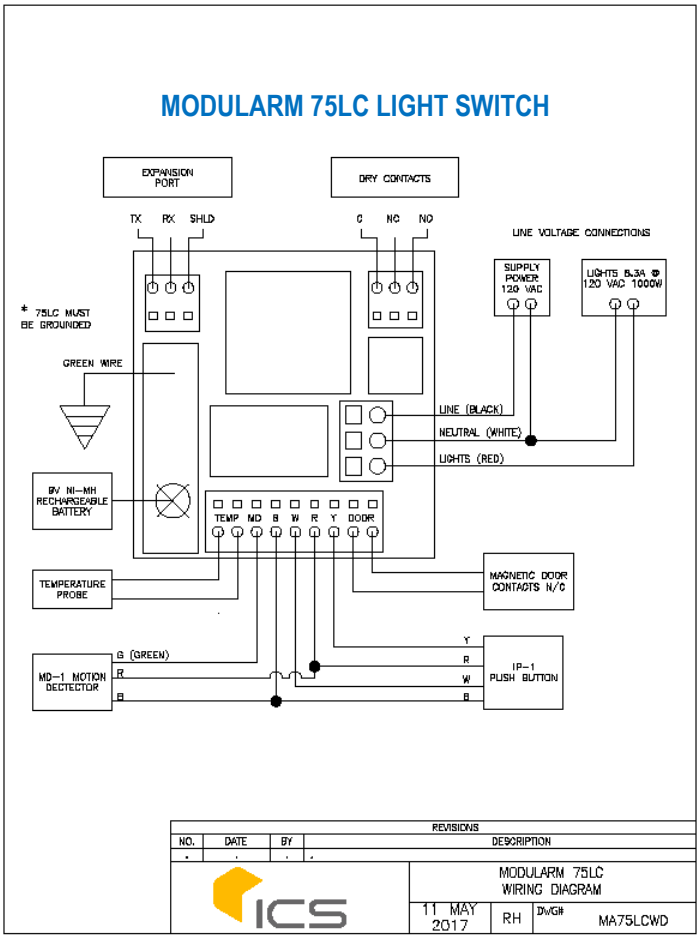


Light Switch Wiring Diagrams

KASON 1967-3 LIGHT SWITCH



MODULARM 75LC LIGHT SWITCH



Notes

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