American Mortuary
COOLERS & EQUIPMENT

1-888-792-9315

Installation Guide

AMC Model#1010

Installation & Troubleshooting Manual
Self Contained Model & Split System Model

Compressor Start-up & Troubleshooting Guide page 15

SHIPMENTS DAMAGED IN TRANSIT BUT NOT OBVIOUS UPON DELIVERY

Leave the item(s), packing material and carton "AS IS". Notify your carrier's local office and ask for an immediate inspection of the carton and its contents. Notify American Mortuary Coolers of your problem. After inspection has been made by the carrier and you have received acknowledgment in writing as to the damage, notify American Mortuary Coolers for the action you desire to resolve the problem. Be prepared to provide your order number, our tag number, and our invoice number It is your responsibility to follow the above instructions or the carrier or American Mortuary Coolers will not honor any claims for damage.

Job Site Preparation
A level floor is critical to the proper installation of any walk-in cooler or freezer, even if the walk-in has a floor. The high point in the floor must be determined and then shims (not furnished) must be used as required to assure the floor or screeds are level. A stable floor is required in order to have a properly functioning walk-in. Any movement of the floor underneath the walk-in will void the factory warranty. This movement can be caused by conditions such as the soil freezing and thawing. It is important to check overhead for any obstructions that would cause a safety hazard (electrical wires, steam pipes or any other items that could cause accidents). It is also important to check at this time for obstructions that interfere with the height of the walk-in. The installer must see that there is proper ventilation and humidity control around both the top and all walls of the walk-in. A minimum of 2" air space should be maintained along with adequate ventilation to prevent condensation. Air should be moving between 30-45 minutes out of every hour around a indoor walk-in. If dew point is reached on the outside surface of the walk-in, condensation will occur. The damage this condensation causes will NOT be covered by American Mortuary Coolers warranty.

Use These Safety Tips
1. To avoid injury while assembling the walk-in, we recommend protective eye gear, hard hat, gloves, and steel toe footwear.

2. Prevent back injuries. Walk-in panels are heavy and care should be taken using ergonomic lifting and handling methods.

3. Any electrical work should be done by a licensed electrician.

4. Any refrigeration work should be done by a licensed refrigeration company.

5. Never work alone. Always have another person helping or observing in case of an emergency.

6. Follow installation instruction pages. The information is designed to assist in the correct method of walk-in assembly.

7. If unsure about something, contact your representative at1-888-792-9315

INTRODUCTION

Once you have located the installation pack, pull out the installation drawing for reference. Each panel is labeled with a CR (Ceiling), W (Wall), or F (Floor) and a number. Separate the panels by grouping the CR panels together, the W panels together, etc. Prior to installation, ensure there is proper clearance where box will be located. There should be a minimum 2" clearance around exterior of panels for airflow. Before setting panels, make sure there is proper clearance for door swing and Heated Pressure Relief.

What's included in the installation box

- Instructions
- 3/8" Lag Bolts
- Gray Cam Plugs
- Cam Wrench

INSTALLATION TIP:
All wall & ceiling panels can be easily identified by the rectanglular silver sticker on the inside upper rzight hand corner. The silver sticker always identifies the inside portion of the panel.

Tools Required:

- Cam-lock wrench (Provided)
- Gloves for handling panels
- Caulk gun and NSF silicone caulk
- Power drill with phillips driver and 1/8" drill bit
- 1/2" metal drill bit (for side mount refrigeration units)
- 4 ft. carpenter level
- Carpenter square
- Measuring Tape
- Hammer
- Rubber Mallet

AMBIENT ENVIRONMENT:
Warranty claims to faulty compressors in environments above 95° will not be honored. The option to upgrade to a larger BTU system is offered at the time of order.

NEVER remove or unlock ANY panel cam locks to install the top mounted refrigeration system.

Job Site Preparation

The building floor should be clean of all debris and checked for level. Using the Installation drawing mark perimeter of screed, wall or floor panel on the building floor using a chalk line. If the walk-in is located in a corner of building, start there leaving the minimum 2" clearance to the building walls. Make chalk mark for base wall first (**see diagram below**). Make perpendicular line using measurements from diagram below.

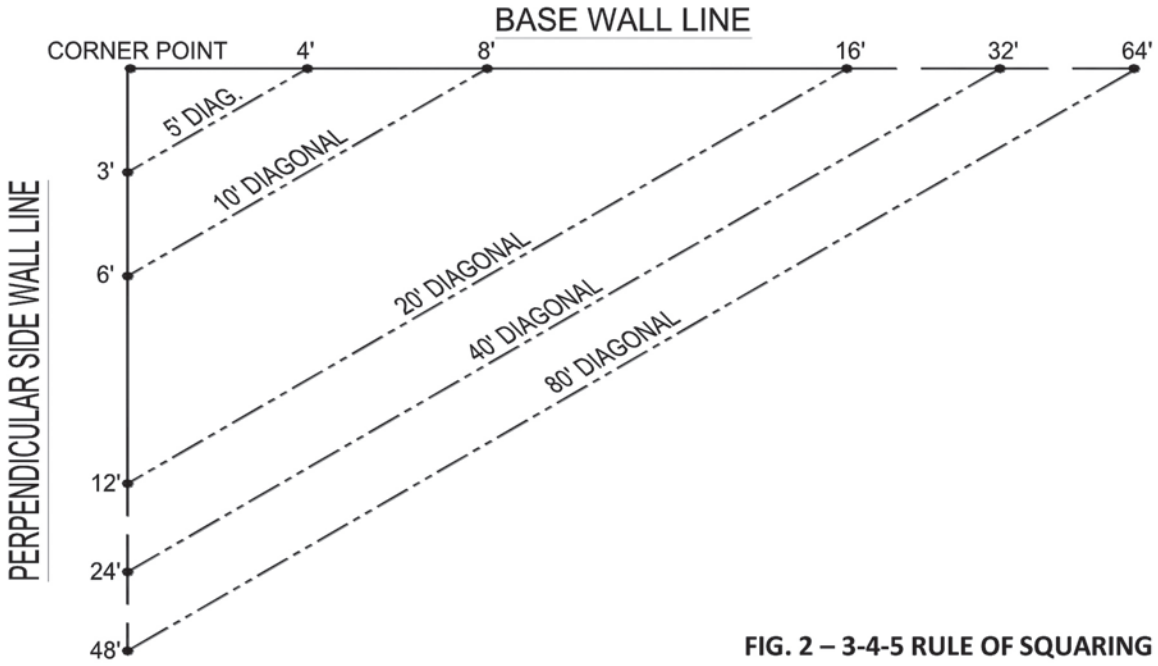
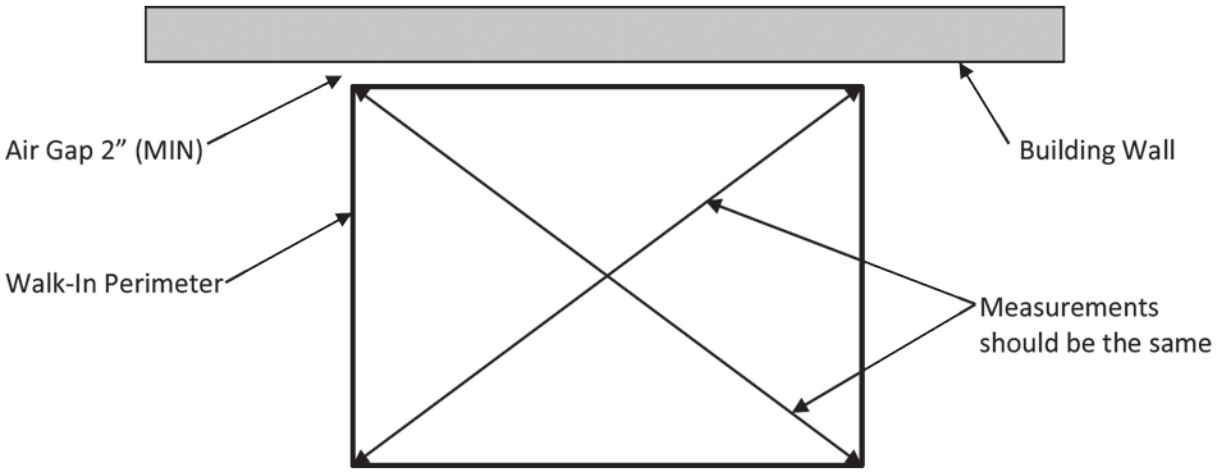


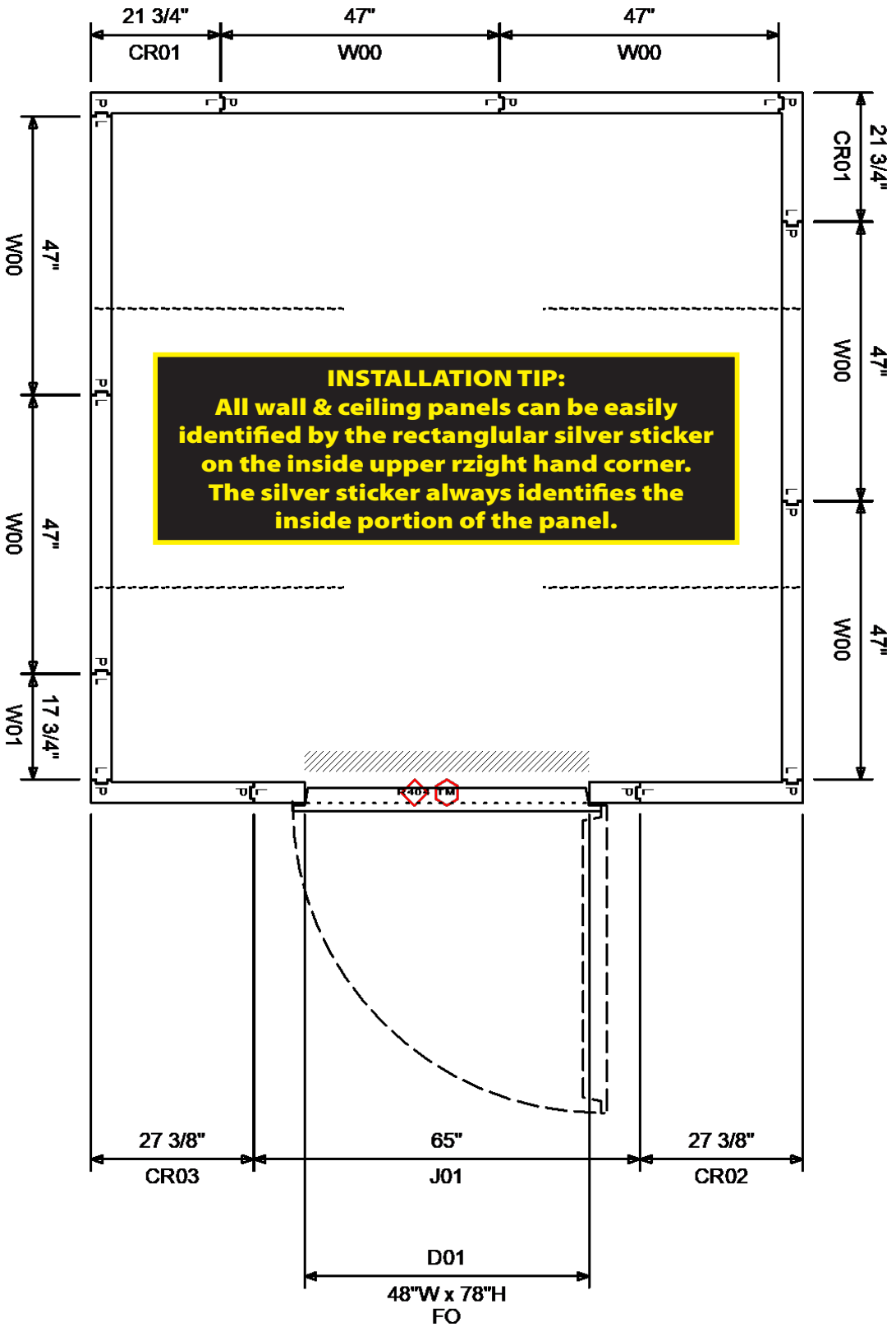
FIG. 2 – 3-4-5 RULE OF SQUARING

Once these first two lines are established measure to establish the parallel lines forming the rest of the perimeter.

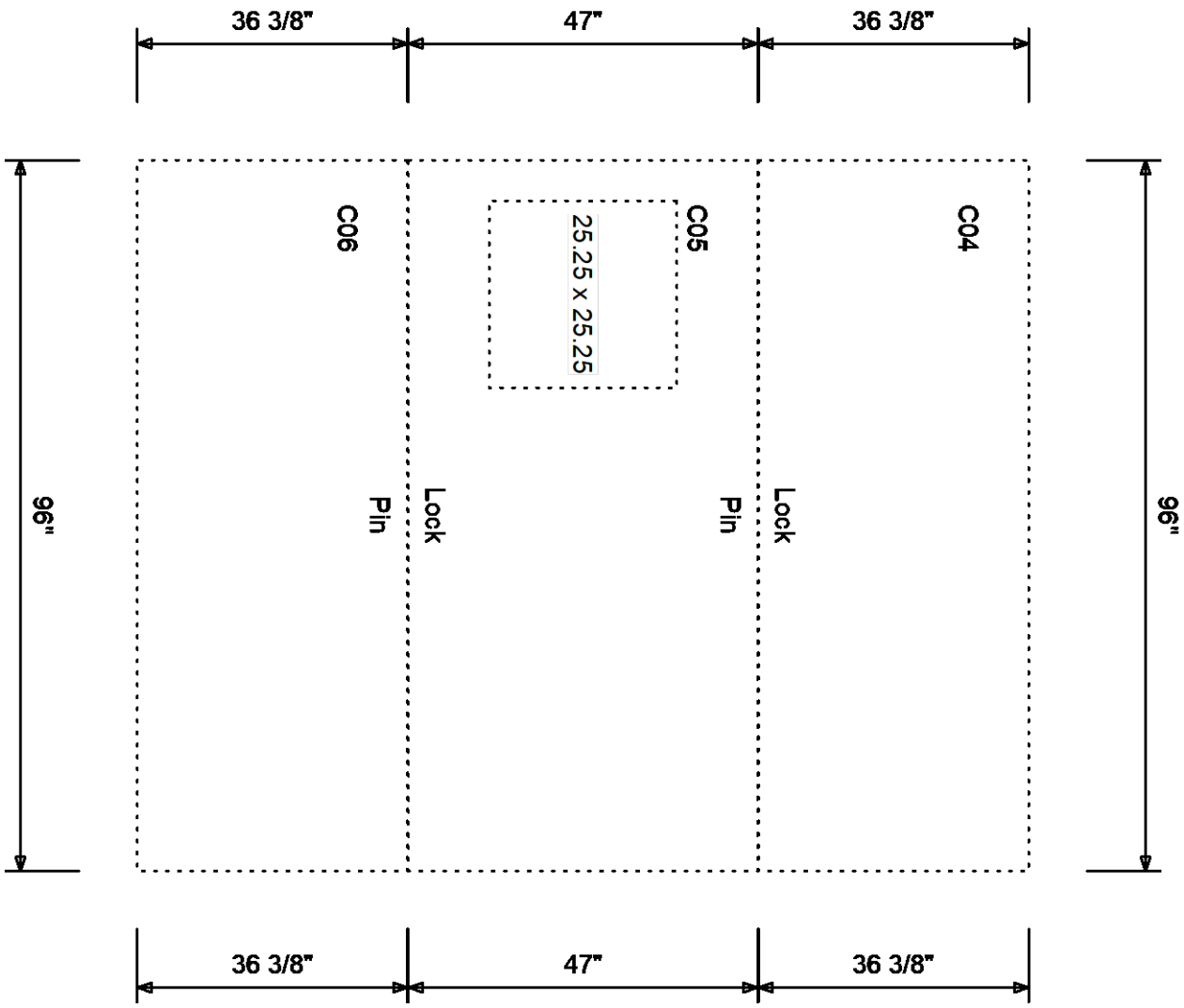


Measure corner to corner to make sure layout is square (measurements should be equal). If not, make all necessary adjustments.
If the installation area is not level, find the high point of the perimeter line and level the screed, wall or floor to this point.

FIG. 3 - WALK-IN LAYOUT



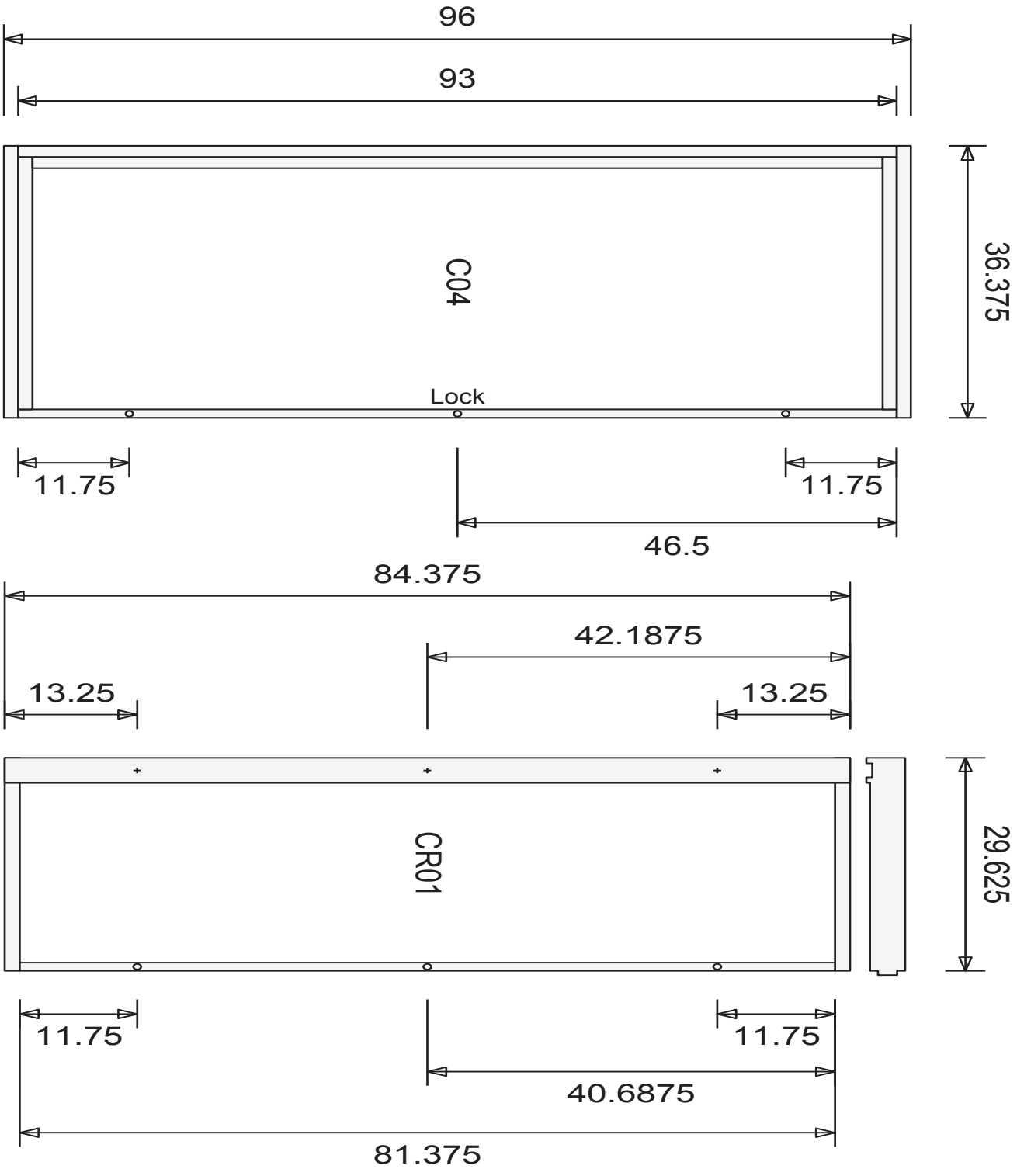
INSTALLATION WALL PANEL LAYOUT

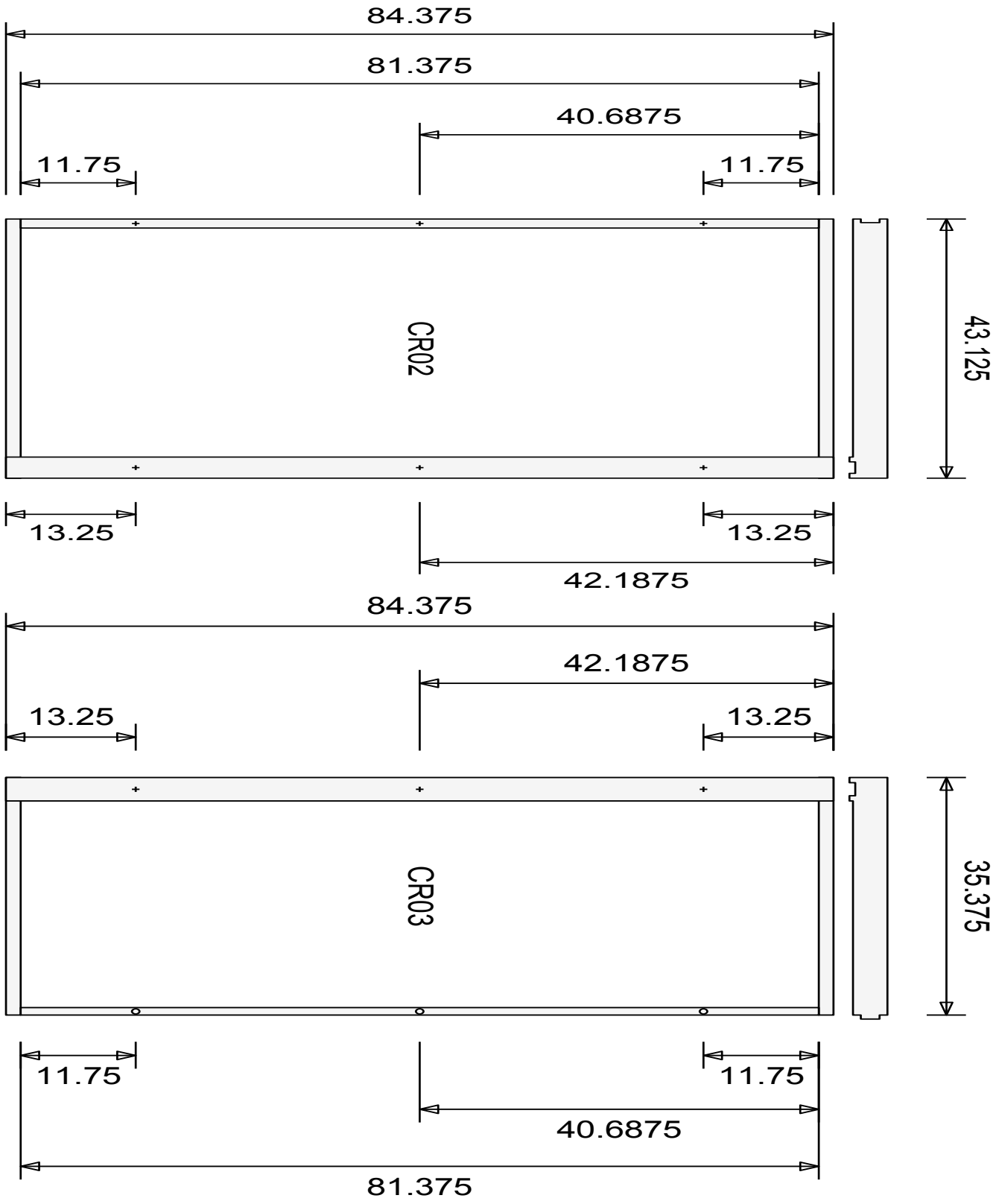


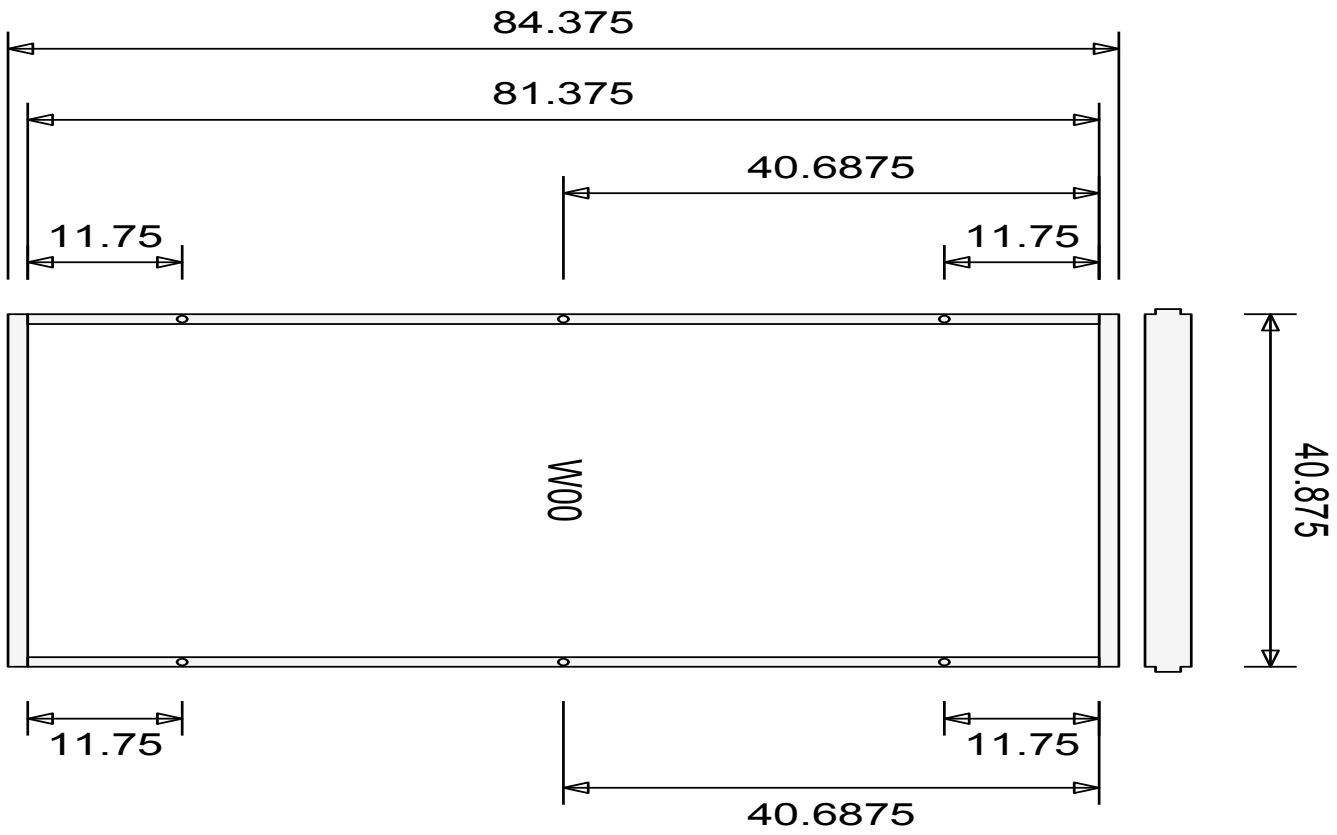
INSTALLATION CEILING PANEL LAYOUT

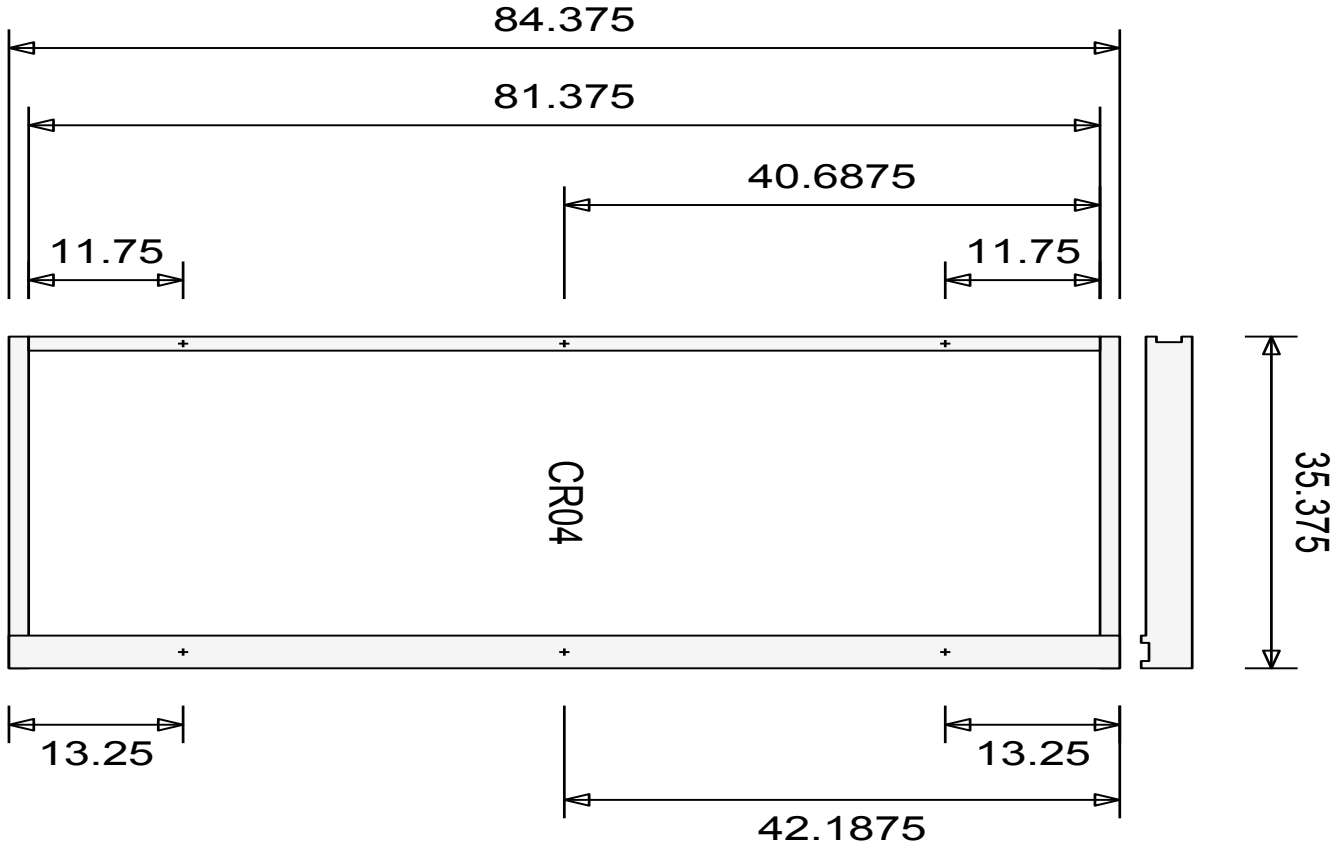
NEVER remove or unlock ANY panel cam locks to install the top mounted refrigeration system.

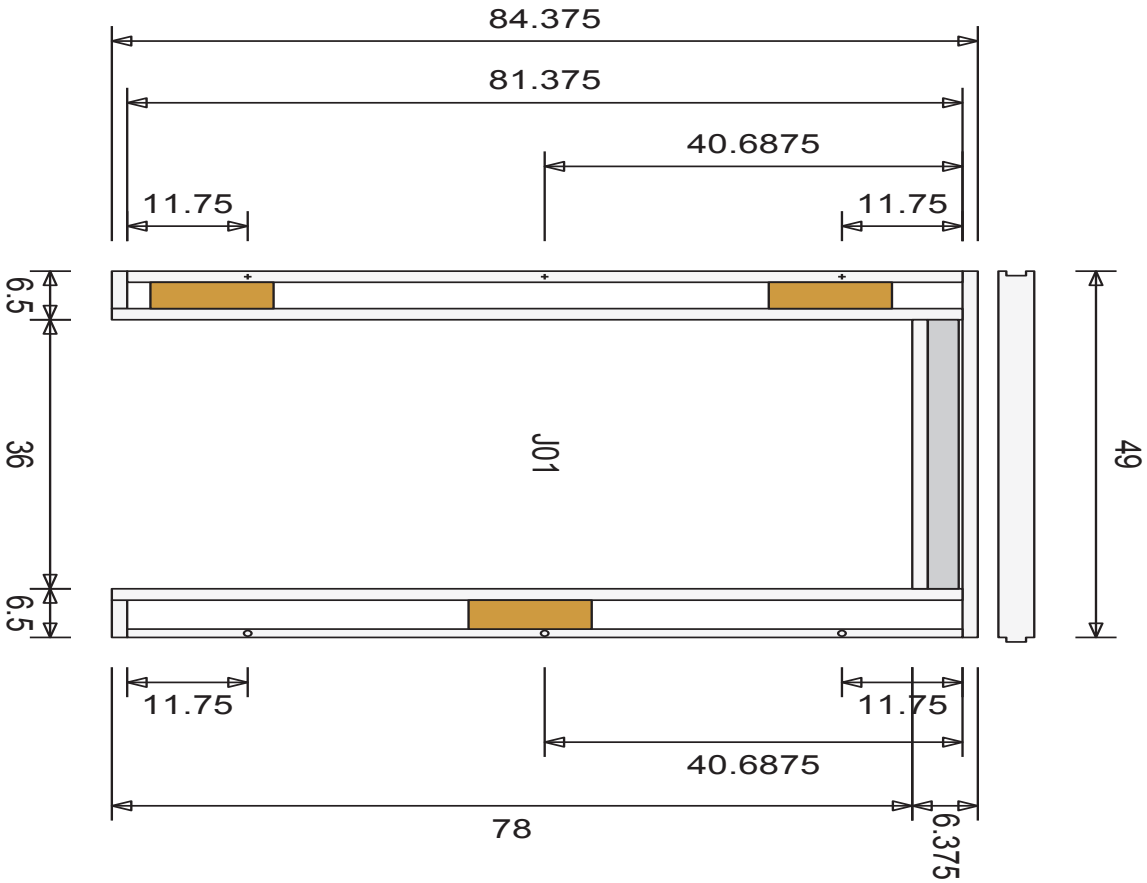

96
93
46.5
11.75
11.75
Pin
C06
36.375
96
93
46.5
11.75
11.75
Pin
10.875
5
25.25 x 25.25
C05
47
Lock
11.75
11.75
46.5

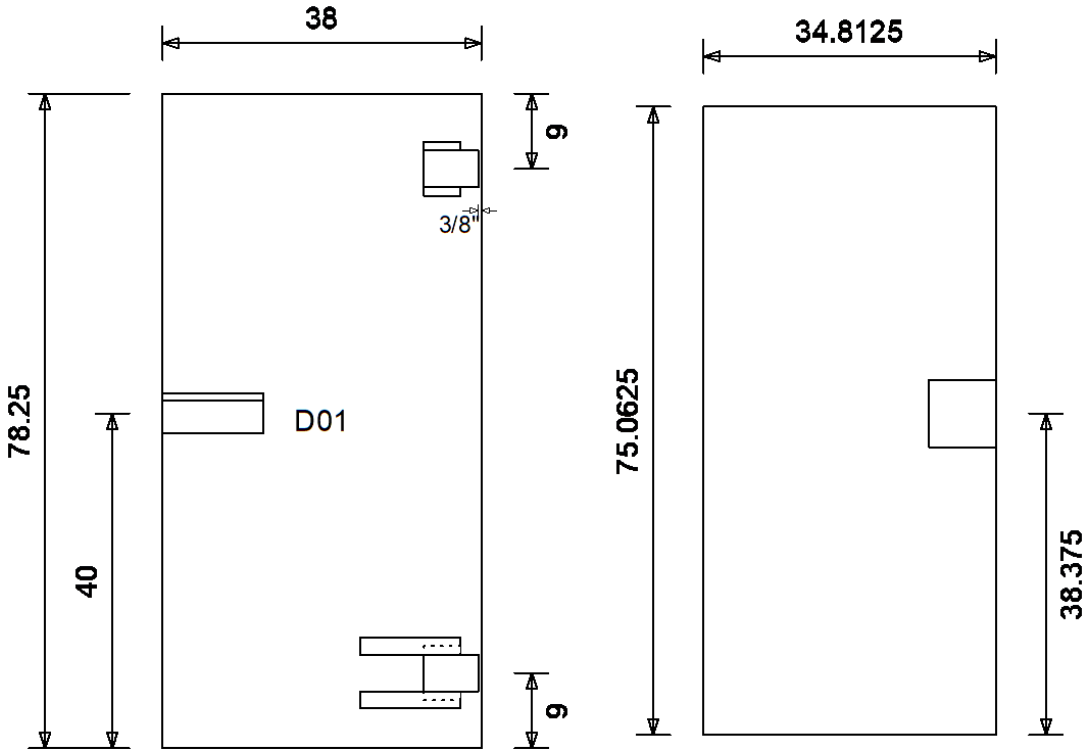

96
93
C04
Lock
36.375
11.75
11.75
46.5
84.375
42.1875
13.25
13.25
CR01
29.625
11.75
11.75
40.6875
81.375

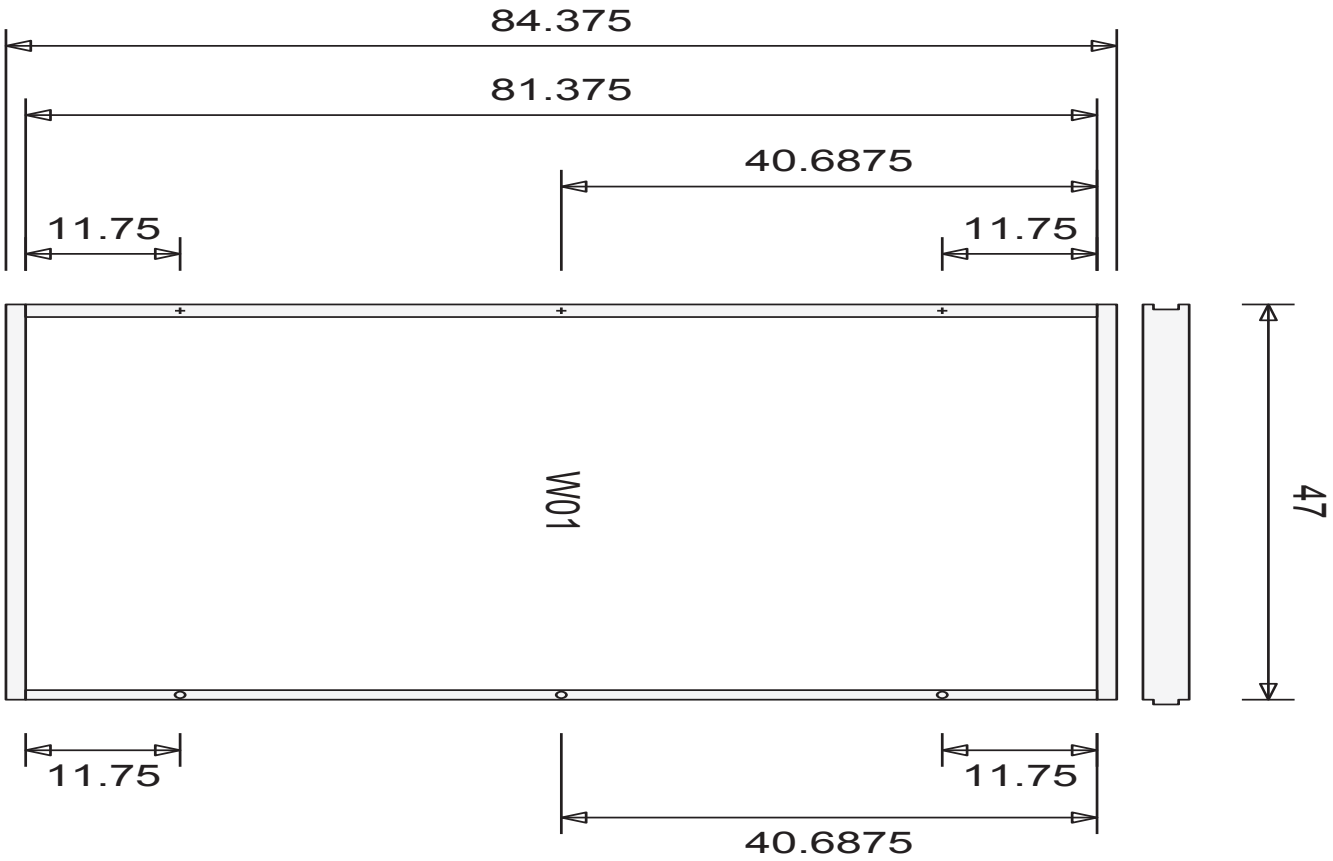

84.375
81.375
40.6875
11.75
11.75
CR02
43.125
13.25
13.25
42.1875
84.375
42.1875
13.25
13.25
CR03
35.375
11.75
11.75
40.6875
81.375

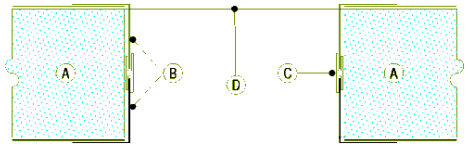

84.375
81.375
40.6875
11.75
11.75
W00
40.875
11.75
11.75
40.6875

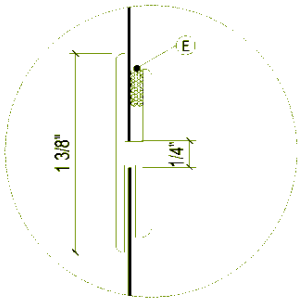

84.375
81.375
40.6875
11.75
11.75
CR04
35.375
13.25
13.25
42.1875


84.375
81.375
40.6875
11.75
11.75
6.5
36
6.5
J01
49
11.75
11.75
40.6875
78
6.375


38
34.8125
9
3/8
78.25
40
D01
75.0625
38.375
9



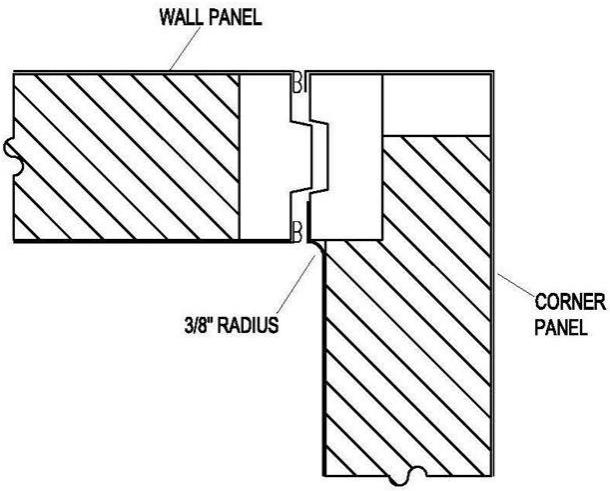


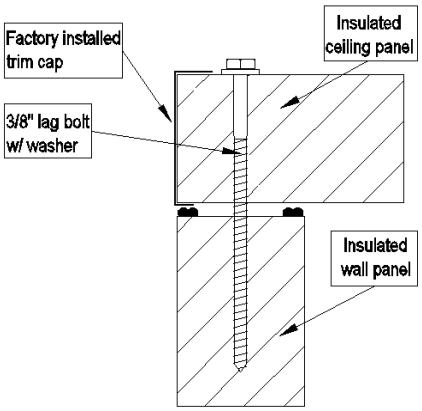


A TYPICAL INSULLATED CEILING PANEL
B "L" SHAPED TRIM (MATCH FINISH)
RIVET IN PLACE
C THERMAL BREAK
D CEILING CUT OUT
ROUGH OPENING = OPENING (+ 1/4")
OPENING WILL BE CUT OUT AND TRIMMED
AFTER THE PANEL HAS BEEN FOAMED.
E SILICONE APPLIED TO THERMAL BREAK

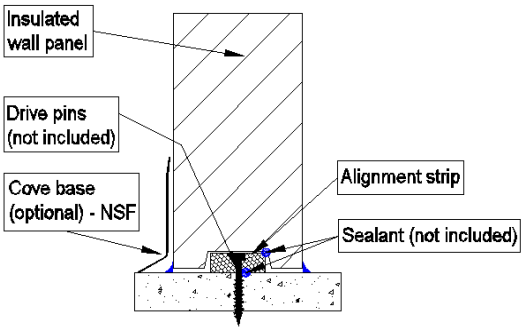
TRIM DETAIL FOR REFRIGERATION CUTOUT

NEVER remove or unlock ANY panel cam locks to install the top mounted refrigeration system.

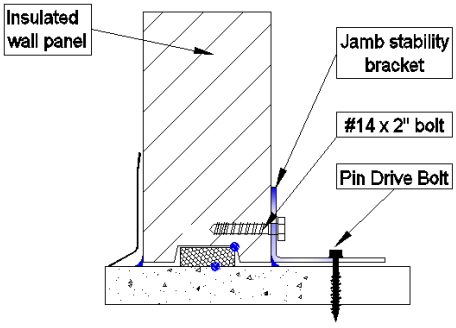




LAG DOWN - WOOD RAIL NON FASCIA
FACTORY INSTALLED CAPS



WALL NO FLOOR - WOOD RAIL



OPENING STABILITY BRACKET - FLOORLESS

NEVER remove or unlock ANY panel cam locks to install the top mounted refrigeration system.

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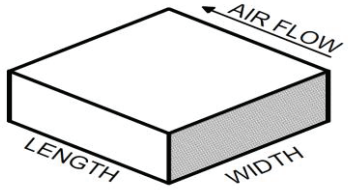
REFRIGERATION SPECIFICATIONS



28.25" 23.75"

Condensing Unit: MOH005X62CFM

5970 BTUH

Liquid line, Filter, Drier, Sight glass installed

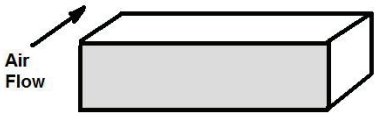
Ambient temp 95°F

Med Temp Air Cooled Hermetic Condensing Unit with microchannel condenser, Liquid Line Filter/Drier and Sight Glass.

Compressor Type	Refrigerant	HP	Electrical	RLA	LRA	MCA	MOPD
Hermetic	**R404**	**0.5**	**208-230/1/60**	**4.8**	**24.1**	**15**	**15**

Receiver Capacity	Liquid	Suction		Length	Width	Height	Weight
5.5	**3/8**	**1/2**		**28.25**	**23.75**	**17.25**	**135**

Notice:Air cooled condensing units require a minimum of 1000 cfm of fresh air per horsepower



Length 29.5" Width 14.875"

Unit Cooler: LCA651AEQRC6B

QTY 1

5100 BTUH

Low profile coil (unit cooler) with EC fan motors, Electric Expansion Valve and Cold Storage Solution Controller.	**Heaters**		**Fans**	**Qty**	**1**
	Voltage	**N/A**	**Voltage**	**115/1/60**	
	Amps	**0**	**Amps Total**	**1.1**	

Drain Connection	Inlet	Suction	Equalizer	Length	Width	Height	Weight
3/4 MPT	**1/2 OD**	**5/8 ID**	**1/4 OD**	**29.5**	**14.875**	**15**	**31**

Standard Features:

Expansion Valve
Solenoid Valve
Defrost Timer
Liquid Line Filter/Drier
Sight Glass
Temperature Control
Condensing Unit
Unit Cooler
Pressure Control

Outdoor Systems Include:

Head Pressure Control
Weather Proof Housing
Crankcase Heater

Ambient Temperature 95°
If your room temperature reaches 95° you must purchase a larger BTU compressor. This is not included.

R404A Refrigerant is not included. It must be provided by the installer.

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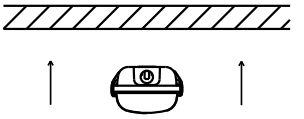
LIGHT FIXTURE INSTALLATION 115V LOW VOLTAGE

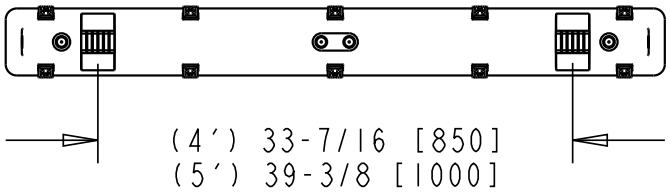
Installation Instructions:

1. Unpack fixture and remove all packaging. Remove Tray and remove sub-packs. (Keep Tray tethered).

2. Mount fixture using supplied brackets. Use hardware sufficient to support the weight of the fixture and associated conduit.

- Mount with Brackets -





Line up both Brackets (not shown) and snap Housing into place using even force.

3. Mount conduit hub into open end of housing and wire as required - Hot to Black, Neutral to White. Ground wire at marked location on Tray. Hub should be connected to conduit before housing.
4. Fill conduit around wires with sealant. (PROVIDED)
5. Secure the Tray in place.
6. Install the Lens Clips and lock the Lens in place. (Lens must be seated into gasket channel with all latches to provide water tightness)

ATTENTION:
Fill conduit around wires with sealant

Before After

WARNINGS AND CAUTIONS:

A. This product must be installed in accordance with local and national electric codes by a qualified electrician.The manufacturer assumes no responsibility for improper installation, or application of this lighting fixture.
B. All supply wires must be suitable for 90° C.
C. Turn off all electricity before installation. Electricity should be turned off prior to servicing.
D. This "FIXTURE MUST BE GROUNDED".
E. Verify a secure connection at the mounting brackets.
F. NO SERVICEABLE PARTS.
G. Sealing of wire opening is necessary to prevent condensation from forming and water collection inside the fixture. Failure to properly seal fixture will VOID warranty.

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Self-Contained Compressor Start-up & Troubleshooting

Inspection

1. Each shipment should be carefully checked against the bill of lading.
2. The shipping receipt should not be signed until all items listed on the bill of lading have been accounted for.
3. Check packaging for signs of damage.
4. Any shortage or damages should be immediately reported to the delivering carrier.
5. Damaged material becomes the delivering carrier's responsibility, and should not be returned to the manufacturer unless prior approval is given to do so.
6. When unpacking the system, care should be taken to prevent damage.
7. Avoid removing the shipping base until the unit has been moved to the final destination.
8. Complete warranty return card for each unit and mail to Heatcraft Refrigeration Products.

General Safety Information

1. **Installation and maintenance to be performed only by a licensed contractor**.
2. Ensure that the structural integrity of the box can withstand the weight of the PRO^3 (See page 2, Table 3 for unit weights).
3. Avoid contact with sharp edges and coil surfaces. They are a potential injury hazard. Wear gloves during moving and rigging.
4. Make sure all power sources are disconnected before any service work is done on units.

Standard Installation Procedure

PTN Models

For Indoor Use Only

1. Inspect packaging for shipping damage. Open package and inspect unit for concealed damage.
2. Review the space and location requirements on page 4.
3. Provide a finished opening in the box ceiling, to the appropriate dimensions and structural strength as stated on page 2, Table 3.
4. DO NOT remove or disengage any box cam-locks in order to install the PRO^3 unit.
5. Clean the roof of the box to provide a good sealing surface for the unit weatherstrip. Refer to box manufacturer's instructions for any procedures or processes necessary to ensure the integrity of the exposed foam in the panels is not compromised.
6. Check the mounting surface with a level. PRO^3 units require a surface that is within 1° of level or better and no more than a 5/8" drop per 3 feet (17mm drop per meter).
7. For walk-in boxes with aluminum top panels, it is recommended that a thermal break be placed on the roof adjacent to the opening to prevent the possibility of sweating.
8. Place the unit gently into the provided opening with the evaporator air flow directed toward the door (See page 4). Be careful not to damage the grill during installation.
9. Ensure that the condenser air flow is not obstructed.
10. Install the trim around the inside opening with the hardware provided.
11. Connect unit to power supply using the cord with plug, if provided, or hard wire. Adhere to local electrical/wiring codes.

IMPORTANT:
- **Do not use extension cords to connect unit to power.**
- **Plug-in to grounded three prong outlet.**
- **Do not remove grounding prong.**
- **Do not use a power adapter.**

12. Apply power to unit. **All controls are preset to factory default settings** (See Table 4).
13. Check unit for proper operation.
14. To change defaults as a group follow these steps:
    1. Press Set button and hold in until the display flashes "PS".
    2. Press the Set Button and the display will change to "0" and will begin to flash.
    3. Press the up button until "22" is displayed.
    4. Press the Set button.
    5. Press the down button 2 times. "EZY" will be displayed.
    6. Press the Set button.
    7. Select the proper number for the model needed by pressing the up or down key.
       - 1 - L Low temperature model
       - 2 - M Med temperature model
       - 3 - H High temperature model
    8. Press Set and wait for unit to return out of programming mode.
    9. Disconnect Power
    10. Press the Set Button while turning unit On
    11. "CE" should display to verify programming display

TABLE 4 Control Factory Default Settings

PTT Models	Temperature Set Points	Defrost Start Times	Defrost Duration (Maximum)	Drip Time	Fan Delay	Defrost Termination Set Point	EZY Default
H - Cooler Models Air Defrost	38˚F	4 / day	60 min.	–	–	38˚F	3

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TABLE 6 Model PTN | Medium Temperature Models | EZY SETTING =2

SET POINT IS 34° F

These models are intended for cooler applications and have electric defrost. These models are intended for coolers that may be operated at a lower saturated suction temperature and require electric defrost to clear the coil.

Status		Compressor	Condenser Fans	Evaporator Fans	Defrost Heaters	Notes
Off	Display alternates "OFF" and Room Temperature	Off	Off	Off	Off	If unit shows "OFF", depress the "^" button and hold for three seconds.
On	Automatic Defrost on start up	Off	Off	Off	On	If coil temperature is below 65° F. If it is above, defrost is not initiated. Drip Time and Freeze Time are ignored.
On	Defrost Sensor reaches 65° F and defrost is terminated	Off	Off	Off	Off	
On	Cooling Cycle initiated - Drip Time	Off	Off	Off	Off	System Timer Begins/2 min drip time
On	Drip Time of 2 minutes ends	On	On	On	Off	Compressor and evaporator fans start
On	Box Temperature (33.9 F) is satisfied	Off	Off	On	Off	
On	Box temperature rises to 36° F	On	On	On	Off	2° F Differential, Minimum Compressor Off Time is 4 minutes
On	Defrost Initiated (manually or 6 hour counter)	Off	Off	Off	On	Electric Defrost
On	Defrost terminated by temperature 65° F	On	On	On	Off	
On	Drip Time of 2 minutes ends	On	On	On	Off	Compressor starts and evaporator fans delay for 2 minutes to freeze coil

Programming the PJEZC Carel Electronic Controller

Reprinted with permission from Carel.

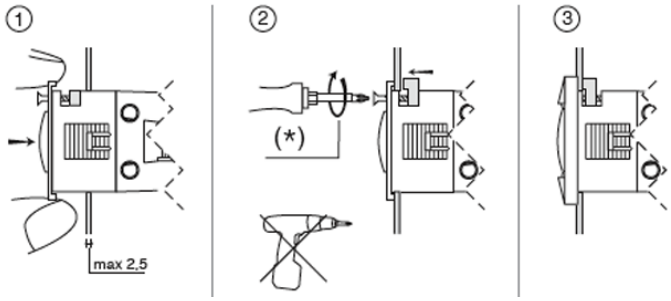
The Carel PJEZC control is a fully configurable electronic refrigeration controller. The Top Mount packaged refrigeration system uses the Carel controller on all three temperature designated models. The models differ by a pre-programmed parameter list that is specific for each application.

There are two levels of programming with the C controller. The first level can be accessed through the keypad. Set Point (st), Interval between defrost (do), Maximum Defrost Duration (dP), and Dripping Time (dd) are examples of first level parameters. Second level parameters can be accessed by entering a password. See "Modifying Parameters" (page 15).

Installation and Removal

PANEL INSTALLATION FROM THE FRONT USING SCREWS

- The thickness of the fastening panel must not exceed 3 mm;
- Remove the front frame and make sure that the two catches are in place (these must not protrude from the outline of the drilling template). If necessary, unscrew the two screws. Do not unscrew excessively, the screws must not be detached from the front panel (phase 1);
- Insert the instrument in the opening in the panel and hold it in position by the centre of the front panel (phase 1);
- Using the screwdriver, tighten the bottom screw 90°, the catch must come out of its slot and click onto the panel, then tighten until the front panel is secure; Do not over-tighten, when the front panel is secured blocks simply make another ½ turn to compress the gasket; If the catch does not click onto the panel, unscrew the screw, applying pressure at the same time with the screwdriver so that the catch moves back. Do not unscrew too much, the head of the screw must not be raised from the surface of the front panel (phase 2);
- Repeat the same operation for the top screw (phase 2);
- Apply the front frame (phase 3).



* Do not over-tighten the screws.

DISMANTLING USING THE SCREWS FROM THE FRONT

- Unclip the front frame;
- Unscrew the bottom screw, at the moment the front panel detaches from the panel keep pressure on the screw and unscrew a further 90° to make the catch go back into its slot;
- Repeat for the top screw;
- Remove the instrument from panel, keeping it horizontal

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Electrical Connections

WARNINGS:

The electrical connections must only be completed by a qualified electrician;

A power supply other than the type specified may seriously damage the system;

Separate as much as possible the probes and digital input signal cables from the cables carrying inductive loads and power cables to avoid possible electromagnetic disturbance. Never lay power cables (including the electrical cables) and probe signal cables in the same conduits. Do not install the probe cables in the immediate vicinity of power devices (contactors, circuit breakers or similar);

Reduce the path of the probe and sensor cables as much as possible, and avoid spiral paths that enclose power devices. The probes must be connected using shielded cables (minimum cross-section of each wire: 0.5 mm²);

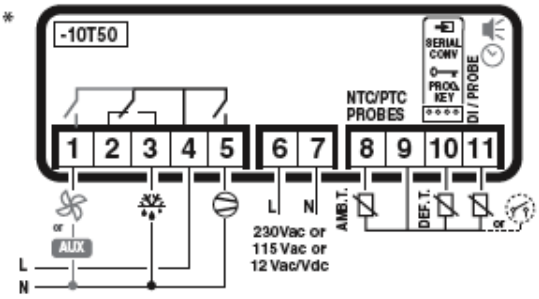
Avoid direct contact with internal electronic components;

Connection errors (and connections other than those indicated in this manual) may involve danger to the safety of the users and cause faults on the instruments and the components connected;

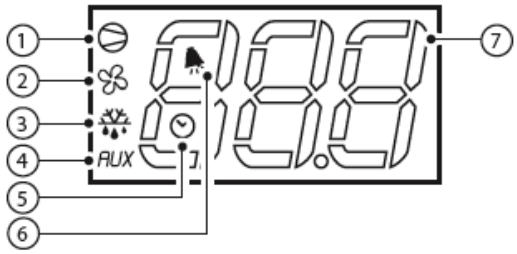
Fit the unit with all the electromechanical safety devices required to guarantee correct operation and the complete safety of the user.

CONTROLLER WIRING

PJEZ(C, Y)*

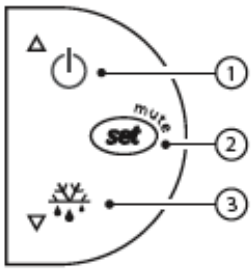


Display



BUT. NO.	FUNCTION	NORMAL OPERATION			START UP
		ON	OFF	flash	
1	compressor	on	off	call	on
2	fan	on	off	call	on
3	defrost	on	off	call	on
4	auxiliary output (AUX)	output active	output not active	–	on
5	clock (RTC)	RTC available, enabled (tEN=1) and at least one time band has been set)	RTC not available or not enabled (tEN=0) or no time band set		on (if the clock is fitted)
6	alarm	alarm in progress	no alarm in progress	–	on
7	digits	three digits with decimal point and range -199 to 999. See parameters /4, /5, /6 for the type of probe displayed, values in °C/°F and decimal point			

Keypads



BUT. NO.	NORMAL OPERATION		START UP	
	pressing the button alone	pressing with other buttons		
1	more than 3 s: switch ON/OFF	pressed together with 3 activates/ deactivates the continuous cycle	–	
2	- 1 s: displays/ sets the set point - more than 3 s: accesses the parameter setting menu (enter password 22) - mutes the audible alarm (buzzer)	–	for 1 s RESET current EZY set	pressed together (2 and 3) activate parameter reset procedure
3	more than 3 s: activates/ deactivates the defrost	pressed together with 1 activates/ deactivates the continuous cycle	for 1 s displays firmware version	

Preliminary Configurations

Once the electrical connections have been completed, simply power-up the controller to make it operative.

Heatcraft recommends that you check the parameters listed.

Control Parameters	
st	set point
rd	set point differential

Defrost Parameters	
d0	type of defrost
dI	interval between two defrosts
dt	end defrost temperature
dP	maximum defrost duration

Alarm Parameters	
Ad	temperature alarm delay
AL	low temperature alarm threshold/deviation
AH	high temperature alarm threshold/deviation

Functions Available from Keypad

ON AND OFF

Switching the instrument ON: press UP for more than 3 s (when pressing the button, the display shows ON).

Switching the instrument OFF: press UP for more than 3 s. The display shows the message "OFF", alternating with the temperature measured by the set probe.

In off status, the following functions are disabled (if featured by the model):

- compressor control / duty setting / continuous cycle;
- defrost;
- fan control;
- alarms : 'LO', 'HI', 'IA', 'cht', 'CHT';
- door switch (A4= 7/8);
- buzzer (when available)

While the following are enabled:

- temperature display, alternating with the message "OFF";
- parameter display and setting;
- alarms: "E0", "E1", "E2";
- the internal timer relating to parameter 'dI' is updated. If 'dI' expires in OFF status, a defrost is performed when restarting;
- auxiliary relay management, only in the following configurations:
  - H1= = 1/2 ("E0" alarm only)
  - H1= 3, A4= 6;

WARNING: ***When first connected, easy is already on and ready to be used. The instrument can be switched on from a supervisor PC and via an external contact (setting A4= 5). The latter has priority over the other modes.***

SET POINT SETTING (DESIRED TEMPERATURE VALUE)

The easy and easy compact devices control the desired temperature (set point) inside the cabinet or cold room directly and dynamically.

To view and modify the set point:

- press SET for 1 s, the set value will start flashing;
- increase or decrease the value using UP or DOWN;
- press SET to confirm the new value.

MANUAL DEFROST

Press DOWN for more than 3 s (activated only if the temperature conditions are right).

CONTINUOUS CYCLE

Press UP+DOWN for more than 3 s (activated only if the temperature conditions are right).

The continuous cycle is used to maintain refrigeration active in the cabinet or cold room, regardless of the temperature inside the unit. This may be useful for rapidly bringing the temperature below the set point value.

RAPID DISPLAY OF THE TEMPERATURE READ BY THE OTHER PROBES

Press the DOWN button to scroll the temperatures read by the probes. Each time the DOWN button is pressed, the display will show the name of the probe Pr1, Pr2 or Pr3 (only on the models with 3 inputs and with multifunction input configured as a probe) and after 1 s the temperature measured by the selected probe will be displayed.

To display the other probes, press DOWN again.

To return to the normal display, wait 3 s without pressing any buttons (exit by timeout).

Temperature Display

The temperature displayed, the unit of measure and the decimal resolution can be set according to the following parameters: /4, /5 and /6.

/4 : select probe displayed

Used to choose whether to display the temperature read by the control probe (Probe 1), Probe 2 or the status of the multifunction input (analogue or digital).

Parameter /4 selects the probe shown on the display, all the other display and control modes remain unchanged.

IMPORTANT: the easy compact models can display up to 2 probes.

/5: select °C/°F

Defines the unit of measure used for temperature control.

/5=0 to work in °C

/5=1 to work in °F.

WARNING:

When changing from one unit of measure to the other, all the values of the temperature parameters are modified to the new unit of measure.

The max and min limits of the absolute temperature parameters are the same for both °C that °F. The range of temperatures allowed is therefore different between °C and °F:

/6: disable decimal point

Used to enable or disable the temperature display with the resolution to the tenths of a degree between -20 and + 20 (easy) or -10 and +10 (easy compact).

/6= 0 temperature displayed to the tenth of a degree;

/6=1 temperature displayed without the tenths of a degree.

NOTE: *the decimal point is only disabled in relation to the reading shown on the display (the calculations performed by the controller remain unchanged).*

Temperature Control

The following parameters are used to control the temperature: St, r1, r2, r3, r4 and rd.

St: set point, r1 minimum value and r2 maximum value of the set point

Parameter St determines the desired temperature to be maintained inside the cabinet or cold room (set point). Parameters r1 (minimum value) and r2 (maximum) set the range of temperatures for setting the set point.

NOTE: *the set point can be set by pressing the SET button (see par. "Setting the set point (desired temperature value)").*

r3: select direct/reverse operation

Defines the operating mode of the device:

- r3=0: direct with defrost. Used to request the activation of the compressor when the temperature measured by probe 1 rises above the set point. This mode also includes defrost
- r3=1: direct without defrost
- r3=2: reverse without defrost. Used to request the activation of the compressor when the temperature measured by probe 1 falls below the set point. This mode does NOT include defrost.

Rapid Parameter Set Selection (EZY)

The easy controller features the EZY parameter which is used to quickly choose a list of parameters, with corresponding values, for the control of the refrigeration system.

NOTE:

- *to restore the selected rapid parameter set at any time, turn the controller off and on again, while holding SET. The display shows "CE" to indicate that the selected rapid set (EZY= 1, 2, 3) has again overwritten the operating parameters, thus restoring the original set of parameters;*
- *to restore all the parameters and return to the original default values (factory settings), turn the controller off and on again while holding DOWN and SET, until the display shows "CF". Use this procedure with extreme care, as it may compromise the fundamental control settings;*
- *EZY=0 brings no change;*

Table of Alarms and Signals

When an alarm is activated, the display shows the corresponding message that flashes alternating with the temperature; if fitted and enabled, the buzzer and the alarm relay are also activated.

All the alarms have automatic reset (that is, they stop when the causes are no longer present), except for alarm 'CHt' which has manual reset (instrument on/off using the UP button or by disconnecting the power supply).

Pressing the SET button mutes the buzzer, while the code displayed and the alarm relay only go off when the causes of the alarm have been resolved. The alarm codes are shown in the table below:

Alarm Code	Buzzer and Alarm Relay	LED	Alarm Description	Reset	Enable Alarm parameters involved
E0	active	ON	probe 1 error= control	automatic	–
E1	not active	ON	probe 2 error= defrost	automatic	d0= 0 / 1 / 4, F0= 1
E2	not active	ON	probe 3 error= condenser/ product	automatic	[A4=10]
IA	active	ON	external alarm	automatic	[A4 = 1] [+A7]
dOr	active	ON	open door alarm	automatic	[A4 = 7/8][+A7]
LO	active	ON	low temperature alarm	automatic	[AL] [Ad]
HI	active	ON	high temperature alarm	automatic	[AH] [Ad]
EE	not active	ON	unit parameter error	not possible	–
EF	not active	ON	operating parameter error	manual	–
Ed	not active	ON	defrost ended by timeout	on first defrost ended correctly	[dP] [dt] [d4] [A8]
dF	not active	OFF	defrost running	automatic	[d6=0]
cht	not active	ON	dirty condenser pre-alarm	automatic	[A4=10]
CHt	active	ON	dirty condenser alarm	manual	[A4=10]
EtC	not active	ON	clock alarm	by setting the time	if bands active

Description of the Main Signals and Alarms

LED flashing

The activation of the corresponding function is delayed by a timer, awaiting an external signal or disabled by another procedure that is already in progress. e.g. if is a continuous cycle in progress and a defrost is called, the latter will remain pending until the end of the continuous cycle, and the corresponding LED (defrost) will flash.

E0 steady or flashing

Control probe error:

- probe not working: the probe signal is interrupted or short-circuited;
- probe not compatible with the instrument;

The alarm signal E0 is steady if it is the only active alarm (the temperature value is not displayed), while it fl ashes if other alarms are active or the second probe is displayed.

E1 flashing

Evaporator probe or food conservation probe error:

- probe not working, the probe signal is interrupted or short-circuited;
- probe not compatible with the instrument;

E2 flashing

Condenser probe or food conservation probe error:

- probe not working, the probe signal is interrupted or short-circuited;
- probe not compatible with the instrument;

IA flashing

Immediate or delayed alarm from multifunction digital input:

- check the multifunction input and parameters A4 and A7.

LO flashing

Low temperature alarm. The probe has measured a temperature lower than the set point by a value that exceeds parameter AL:

- check parameters AL, Ad and A0.

The alarm is automatically reset when the temperature returns within the set limits (see parameter AL).

HI flashing

High temperature alarm. The probe has measured a temperature higher than the set point by a value that exceeds parameter AH.

- check parameters AH, Ad and A0.

The alarm is automatically reset when the temperature returns within the set limits (see parameter AH).

EE displayed during operation or on power-up

unit parameter reading error. See Data errors.

EF displayed during operation or on power-up

operating parameter reading error. See Data errors.

Ed flashing

The last defrost ended after exceeding the maximum duration rather than when reaching the end defrost set point.

- check parameters dt, dP and d4;
- check the efficiency of the defrost.

The message disappears when the next defrost ends correctly.

dF flashing

Defrost running:

- this is not an alarm signal, but rather a message that the instrument is running a defrost. Only shown if d6= 0.

EtC flashing

Internal clock error.

Data Error

In certain operating conditions, the instrument may detect errors in the data saved. These errors may compromise the correct operation of the instrument. If the microprocessor detects a data saving error, the display shows the message "EE".

If the fault persists, the controller needs to be replaced. If, on the other hand, the message disappears, it can continue to be used. When "EE" error occurs frequently and/or remains for some time, the controller should be checked, as the original precision may not be guaranteed.

Modifying the Parameters

PARAMETER NAVIGATION

The operating parameters, modifiable using the keypad, are divided into two types: frequent (type F) and configuration (type C). Access to the latter is protected by password (default= 22) to prevent accidental or unauthorized modifications.

Accessing the type F parameters:

- press the SET button for more than 3 s (if there are active alarms, mute the buzzer), the display shows the parameter code 'PS' (password);
- use the UP and DOWN buttons to scroll the parameters. The LED corresponding to the category of parameters will be on;
- press SET to display the value associated with the parameter increase or decrease the value using the UP or DOWN button respectively;
- press SET to temporarily save the new value and display the parameter again;
- repeat the procedure for any other parameters that need to be modified;
- press the SET button for more than 3 s to permanently save the parameters and exit the parameter setting procedure.

Accessing the type C parameters:

- press the SET button for more than 3 s (if there are active alarms, mute the buzzer), the display shows the parameter code "PS" (password);
- press the SET button to access the password setting;
- use the UP and DOWN buttons to scroll the numbers until displaying "22" (password to access the parameters);
- press the SET button to confirm the password;
- use the UP and DOWN buttons to scroll the parameters. The LED corresponding to the category of parameters will be on (see Table below);
- press SET to display the value associated with the parameter increase or decrease the value using the UP or DOWN button respectively;
- press SET to temporarily save the new value and display the parameter again;
- repeat the procedure for any other parameters that need to be modified;
- press the SET button for more than 3 s to permanently save the parameters and exit the parameter setting procedure.

Warnings:

If no button is pressed for 60 s, all the changes made to the parameters, temporarily saved in the RAM, will be cancelled and the previous settings restored.

The dAY, hr, Min parameters are not restored, as these are saved instantly when entered.

If power is disconnected from the instrument before saving the settings (pressing the SET button for 3 s), all the changes made to the parameters and temporarily saved will be lost.

Category	Initial	Icon
Probe parameters	/	-
Control parameters	r	-
Compressor parameters	c	
Defrost parameters	d	
Alarm parameters	A	
Fan parameters	F	
AUX output configuration parameters	H1	AUX
RTC parameters	-	

Setting the Default Parameters

Warnings:

Running this procedure overwrites any custom parameter settings.

To reset the default parameters:

- disconnect power from the instrument;
- reconnect power while holding the SET and DOWN buttons;
- the display will show the message "CF";
- after a few seconds the instrument starts operating with the default configuration. Any different parameter settings will need to be updated.

American Mortuary
COOLERS & EQUIPMENT

Troubleshooting

The following table shows a number of situations that may occur on the various models.
The most frequent causes and corresponding checks are described:

Problem	Cause	Checks
the compressor does not start (signalled by the compressor LED flashing)	• compressor delay set defrost post • dripping in progress	parameters c0, c1 and c2 and dd
the temperature is over the set limits but there is no alarm message and the buzzer, if fitted, does not sound	alarm delay set	parameters Ad, c6, d8
alarm IA is signalled (multifunction input) without actually being active	the multifunction input generates an alarm when the contact opens	connection of the input and whether this is closed in normal operation
the alarm connected to the multifunction input is not detected	alarm delay set or parameter programming error	1. if A4=1 2. the status of digital input A7
the defrost is not activated	defrost duration too short (dP) interval between defrosts dI=0: in this case the defrost is not activated	parameters dP and dI
	the end defrost temperature is too low or the evaporator temperature is too high	parameters dt and d/ (defrost probe)
the manual defrost is not activated and the defrost LED flashes	compressor protection times set	parameter d9 (select d9=1)
the high temperature alarm is shown after a defrost	the alarm delay after defrost is too short or the alarm threshold is too low	parameters d8 and AH
the display remains frozen even after the defrost	the ambient temperature has not yet reached the set point or alternatively the time d8 has not elapsed	wait or reduce d8
after modifying a parameter the controller continues working with the old values	the instrument has not updated the old value or alternatively the parameter setting procedure has not been ended correctly by pressing the SET button for 3 s	turn the instrument off and on again or alternatively reprogram the parameters correctly
The evaporator fan does not start.	1. a compressor and fan start delay has been set 2. if F0=1 (fan managed by fan controller) • the evaporator is "hot": the evaporator temperature can be read by selecting parameter /d; • dripping in progress; • F1 (evaporator fan control set point) too low. • post-dripping delay set 3. if F0=0 • F2=1 and the compressor is off • dripping in progress • post-dripping in progress	1. parameter c0 2. parameters F0, F1, Fd, dd and d/ 3. parameters F0, F2, dd and Fd

Table 8. PRO³ System Troubleshooting Chart

PROBLEM	POSSIBLE CAUSES	POSSIBLE CORRECTIVE STEPS
Compressor will not run	1. Main switch open.	1. Close switch.
	2. Fuse blown.	2. Check electrical circuits and motor winding for shorts or grounds. Investigate for possible overloading. Replace fuse after fault is corrected.
	3. Thermal overloads tripped.	3. Overloads are automatically reset. Check unit closely when unit comes back on line.
	4. Defective contactor or coil.	4. Repair or replace.
	5. System shut down by safety devices.	5. Determine type and cause of shutdown and correct it before resetting safety switch.
	6. No cooling required.	6. None. Wait until calls for cooling.
	7. Motor electrical trouble.	7. Check motor for open windings, short circuit or burn out.
	8. Loose wiring.	8. Check all wire junctions. Tighten all terminal screws.
Compressor noisy or vibrating	1. Flooding of refrigerant into crankcase.	1. Check setting of expansion valves.
	2. Worn compressor.	2. Replace.
High discharge pressure	1. Non-condensables in system.	1. Remove the non-condensables.
	2. Fan not running.	2. Check electrical circuit. Replace if motor fails.
	3. Dirty condenser coil.	3. Clean.
	4. System overcharged with refrigerant.	4. Reclaim refrigerant and recharge proper amount.
Low discharge pressure	1. Insufficient refrigerant in system.	1. Check for leaks. Repair and add charge.
	2. Low suction pressure.	2. See corrective steps for low suction pressure.
High suction pressure	1. Excessive load.	1. Reduce load or add additional equipment.
	2. Expansion valve overfeeding.	2. Check remote bulb. Regulate superheat.
Low suction pressure	1. Lack of refrigerant.	1. Check for leaks. Repair and add charge (see refrigerant charge chart).
	2. Evaporator dirty or iced.	2. Clean.
	3. Expansion valve malfunctioning.	3. Check and reset for proper superheat.
	4. Condensing temperature too low.	4. Check ambient temperature 50°F to 100°F.
Compressor thermal protector switch open	1. Operating beyond design conditions.	1. Add equipment so that conditions are within allowable limits.
	2. Dirty condenser coil.	2. Clean coil.
	3. Overcharged system.	3. Reduce charge (see refrigerant charge).
Fan(s) will not operate	1. Main switch open.	1. Close switch.
	2. Blown fuses.	2. Replace fuses. Check for short circuits or overload conditions.
	3. Defective motor.	3. Replace motor.
	4. Defective defrost control.	4. Replace defective component.
	5. Unit in defrost cycle.	5. Wait for completion of cycle.
	6. Coil does not get cold enough to reset thermostat	6. Adjust fan delay setting of control.
Room temperature too high	1. Control cut out set too high.	1. Adjust control.
	2. Superheat too high.	2. Adjust thermal expansion valve.
	3. System low on refrigerant.	3. Add refrigerant. See refrigerant charge chart. See page 2.
	4. Coil iced-up.	4. Manually defrost coil. Check defrost controls for malfunction.
Ice accumulating on ceiling around evaporator and/or on fan guards' venturi or blades	1. Defrost duration is too long.	1. Adjust defrost termination temp on control.
	2. Fan delay not delaying fans after defrost period.	2. Adjust fan delay setting or replace bad sensor.
	3. Defective defrost control or sensor.	3. Replace defective control or sensor.
	4. Too many defrosts.	4. Adjust number of defrosts.
Coil not clearing of frost during defrost cycle.	1. Coil temperature not getting above freezing point during defrost.	1. Check heater operation.
	2. Not enough defrost cycles per day.	2. Adjust control for more defrost cycles.
	3. Defrost cycle too short.	3. Adjust defrost control, defrost duration setting.
	4. Defective defrost control or sensor.	4. Replace defective component. .
Ice accumulating in drain pan	1. Defective heater.	1. Replace heater.
	2. Unit not installed properly (out of level)	2. Check and adjust if necessary.
	3. Drain line plugged.	3. Clean drain line.
	4. Defective control.	4. Replace defective component.