Dimplex
Thermal Solutions

WO2-2-10000-2P-NF-L-M-407c
Spec Submittal

The solution to all your cooling needs.

2625 Emerald Drive, Kalamazoo, Michigan 49001
Phone: 800.968.5665 or 269.349.6800 Fax: 269.349.8951

General Specifications

WO2-2-10000(801304)		
Width:	IN/CM	136.25/346.07
Height:	IN/CM	84.5/214.63
Depth:	IN/CM	41.7/105.92
Dry weight:	LB/KG	4000/1814.37
Operational weight:	LB/KG	4800/2177.24
Max. ambient temperature:	°F/°C	104/40
Min. ambient temperature:	°F/°C	-20/-28.89
Condenser air flow approx.:	CFM	24,000
Fluid tank capacity:	GAL/LTR	100/378.54
Coolant connections:	NPTF	2.0”

Fluid Specifications

Coolant:	N/A	Water/glycol 50/50
Coolant outlet temperature:	°F/°C	53/11.67
Coolant temperature accuracy:	°F/°C	3/1.65
Coolant flow:	GPM/LPM	35/132.49
Max coolant pressure:	PSI/BAR	70/4.83

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Refrigeration Specifications

Net cooling capacity:	BTU/kW	320,000/94
Refrigerant:	N/A	R407C
Refrigerant Charge:	LB/KG	60/27.22

Electrical Specifications (460/3/60)

FLA	105A
MOP	125A
MCA	110A
Disconnect Fuses	125A
Compressor FLA	20
Compressor LRA	101
Pump FLA	6.3A
Fan FLA	1.2A
Control Voltage	24v AC
SCCR	5kA
Note:	**For 208v or 230v, please consult the manufacturer for specifications!**

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Componentry Details

Cabinet	Galvanized, NEMA 4 electrical enclosure, site glass/fill tube
Circuits	Dual Refrigeration Circuit, Dual Fluid Circuit
Compressor(s)	Four, 10hp Hermetic Scroll
Condenser(s)	Two, oversized, air-cooled, with vertical air discharge and cleanable air filters
Evaporator(s)	Two, Copper-brazed, 316 Stainless Steel
Fan(s)	Eight, 0.5hp TEFC
Pump(s)	Two, 3hp, non-ferrous, centrifugal
Controller	Carel PCO5 controller with Carel pGD1 remote display with 150' of cable (requires ½" conduit)
Certifications	Compliant with UL1995 standards; OSHPD, CE, and CSA available as options
Upgrades (if applicable)	Seismic (800850), Coastal (In Development)

Add-Ons/Options

Filter Flow Meter Kit	Kit that provides filtration and 0-50GPM flow meter on inline piping. Installed indoors between chiller and MR equipment.
Isolation Springs	Set of vibration isolation springs. Recommended to be used when installing a chiller on a roof top. Helps eliminate vibration through the rooftop.
City Water Bypass Panel	Panel that allows switchover to city water backup in case of chiller failure. Multiple types available. Consult DTS for details.
Long Distance Remote Kit	Increases distance remote display can be ran from chiller to MR control room from 150' up to 400'
BMS Card	Card that allows chiller to tie into customer BMS system. Various types available. Consult DTS for details.
Booster Pump	In-line pump that allows chiller to provide adequate flow to process for systems that exceed standard pipe allowances.
Glycol	Propylene or Ethylene available at various concentrations in 55 gallon drums or 5 gallon pails

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Warranty/Services

Dimplex Thermal Solutions offers various services that can be performed by our certified technicians. These can be quoted at the time of purchase by our Sales Team, or as aftermarket services by our Parts Team. Please reach out to Dimplex for additional information.

Available services

Start Up Assistance	A DTS certified rep will come to site to inspect and start a new chiller to full operation
Planned Maintenance Program	A DTS certified rep will come to site 2 times a year to perform a maintenance check on the chiller. The tech will perform a full operational check and make any recommendations for repairs needed.
Start Up Plus	This includes: 1 startup and 2 PMs that can occur during your chiller warranty. This also extends your warranty an additional 6 months.
Field Evaluation	A DTS certified rep will come to site to inspect an existing chiller or in-process installation
Field Training	A DTS factory rep will come to site to train specified personnel on chiller operation and basic function.
Field Repairs	A DTS certified technician will complete a repair to an existing chiller and recommend any additional repairs or changes needed to keep the chiller in full operation

Please reach out to Dimplex Thermal Solutions' Parts team to inquire on or request a quote on any of these services at 800-968-5665 X708

Version	Revision Date	Description of Change	Changes Made By (Name & Title):
001	12/15/16	Creation of document	Kyle Hastings, Medical Service Manager

Dimplex
Thermal Solutions

At **Dimplex Thermal Solutions** we are aware that our success depends on your satisfaction. We thank you for the confidence you have displayed in our company through your recent purchase of a **Dimplex Thermal Solutions chiller**.

The unit is designed with your specific needs in mind to provide years of service and ongoing satisfaction. It has been thoroughly tested in our plant prior to shipping and stands ready to exceed expectations.

Please thoroughly review the enclosed materials before installation or operation. These pages contain detail regarding suggested fluids, start-up/maintenance operation and controls applications. They will guide you through the important steps of making this purchase part of your process.

As always, we stand by our product and should you require clarification or service please call us at:
1-800-YOU-KOOL (968-5665)
or 269-349-6800

Scan the QR code for quick access to online manuals. Must have chiller serial number, model number and email address.

Original Instruction

Dimplex
Thermal Solutions

AIR COOLED CHILLER
INSTALLATION and OPERATION MANUAL

TABLE OF CONTENTS

GENERAL INFORMATION REGARDING DESIGN TEMPERATURE

Our custom chiller systems are designed to maintain the temperature of cooling fluids within a selected temperature range. Each of our units is tested through monitored operation within design parameters. This enables our experienced technicians to calibrate all instrumentation precisely to the customers needs and verify that each individual unit will function as specified. Supporting test data is enclosed either in digital format or in print.

The units are designed to operate efficiently within given parameters. Due to varying heat exchange rates outside of design temperature, it is highly recommended that the machine operate only at temperatures within 10°F of the specified temperature. **Consult the factory if a process requires changes in excess of 10°F in either direction of design temperature**.

INSTALLATION:

1. Read and follow all information included with the chiller manual.

2. Read and understand all warning labels and tags on the chiller before installation.

3. Ensure the unit is placed on a flat, level, hard surface. Unless the chiller has been built for outdoor operation, it must be placed indoors. Space above and around the unit must be capable of dissipating the heat rejected by the chiller and allow room for servicing. Keep the unit at least 3ft away from walls or other objects and allow full access to all openings and electrical enclosures. At a minimum, 8ft of clearance is required above the unit for proper air circulation around the chiller as shown in Fig 1.

4. Chillers with solid feet should be secured using the provided mounting holes if possible. Units that have caster wheels should be locked to ensure the chiller does not move around.

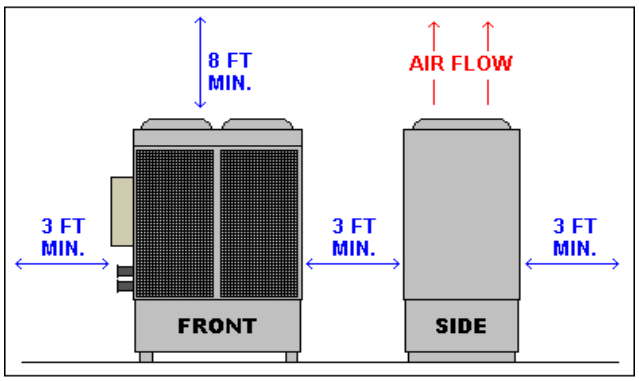


Figure 1. Minimum Installation Clearances

5. Connect fluid lines to the proper fittings from the process to the chiller marked "FLUID INLET TO CHILLER" and "FLUID OUTLET FROM CHILLER". Make sure that the flow of fluid to and from the unit can not be shut off or blocked while the chiller is in operation. Piping size should be large enough to match the fluid flow conditions, generally the size of the fittings on the chiller.

6. Fill the process plumbing and, if applicable, the chiller reservoir with the proper type and amount of fluid. **Check with the manufacturer of the process equipment for specific fluid requirements. Refer to the "Process Fluid Recommendations" section of the manual for information on using water in the chiller.**

7. Purge any air out of the fluid system to ensure that the pump suction is flooded. If possible, bleed any air trapped in the pump by opening the vent plug at the top of the pump until no more air comes out and fluid is present in the pump cavity.

DO NOT ALLOW THE FLUID PUMP TO RUN DRY. THIS WILL DAMAGE THE PUMP SEALS AND WILL NOT BE COVERED UNDER WARRANTY.

8. Connect any communication wiring between the chiller and process equipment including remote controls and interlocks. All communication and remote wiring is to be provided by the customer. Refer to the chiller's electrical prints for information on wiring locations.

9. Run power wiring to the chiller's main disconnect. Conductor size should match the chiller's disconnect size and power requirements in accordance with local codes. Ensure the power supplied matches the chiller data plate requirement for voltage, frequency, and amperage.

10. All inclusive units are shipped with the proper refrigerant charge in place. No adjustments should be necessary to the refrigeration system before startup. Refrigeration service valves are shipped in the open (back-seated) position.

11. Chillers with a remote condenser are shipped with a nitrogen charge from the factory. Refer to the included refrigeration drawing or contact Dimplex Thermal Solutions (DTS) for instructions on installing remote condenser units.

BASIC COMPONENTS:

Refer to Figure 2 for identification of the main parts on a standard DTS chiller. Please note that this is only a general representation of components and the model of your chiller may differ from the design shown. Contact Dimplex Thermal Solutions for specific component information regarding your chiller.

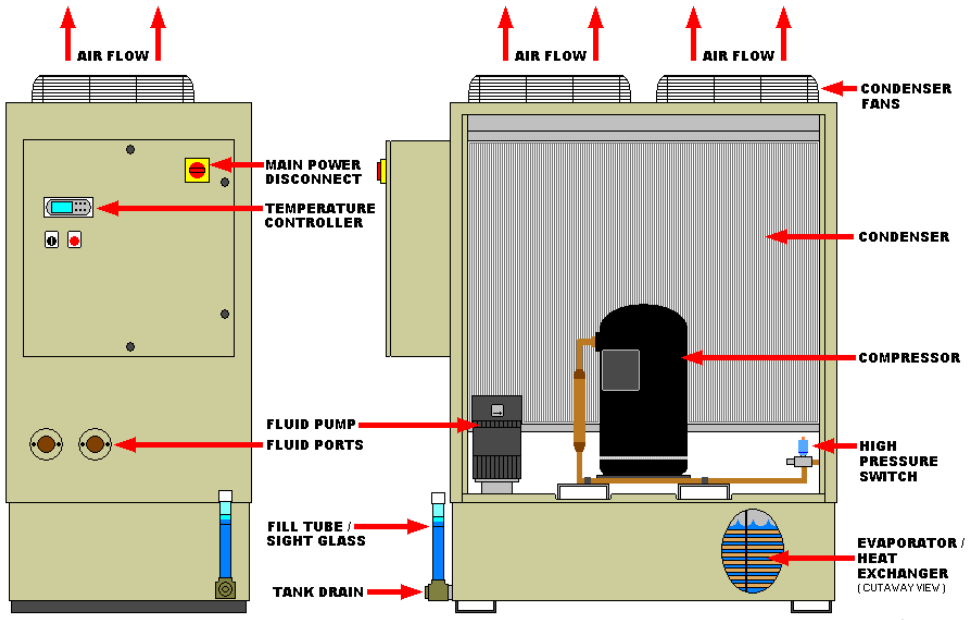


Figure 2. Basic Air-Cooled Chiller Components

PRE-STARTUP PROCEDURE:

1. Complete all steps of the *installation* process before applying power to the chiller.

2. If the unit is equipped, ensure the system switch is in the OFF position, then turn on the main power disconnect. The temperature controller will turn on and automatically go into a self-test. When the self-test is complete, the controller will begin to monitor the process fluid.

3. For units that run on three-phase power, **motor rotation must be checked and corrected to avoid damaging the chiller and voiding the warranty**. If the chiller is equipped with a phase protector, the unit will not start up and may display a fault if phase rotation is not correct. Correcting phase rotation should make this fault go away.

   Single phase units will not be affected by any certain phase rotation and should continue on with step 4 of the *pre-startup procedure*.

   If the unit is equipped with a process fluid pump, phase rotation can be checked by briefly turning on the system and allowing the pump to energize. Watch the rotation of the cooling fan on the pump to see that it is turning in the direction indicated by the rotation arrow on the pump motor. Do not use condenser fans to judge phase rotation as many three phase units have single phase fans and will run correctly from DTS even with incorrect power phasing.

   If the unit does not have a pump or any other visual method of checking rotation, a phase checking device can be used to check power at the disconnect. All components of the chiller are wired to operate with a "right-hand" phase rotation. If you do not have a phase checking device, a certified refrigeration technician should be utilized to monitor refrigerant pressures as the chiller compressor comes online.

   All motors within the chiller are synchronized at the factory for proper rotation. If one motor is turning in the wrong direction, all other motors will as well. **DO NOT** change the orientation of any motor leads within the chiller. If phase rotation is incorrect, shut off the power feed and change any two incoming power leads BEFORE the main disconnect.

4. Chillers two tons or larger are equipped with a compressor crankcase heater. These units must have power supplied to the unit with only the disconnect switch on for 8 hours prior to starting the chiller. This will raise the temperature of the compressor oil enough to vaporize any refrigerant that may be in the crankcase oil. **Failure to allow this warm-up can result in compressor damage.**

5. Ensure all process fluid lines and shutoff valves are open and the system is able to flow freely. Re-check the fluid level in the system before continuing with the startup.

INITIAL STARTUP & OPERATING PROCEDURE:

1. Complete all steps of the *pre-startup procedure* before starting the chiller process.

2. Before turning on the chiller system, become familiar with the operation of the temperature controller on the chiller. Refer to the *temperature controller guide* in this manual for instructions.

3. Turn on the chiller process by moving the selector switch to either ON or LOCAL. If the unit is wired to start remotely, turn the selector switch to REMOTE and start the chiller from the other location.

   Chillers that do not have a process selector switch or remote control should begin the chilling process as soon as the disconnect switch is turned on.

4. If the unit is equipped with a process pump, it will energize and produce flow as soon as the chiller is turned on. Monitor any system

pressure gauges and make note of initial pressures. The pump may need to run for several minutes to allow any air to be worked out of the system before regular flow is established. Any fluid bypass valves in the system should be factory set according to customer specifications but may need slight adjustment in the field. **Consult the factory before making any adjustments to the system.**

5. Check the entire fluid system for leaks and ensure there is flow throughout the system.

6. After the pump turns on, the temperature controller will then analyze the process fluid temperature and determine whether or not cooling is needed. If the fluid temperature is above setpoint, the refrigerant compressor will commence and begin cooling the fluid.

7. Monitor the chiller to ensure it is performing as designed. The chiller should be able to maintain the desired fluid setpoint under a full load from the process. Slight adjustments may be necessary according to your specific process. Please consult a technician at Dimplex Thermal Solutions before making any changes to the unit.

8. **DO NOT SWITCH OFF THE CHILLER USING THE MAIN POWER DISCONNECT.** To turn off the chiller process, move the selector switch to the OFF position. With the selector OFF, the temperature controller display will be on to monitor the process, but indicate the system is off. This keeps the power to the crankcase heater and allows a controlled shut-down and pump-out process which prevents compressor damage when starting again. Power should only be switched off when service is required and only after the unit has been switched off for at least 30 seconds. J-Series chillers do not have a separate on/off switch and power disconnect and can be switched off directly.

If the unit is equipped with a fluid maintenance heater, the heater will operate if the fluid falls below the factory setpoint and will operate with the selector switch off.

MAINTENANCE :

Proper maintenance is the key to extending the life of your chiller. Routine checks and a watchful eye will minimize costly repairs and down time. Establish a regular schedule of maintenance depending on the amount the chiller is used and the environment in which it is used. Environments that are very dirty or dusty will require more attention than ones that maintain a cleaner atmosphere.

This list of maintenance items will help to ensure an operational chiller:

1. **Inspect and clean condenser / air filters**
   Excessive buildup of dirt, oil, and other debris on the condenser coil will cause refrigerant pressures to increase and not allow the unit to perform to its full capacity. Ensure the fins of the condenser are clean and not damaged to keep airflow at a maximum. Use compressed air at no more than 30PSI to blow out the condenser in the opposite direction of air flow. If the unit is equipped with air filters, clean them with compressed air or wash them out with water and allow drying before reinstallation.

2. **Check water quality/glycol mixture**
   The process fluid should be clean and free of contaminants. If the chiller has a reservoir, check for debris or contaminants which could reduce the efficiency of your chiller. Check for normal inlet and outlet fluid pressures through the chiller. A large pressure differential could indicate a plugged heat exchanger or dirty tank. Test the process fluid to ensure proper freeze and corrosion protection in accordance with original design specifications. Do not test the process fluid from the sight glass due to the lower turnover at that location.

3. **Inspect fluid filters**
   Fluid filters should be clean enough to allow for proper flow and pressure in the system. An increased fluid pressure on the system may indicate a dirty filter. Replacement of fluid filters should be done at regular intervals to keep the fluid system clean and free flowing. Inspect fluid filters shortly after initial start-up of the chiller and establish a basis for how frequently they may need to be changed in the future.
4. **Inspect fluid system**

Visually check for fluid leaks throughout system. Physically check for loose pipe fittings or hoses. Ensure that no plumbing parts are wearing, cracking, or chafing.

5. Check voltage & amp draws

Check for proper incoming voltage and current draws on all motors and heaters. Refer to the chiller's electrical schematics or the motor nameplate for proper voltage and amperage ratings. Readings should be within +/- 10% of the nameplate and have a maximum difference of +/- 2% between each phase.

6. Inspect mechanical components

Check mechanical components of the chiller for signs of wear or over-heating. Metallic sounds or other excessive noise could indicate a problem with the chiller. Discolored paint or metal could be a sign of a motor under excessive load and over-drawing current. Keep all components with lubrication fittings properly filled according to the nameplate data or information tag.

7. Check all wiring

Ensure the chiller's main power disconnect is OFF. Check the electrical box and all junction boxes for any loose or damaged wiring. Replace any wiring that could cause problems with shorting or unintentional grounds.

8. Inspect/test refrigeration system

Check the inside of the chiller for evidence of refrigerant leaks. Spots of oil inside of the chiller or refrigeration lines covered in oil could indicate a possible leak. Have a certified refrigeration technician check the refrigeration system for proper operation. The technician should leak check the unit, monitor operating pressures, and adjust as needed.

9. Pump seals

All pump seals are designed to have some leakage to promote long seal life. The two parallel parts of the pump seal are separated by a thin film of the fluid being pumped. If pump seals did not leak at all, the two halves of the pump seal would contact each other and quickly be destroyed. With this said, with water or water/glycol most of the leaking fluid evaporates before ever dripping below the pump. With a water/glycol mixture some evidence of glycol staining or a drop or two below the pump is considered normal. With pumps used with oil, one should expect some evidence of oil near the pump considering that the oil cannot evaporate. A small amount of leakage is considered normal and desirable for long seal life.

- **For more information, contact the DTS Service Department 24 hours a day at 1-800-YOU-KOOL. Be sure to have model and serial number ready when calling.**

- **To purchase spare parts and regular maintenance items for your chiller, contact our Parts department at 1-800-YOU-KOOL.**

PROCESS FLUID RECOMMENDATIONS:

For recommendations on the correct process fluid to use in your chilling system, refer to the manufacturer of the equipment served by the chiller. Most manufacturers have a specified type of fluid for correct system operation. This document should serve as a guide only when using a glycol and water mixture for the heat transfer fluid.

USING WATER FOR CHILLER PROCESS:

Dimplex Thermal Solutions recommends the use of an industrial inhibited glycol and water mixture in its water chiller systems. The main job of glycol is to prevent freezing of the process fluid and ensure consistent flow at the operating temperature. Inhibited glycols will also prevent formation of scale and corrosion while protecting metals such as brass, copper, steel, cast iron, and aluminum. Water systems treated with inhibited glycol will also be protected from algae and bacteria that can grow and degrade the fluid system performance. **Ethylene** and **Propylene** are the two standard types of inhibited glycols that can be used in DTS chillers.

- Do not mix different types or brand names of glycol as this can result in some inhibitors precipitating out of the solution.
- Do not use automotive grade anti-freeze in the chiller process. These types of glycols are not designed for industrial applications and may cause problems with heat transfer or fluid flow.

Many automotive glycols contain silicate-based inhibitors that can coat heat-exchangers, attack pump seals, or form a flow restricting gel.

Check state and local codes when selecting the process fluid. Certain areas may have environmental regulations concerning the use and disposal of glycol or other additives.

ETHYLENE GLYCOL:
Ethylene glycol is the standard heat-transfer fluid for most industrial applications. This type of glycol can be used in any application where a low-toxicity content is not required. Ethylene glycol has moderately acute oral toxicity and should not be used in processes where the fluid could come in contact with potable water, food, or beverage products.

PROPYLENE GLYCOL:
Propylene glycol maintains generally the same freeze protection, corrosion and algae prevention as ethylene glycol, but has a lower level of toxicity. This type of glycol is more readily disposable than ethylene and safer to handle. Propylene glycol is commonly used in the food industry and in applications where the user may come in frequent contact with the fluid.
Dimplex Thermal Solutions recommends the use of K-Kool Glycols in its units.

WATER:
When selecting the water to mix with the glycol, use a good quality, filtered source that meets the requirements of the process machine manufacturer. Dimplex Thermal Solutions recommends the use of **distilled** or **reverse-osmosis** water for the water / glycol mixture.

De-ionized water can be used to fill the chiller process initially, but should not be maintained to a de-ionized state thereafter. Unless the chiller has been ordered and designed for the use of water that is continually de-ionized, the fluid will actually attack certain metals within the chiller and cause damage to some components. Damage caused by the use of maintained de-ionized water in a chiller not designed for it will not be covered under warranty. Consult DTS before continuously using de-ionized water to check for compatibility.

The use of regular tap water is not recommended. Water from the "city" or "ground" contains deposits and additives which can decrease component life and increase maintenance time.

GLYCOL / WATER MIXTURES:
The location of the chiller and environmental concerns must be taken into account when selecting the proper mixture of glycol and water for the chiller process. A process which is located completely indoors and has no chance of freezing will require less glycol than a system located outdoors where low temperatures can cause the fluid to freeze and piping to burst. Applications that have a low operating temperature (below 30°F) should use a glycol mixture equivalent to an outdoor system.

After selecting the proper glycol and water types, use the following chart to determine the recommended mixture depending on application and location of the process. The glycol percentage figures in the chart below will apply to any brand of ethylene or propylene glycol.

APPLICATION	GLYCOL %	WATER %	FREEZE PROTECTION*	BURST PROTECTION*
Indoor chiller and process	30	70	5°F / -15°C	-20°F / -29°C
Outdoor chiller / Low fluid temperature system (<30°F)	50	50	-35°F / -37°C	-60°F / -51°C

*** Figures based on performance of DTS "K-Kool-E" brand of Ethylene Glycol.**

FLUID MAINTENANCE / FILTRATION:

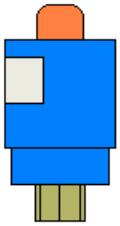
Maintaining clean process water and the proper glycol content will extend the life of the system and reduce costly down-time. If the chiller was not equipped with a fluid filter from the factory, it is highly recommended to install some sort of filtering system to remove unwanted dirt and debris. Refer to the *Chiller Maintenance* section of the manual for water and filter maintenance information.

TROUBLESHOOTING GUIDE:

- This guide should serve as a general outline for troubleshooting issues with all Dimplex Thermal Solutions chillers. Due to the various models of DTS chillers, the items listed in *possible causes* may not apply to every DTS chiller. Contact the DTS customer service department for assistance at 1-800-YOU-KOOL

- Refer to the *Warranty Procedures* section of this manual before having any work performed on units that are under warranty.

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Chiller will not turn on. (No display on temperature controller)	• No power to chiller. • Main disconnect turned off. • Blown fuses. • Tripped starter overloads.	• Check power feed to chiller. • Turn on main disconnect. • Check for and replace blown fuses. • Reset any tripped overloads.
Chiller turns on but nothing happens. (Display is on but no pump or cooling cycle)	• Selector switch not turned on. • Remote signal not active. • Fault present within chiller. • Fluid pump not operating. • Blown fuses. • Phase rotation incorrect.	• Turn selector switch to ON or LOCAL. • Check remote connection for signal. • Determine fault and clear if possible. • Check pump overload and power to contactor. • Check and replace fuses. • Correct phase rotation at main disconnect.
Fluid pump is on but does not create required pressure or flow. (Flow fault)	• No fluid present at pump suction. • Pump discharge closed or blocked. • Fluid is dirty / dirty filters. • Fluid line size too small. • Pump / fluid system is air-bound. • Phase rotation incorrect.	• Check fluid level and ensure there is fluid at the pump's suction. • Ensure all fluid lines are open to flow. • Clean fluid and change filters. • Up-size fluid lines outside of chiller. • Vent pump cavity to flood the suction. • Correct phase rotation at main disconnect.
Fluid pump is operational but the refrigerant compressor will not run.	• Fluid temp is below setpoint. • Inadequate fluid flow. • Low refrigerant pressure. • High refrigerant pressure. • Compressor overload tripped. • Compressor lube protector tripped (If equipped). • Blown fuses to compressor. • Faulty temp controller output. • Bad compressor.	• Allow fluid system to increase in temperature. • Correct fluid system to establish flow. • SEE "Low refrigerant fault" section. • SEE "High refrigerant fault" section. • SEE "Compressor overload" section. • Reset lube protector. • Check and replace blown fuses. • Consult DTS customer service department. • Consult DTS customer service department.
Chiller is running but does not maintain the desired fluid temp.	• Fault present within chiller. • Phase rotation incorrect. • Fluid or heat exchanger is dirty. • Loss of flow or fluid level. • Low refrigerant pressure. • Ambient temperature too high. • Heat load exceeds chiller's capacity.	• Determine fault and clear if possible. • Correct phase rotation at incoming power. • Replace fluid and clean fluid system. • Check fluid system for free flow and ensure chiller has adequate fluid level. • Restart chiller or clear fault on controller. SEE "low refrigerant fault" section. • Ensure chiller is operating within its designed ambient temperature specification. • Reduce heat load to chiller if possible. Check the factory specifications to ensure the chiller is not being operated more than +/- 10°F of the original temperature setpoint or fluid flow.

Low refrigerant pressure fault - (Automatically reset when satisfied with pressure)	• Low ambient air temperature. • Loss of fluid flow through evaporator. • Loss of refrigerant. • Refrigerant solenoid not functional. • Faulty pressure switch. • Compressor crankcase not warm or faulty crankcase heater.	• Ensure chiller is operating within its designed ambient temperature specification. • Check fluid flow and ensure evaporator is clean. • Have a refrigerant technician leak check unit and charge with the appropriate refrigerant. • Check wiring to solenoid or replace valve. • Replace pressure switch. • Ensure main power disconnect has been on for at least 8 hours prior to use. Replace crankcase heater if faulty.
High refrigerant pressure fault - (Manually reset inside of chiller)  (Example of a high pressure switch shown)	AIR COOLED CHILLERS: • Air filters dirty. • Condenser dirty. • Incoming air too hot. • Inoperative fans. • Back panel out of chiller. • Phase rotation incorrect. • Refrigerant system overcharged. WATER COOLED CHILLERS: • Low water flow to condenser. • Condenser dirty. • Regulating valve operating incorrectly. • Refrigerant system overcharged.	• Clean filters (See maintenance section). • Clean condenser (See maintenance section). • Ensure the chiller is properly ventilated with fresh air not exceeding 90°F, unless designed for high-ambient temperature operation. • Check for blown fan fuses. • Ensure all covers and panels are in chiller. • Correct phase rotation at incoming power. • Have a refrigeration technician ensure the system is properly charged. • Check condenser water supply and pressure. • Clean condenser. • Have a refrigeration technician adjust the valve to the proper pressure setting and check operation. • Have a refrigeration technician ensure the system is properly charged.
Compressor overload - (May be manually or automatically reset, depending on compressor)	• Compressor running too hot. • Temperature setpoint too high. • Refrigerant pressures too high or low. • Faulty overload module. • Low voltage to chiller. • Defective compressor.	• Allow compressor to cool, then restart unit. • Move temperature setpoint to +/- 10°F of factory setting. • Have a refrigeration technician monitor pressures and determine cause. • If compressor will run, check amp draw on compressor leads to verify compressor is ok. • Correct incoming voltage. • Replace compressor.

GENERAL WARRANTY PROCEDURES:

WARRANTY WORK:

Before doing any work on a chiller covered under warranty, call Dimplex Thermal Solutions (DTS) and explain the problem to one of our service technicians who can then determine the best course of action. DTS will not be obligated to pay for warranty service performed without our prior approval.

Please Note: It is the service contractor's responsibility to enclose a service report/work order with each invoice. Unless pre-authorized for special circumstances, DTS will not honor invoices for work done by two or more people at a time, or for overtime labor charges. If the customer requests work that falls into either of these categories, the customer is responsible for the extra charges incurred.

WARRANTY PARTS:

All replacement parts under warranty must come from Dimplex Thermal Solutions. When it is necessary for DTS to replace parts which are under warranty, we will issue a Returned Goods Authorization (RGA) for all parts we wish to have shipped back to our factory, freight prepaid. RGA's are valid for a period of thirty (30) days. If DTS has not received the requested parts by the expiration date, the customer will be invoiced for the replacement cost at that time.

Please Note: While DTS is willing to pay freight charges one way for replacement parts, special freight charges such as next day service, Saturday delivery, etc, are not included. If the customer requests one of these special services, they are responsible for the charges incurred.

DIMPLEX THERMAL SOLUTIONS

2625 Emerald Drive
Kalamazoo, MI 49001

1-800-YOU-KOOL
(1-800-968-5665)

Dimplex Thermal Solutions

WARRANTY

WARRANTY OF WORKMANSHIP AND MATERIALS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE AND, EXCEPT AS SPECIFICALLY SET FORTH HEREIN, ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESSED OR IMPLIED, ARE HEREBY DISCLAIMED AND EXCLUDED BY THIS AGREEMENT. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION HEREOF. SELLER'S WARRANTIES HEREIN APPLY ONLY TO THE ORIGINAL PURCHASER AND DO NOT EXTEND, EXPRESSLY OR BY IMPLICATION, TO ANY OTHER PERSON OR PERSONS. Seller guarantees all North American installed equipment and materials of its manufacture or start-up services performed by Seller against defects in workmanship and material—under normal and intended use, service, maintenance and proper installation—for a period of **eighteen (18) months for Koolant Kooler Brand Chillers** from date of shipment. Equipment installed outside of North America will be warranted for parts only, standard delivery shipment. The Seller obligation under this agreement is limited solely to repair or replacement at Seller's option, in Seller's factory or in the field, with Seller approval, within said warranty period. If the equipment is returned to Seller's factory, the unit must be returned freight prepaid, with prior approval from Seller, with Buyer having obtained a returned goods authorization (RGA) number from Seller. Seller will make any needed repairs at no charge to Buyer if the damage is determined not to be the fault of the Buyer. Seller will then return the equipment to Buyer freight prepaid; in other words, Seller will be responsible for one leg of the transportation costs. The above warranty shall not apply to any equipment, or components thereof, which have been subject to abnormal or improper use, negligence (including failure to maintain the equipment as recommended in writing by Seller) or accident or which have been altered or repaired by other than Seller or Seller's authorized representative. Nothing shall be construed as an additional warranty unless specifically designated as such in writing and signed by Seller ("Additional Warranty"). The Additional Warranty shall be subject to the provision of this document as to duration and limitation of remedy, unless the Additional Warranty expressly amends such provisions. The above warranty shall not apply to any parts sold independently of the unit sold. All parts sales are subject to ninety (90) day warranty. *(Effective Date 7-5-2012)*

SAFETY DATA SHEET

FILE NO.: SDS_R-407c_01
SDS DATE: April 2015

A-GAS® AMERICAS

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: R-407c
SYNONYMS: Refrigerant Gas Blend
Product Use: Refrigerant

RECLAIMER: A-Gas Americas
ADDRESS: 30045 FM 2978
Magnolia, TX 77354
agasamericas.com
CAGE Code: 4LMC6

EMERGENCY PHONE: 1-800-633-8253 PERS in USA
INT'L EMERGENCY PHONE: 1-801-629-0667
GENERAL INFORMATION: 1-419-867-8990
FAX: 1-419-867-3279

PREPARED BY: Environmental, Health & Safety Manager

SECTION 2: HAZARD IDENTIFICATION

HAZARD CLASSIFICATION: Gas under pressure, Liquefied gas
Skin irritation, Category 3
Eye irritation, Category 1

SIGNAL WORD: **WARNING**

HAZARD STATEMENT: Liquid and gas under pressure.
Overheating and overpressurizing may cause gas release or violent cylinder bursting.
Simple asphyxiant.

PRECAUTIONARY STATEMENTS: Keep container tightly closed in a cool/well-ventilated place.
Keep away from heat/sparks/open flame. – No smoking.
Do not allow liquid or vapors to come into contact with skin or eyes.
Wear protective gloves and eye/face protection.
Do not breathe mist/vapors.
Use only in a well-ventilated area.
Avoid release to the environment.

OTHER HAZARDS: May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products.
Vapor reduces oxygen available for breathing and is heavier than air.
Harmful if inhaled and may cause heart irregularities, unconsciousness, or death.
Liquid contact with eyes or skin may cause frostbite

ASHRAE STANDARD 34 SAFETY RATING: A1

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	FORMULA	CAS NUMBER	WEIGHT %
Difluoromethane (HFC-32)	CH_2F_2	75-10-5	23
Pentafluoroethane (HFC-125)	CHF_2CF_3	354-33-6	25
1,1,1,2-Tetrafluoroethane (HFC-134a)	CH_2FCF_3	811-97-2	52

Trace impurities and additional material names not listed above may also appear in Section 15 toward the end of this SDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

SECTION 4: FIRST AID MEASURES

SKIN: Flush exposed skin with lukewarm water (not hot), or use other means to warm skin slowly. Get medical attention if frostbitten by liquid or if irritation persists.

EYES: Immediately flush with large amounts of water for at least 15 minutes. Get medical attention if irritation persists.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. Do not give adrenaline, epinephrin or similar drugs following exposure to this product.

INGESTION: Not applicable - product is a gas at ambient temperatures.

ADVICE TO PHYSICIAN: Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

SECTION 5: FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA: Use extinguishing media appropriate to surrounding fire conditions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: R-407c is not flammable at ambient temperatures and atmospheric conditions. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources.
May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products.
Cylinders are equipped with pressure release devices to vent contents exposed to high temperatures.
Container may explode if heated due to resulting pressure rise.

SPECIAL FIRE-FIGHTING PRECAUTIONS/INSTRUCTIONS: Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: If the release is caused by an open valve and it is safe for operator to close, do so. If possible to transfer the remaining gas in the cylinder in a safe manner to a separate tank, do so. If the release cannot be isolated or closed and it is a significant amount, allow the gas to release in place or safely move cylinder to a safe area. Evacuate area in the event of a significant release in an enclosed area. Keep upwind. Ventilate area, especially low places. Remove open flames and heating elements. Disperse gas with floor level forced air. Liquid will evaporate.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

SECTION 7: HANDLING AND STORAGE

HANDLING AND STORAGE: Avoid breathing gas. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Use properly rated DOT or ASME cylinders/tanks only. Follow standard safety precautions for handling and use of compressed gas cylinders. Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

OTHER PRECAUTIONS: R-407c should not be mixed with air above atmospheric pressure for leak testing or any other purpose. See Section 5: Unusual Fire and Explosion Hazards.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS:

INGREDIENT NAME	CAS NUMBER	ACGIH TLV	OSHA PEL	OTHER LIMIT(S)
Difluoromethane (R-32)	75-10-5	None	None	* 1000 ppm TWA
Pentafluoroethane (R-125)	354-33-6	None	None	*1000 ppm TWA **1000 ppm TWA
1,1,1,2-Tetrafluoroethane (HFC-134a)	811-97-2	None	None	*1000 ppm TWA **1000 ppm TWA

* = Occupational Exposure Limit (ASHRAE)
** = Workplace Environmental Exposure Limit (AIHA)

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:
Hydrogen Fluoride: ACGIH TLV = 3 ppm ceiling

ENGINEERING CONTROLS: Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.

PERSONAL PROTECTIVE EQUIPMENT:

SKIN: Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type of glove material for given application. Wash contaminated clothing and clean protective equipment before reuse. Wash skin thoroughly after handling.

EYES: Where there is reasonable probability of liquid contact, wear chemical safety goggles, and have eye flushing equipment available.

RESPIRATORY: None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, use a self-contained, NIOSH-approved breathing apparatus or supplied air respirator. For escape, use the former or a NIOSH-approved gas mask with organic vapor canister.

ADDITIONAL RECOMMENDATIONS: Wash hands after use and before eating or drinking. Provide eyewash stations and quick-drench shower facilities at convenient locations.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear, colorless liquid and vapor
PHYSICAL STATE:	Gas at ambient temperatures
MOLECULAR WEIGHT:	86.2 g/mol
CHEMICAL FORMULA:	23% CH_2F_2 / 25% CHF_2CH_3 / 52% CH_2FCF_3
ODOR:	Faint ethereal odor
ODOR THRESHOLD:	Not available
RELATIVE DENSITY:	Not available
VISCOSITY:	Not available
SPECIFIC GRAVITY:	1.16 @ 21.1^{o} C
SOLUBILITY IN WATER (weight %):	Not available
pH:	Neutral
BOILING POINT:	-43^{o} C
MELTING POINT:	Not available
VAPOR PRESSURE:	156.2 psia @ 21.1^{o} C 356.7 psia @ 54.4^{o} C
VAPOR DENSITY (air = 1.0):	3.0
EVAPORATION RATE (CC14 = 1.0):	>1
% VOLATILES:	100%
FLASH POINT:	Not applicable
FLASH POINT METHOD:	Not applicable
AUTOIGNITION TEMPERATURE:	Not available
DECOMPOSITION TEMPERATURE:	Not available
UPPER FLAMMABLE LIMIT (volume % in air):	None*
LOWER FLAMMABLE LIMIT (volume % in air):	None*
FLAME PROPAGATION RATE (solids):	Not applicable
OSHA FLAMMABILITY CLASS:	Not applicable
PARTITION COEFFICIENT (n-octanol/water):	Not available

* Based on ASHRAE Standard 34 with match ignition.

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY: May cause strong exothermic reaction when exposed to freshly abraded aluminum surfaces at very high temperatures or high pressure. Chemically active metals: potassium, calcium, powdered aluminum, magnesium and zinc.

STABILITY: This material is chemically stable under specified conditions for storage, shipment and/or use. See Section 7 Handling and Storage for specified conditions.

CONDITIONS TO AVOID: Do not mix with oxygen or air above atmospheric pressure.
Any source of high temperature, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Thermal decomposition products include halogens, halogen acids and possibly carbonyl halides.

SECTION 11: TOXICOLOGICAL INFORMATION

ROUTES OF EXPOSURE: Inhalation, Skin contact, Eye contact

ACUTE EFFECTS OF EXPOSURE: Frostbite from skin contact with liquid.
High vapor concentrations are irritating to the eyes and respiratory tract and may result in central nervous system effects such as headache, dizziness, drowsiness and, in severe exposure, loss of consciousness and death.

The dense vapor of this material may reduce the available oxygen for breathing, and prolonged exposure to an oxygen-deficient atmosphere may be fatal.
Inhalation may cause an increase in the sensitivity of the heart to adrenaline, which could result in irregular or rapid heartbeats.
Medical conditions aggravated by exposure include heart disease or compromised heart function.

CHRONIC EFFECTS OF EXPOSURE: None known.

ACUTE TOXICITY: LC_{50} (rat – 4 hr.): ≥ 520,000 ppm (R-32); ≥ 800,000 ppm (R-125); > 500,000 ppm (R-134a)
Cardiac Sensitization Threshold (dog): 350,000 ppm (R-32); ≥ 75,000 ppm (R-125); > 80,000 ppm (R-134a)

CHRONIC TOXICITY: Teratogenic NOEL (rat and rabbit): 50,000 ppm (R-32); 50,000 ppm (R-125); 40,000 ppm (R-134a)
Subchronic Inhalation NOEL (rat): 50,000 ppm (R-32); ≥ 50,000 ppm (R-125); 50,000 ppm (R-134a)
Chronic NOEL: 10,000 ppm (R-125); 10,000 ppm (R-134a)

DESCRIPTION OF SYMPTOMS: Inhalation of high concentration may lead to unconsciousness and possible death. Effects of overexposure by inhalation may include non specific discomfort, such as nausea, headache, or weakness, or temporary central nervous system depression with effects such as dizziness, headache, confusion, loss of coordination, and loss of consciousness. Higher exposures by inhalation may cause temporary alteration of the heart's electrical activity with irregular pulse, palpitations, or inadequate circulation. Individuals with pre-existing diseases of the central nervous or cardiovascular system may have increased susceptibility to the toxicity of excessive exposure.

CARCINOGENICITY: Not listed as a carcinogen by NTP, IARC, or OSHA

SECTION 12: ECOLOGICAL INFORMATION

AQUATIC TOXICITY: No data available, but product is unlikely to remain in water due to its gaseous state at room temperature.

DEGRADABILITY: No data available.

BIOACCUMULATION: Bioaccumulation is considered unlikely for all ingredients of this material, due to their gaseous state at ambient temperatures and atmospheric pressure.

ADSORPTION/LEACHING: Adsorption/Leaching is considered unlikely for all ingredients of this material, due to their gaseous state at ambient temperatures and atmospheric pressure.

OTHER ADVERSE EFFECTS:

Ozone Depletion Potential (CFC 11 = 1.0):	0.00
Global Warming Potential (CO_2 = 1.0):	1,600

SECTION 13: DISPOSAL CONSIDERATIONS

RCRA: Unused product is not considered to be a RCRA hazardous waste.

DISPOSAL CONSIDERATIONS: Recover, reclaim or recycle when practical. Dispose of in accordance with federal, state and local regulations. Product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations. Contact A-Gas Americas for recovery/reclamation of this product.

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

UN NUMBER:	UN3340
UN PROPER SHIPPING NAME:	Refrigerant Gas R407C
US DOT HAZARD CLASS:	2.2, Non-Flammable Gas
PACKING GROUP:	Not Applicable

ENVIRONMENTAL CONCERNS: Product contributes to global warming.

BULK TRANSPORTATION: Avoid transportation in vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the containers and what action to take in the event of an accident or an emergency.
Prior to transporting cylinders, ensure that they are firmly secured, valves are closed and not leaking, and the valve outlet cap nuts or plugs (if provided) are correctly connected.

SPECIAL TRANSPORTATION: None determined.

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT): All components of this product are listed on the TSCA Inventory list.

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT) and SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):

No "Reportable Quantities" (RQs) or "Threshold Planning Quantities" (TPQs) exist for any of the ingredients in this product.

Any spill or release resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center (800-424-8802) and to your local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: Immediate (Acute) Health
Sudden Release of Pressure

SECTION 313 TOXIC CHEMICALS: None of the ingredients of this product are classified as SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 3 Composition/Information on Ingredients.

ADDITIONAL REGULATORY INFORMATION:

R-407c is subject to U.S. Environmental Protection Agency Clean Air Act Regulations at 40 CFR Part 82.

WARNING: Do not vent to the atmosphere. To comply with provisions of the U.S. Clean Air Act, any residual must be recovered. **Contains Pentafluoroethane (HFC-125) Difluoromethane (HFC-32), and Tetrafluoroethane (HFC-134a)**, greenhouse gases which may contribute to global warming.

FOREIGN INVENTORY STATUS:

EU-EINECS: # 2065578 (HFC-125)
2008394 (HFC-32)
223770 (HFC-134a)

SECTION 16: OTHER INFORMATION

PREPARED BY:	A-Gas Americas
DATE PREPARED:	January 2015
CURRENT REVISION LEVEL:	01
CURRENT REVISION DATE:	4/1/2015
REVISED BY:	Environmental, Health & Safety Manager (A-Gas RemTec)

DISCLAIMER: *Details given in this document are for informational purposes only, and are believed to be correct. Information is provided without warranty. A-Gas RemTec is not liable for any damage which may result from the use or reliance on this information.*

pCO compact

controllo elettronico
electronic controller

CAREL

ITA Foglio istruzioni

ENG Technical leaflet

LEGGI E CONSERVA QUESTE ISTRUZIONI

READ AND SAVE THESE INSTRUCTIONS

Integrated Control Solutions & Energy Savings

Simboli:

 **Attenzione:** il simbolo nel coperchio plastico del controllo indica di riferirsi al presente foglio istruzioni durante l'installazione elettrica.

ENG

Symbol:

⚠ **Warning:** the symbol in the plastic cover of the control, means to refertto this techinical leaflet, during the electrical installation.

1. INTRODUCTION

The new pCO compact series is the result of the need for a controller than can manage considerable information flows. This feature adds to the numerous advantages of a programmable controller.
pCO compact is compatible with the pCO family at both a hardware and software level, the controller has been developed by CAREL in compliance with the European RoHS directive. Ideal as system coordinator, the simultaneous access to one supervisory systems and master functions make it versatile for all types of applications and requirements in the HVAC/R sector.
The application program can be downloaded to the flash memory using the smart key PCOS00AKY0, or from a PC using the CVSTDUTLF0 USB-485 adapter and the pCO manager, or 1 tool program, or directly by USB connection in the provided models.
The pCO compact can also execute a control program, and is fitted with a set of terminals for connection to devices such as probes, compressors, fans, etc.
The fast digital input can be used to directly read energy meters.
The program and the parameters are saved to FLASH memory and EEPROM, meaning the data is stored even in the event of power failures and without the need for a backup battery.
The program can be loaded from a PC (28.8 kbps and 115.2 kbps) or using the special programming key called the Smart Key. The optional connection to the supervisor-telemaintenance serial line using the CAREL or Modbus® communication protocol, over the RS485 standard, is made by fitting the pCO compact with one optional serial cards. Other optional cards can be used to connect to a supervisor over standards other than RS485 (communicating via BACnet, LON, SNMP, HTTP, e-mail, Konnex).
pCO compact has 3 serial interfaces, specifically:

- one BMS serial interfaces for serial cards
- one opto-isolated Field-Bus serial interface (alternatively can be used for the tLAN)
- one pLAN serial interface for acquiring or sharing data.

The built-in user interface consists of a White positivo LCD, with 132x64 pixel resolution and a six-button membrane keypad.

1.1 Versions available

The controller is available in two models: TYPE A and TYPE B, yet a different only maximum number of I/Os available.

Models	Description	Carel code
TYPE A	BASIC (RELAY)	PCOX000AA0
	BASIC (2 SSR)	PCOX002AA0
	+ BUILT-IN DISPLAY (RELAY)	PCOX000BA0
	+ BUILT-IN DISPLAY (2 SSR)	PCOX002BA0
	+ USB (RELAY)	PCOX000CA0
	+ USB (2 SSR)	PCOX002CA0
	+ USB + BUILT-IN DISPLAY (RELAY)	PCOX000DA0
	+ USB + BUILT-IN DISPLAY (2 SSR)	PCOX002DA0
TYPE B	BASIC (RELAY)	PCOX000AB0
	BASIC (2 SSR)	PCOX002AB0
	BASIC (4 SSR)	PCOX004AB0
	+ BUILT-IN DISPLAY (RELAY)	PCOX000BB0
	+ BUILT-IN DISPLAY (2 SSR)	PCOX002BB0
	+ BUILT-IN DISPLAY (4 SSR)	PCOX004BB0
	+ USB (RELAY)	PCOX000CB0
	+ USB (2 SSR)	PCOX002CB0
	+ USB (4 SSR)	PCOX004CB0
	+ USE + BUILT-IN DISPLAY (RELAY)	PCOX000DB0
	+ USB + BUILT-IN DISPLAY (2 SSR)	PCOX002DB0
	+ USB + BUILT-IN DISPLAY (4 SSR)	PCOX004DB0

Tab. 1.a

1.2 Installation

Mechanical fastening

The pCO compact is installed on a DIN rail. To fasten the unit to the DIN rail, press it lightly against the rail. The rear tabs will click into place, locking the unit to the rail. Removing the unit is just as simple, using a screwdriver through the release slot to lever and lift the tabs. The tabs are kept in the locked position by springs.

1.3 Power supply

The power supply is connected between G and G0, with G0 clamp connected to earth (PE). For AC installation, use a 30 VA class II safety transformer, output voltage 24 Vac, supplying one pCO compact controller only.
If supplying multiple pCO compact controllers with the same transformer, the rated power of the latter must be n x 30 VA, where "n" is the number of controllers being supplied by the transformer, regardless of the version of controller.

- The power supply to the pCO compact controller and terminal (or series of pCO compact controllers and terminals) should be separate from the power supply to the other electrical devices (contactors and other electromechanical components) inside the electrical panel.
- A 250 V (5x20) 800 mAT fuse must be installed in the power supply line of the controller and a 50 mAT - 250 V (5x20) must be installed in the power supply of SYNC clamp (only for 48 Vdc power supply). The power supply is functionally insulated from the rest of the I/O circuit, including the serial connections.
- The power cable should be wound twice around a ferrite (i.e. KITAGAWA part no. RI 18-28-10 - CAREL code 0907877AXX).
- The synchronicity line (SYNC) must be supplied by a class 2 safety transformer with 24 Vac output using the two pins on terminal "J2" called SYNC.
  If the controller has a 24 Vac power supply, this can also be used to supply the SYNC signal. It is necessary to follow exactly the wiring connection in fig. 4.b.
  If, on the other hand, the controller has a DC power supply 48 Vdc (36 Vmin…72 Vmax), the SYNC connection must be supplied by a special transformer (at least 1 VA) connecting the 24 Vac output to the two SYNC pin. In this case, it must be protected by a 250 V 50 mAT fuse (follow the Fig. 4.c).
- To make the power supply connection to terminal J1, use a cable with a minimum cross-section of 1mm^2.

1.4 BMS serial options

	item	code	description
1	Modbus®/CAREL RS485	PCOS004850	opto-isolated RS485 serial
2	LON	PCO10000F0	LON FTT10 serial
3	Ethernet™ BACnet™ / SNMP /Modbus®	PCO1000WB0	Ethernet™ serial
4	BACnet™ RS485	PCO1000BA0	BACnet™ MS/TP 485 serial
5	RS232	PCO100MDM0	RS232 serial
6	CANbus	PCOS00HBB0	CANbus for slave serial port (BMS)
7	KONNEX	PCOS00KXB0	KONNEX serial BMS port

Tab. 1.b

1.5 Connectors

Electrical specifications of the plug-in connectors used
Step: 5.08 mm; Rated voltage: 250 V; Rated current: 12 A; Cable size: 0.25 mm^2 - 2.5 mm^2 (AWG: 24 to 12);
Stripping length: 7 mm; Screw thread size: M3; Tightening torque: 0.5- 0.6 Nm
Step: 3.81 mm; Rated voltage: 160 V; Rated current: 8 A; Cable size: 0.25 mm^2 - 1.5 mm^2 (AWG: 28 to 16);
Stripping length: 7 mm; Screw thread size: M2; Tightening torque: 0.22- 0.25 Nm.

1.6 Installation warnings - operating environments and connections

Avoid assembling the boards in environments with the following characteristics:
- relative humidity greater than 90%;
- strong vibrations or knocks;
- exposure to continuous water sprays;
- exposure to corrosive or pollutant gases (e.g. sulphur or ammonia fumes, saline mist, smoke) so as to avoid corrosion and oxidisation;
- strong magnetic and/or radio interference (therefore avoid installing the unit near transmitting antennae);
- exposure of the pCO compact to direct sunlight or the elements in general;
- large and rapid fluctuations in ambient temperature;
- environments where explosives or mixes of flammable gases are present;
- exposure to dust (formation of corrosive patina with possible oxidation and reduction of insulation).

For connection, the following warnings must be observed:
- provide a power supply switch in accordance with the local disposal legislation;
- using a different power supply from the one specified may seriously damage the system;
- use cable ends suitable for the terminals. Loosen each screw and insert the cable ends, then tighten the screws. When completed, lightly tug the cables to check that they are tight;
- separate as much as possible the probe and digital input signal cables from the cables carrying inductive loads and power cables to avoid possible electromagnetic disturbance. Never run 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 cables as much as possible, and avoid spiral paths that enclose power devices;
- avoid touching or nearly touching the electronic components fitted on the boards, so as to avoid electrostatic discharges (extremely dangerous) from the operator to the components;
- separate the power supply to the digital outputs from the power supply to the pCO compact;
- when tightening the cables to the terminals do not exert excessive pressure on the screwdriver, to avoid damaging the pCO compact;
- disconnect the controller from the power supply before performing any maintenance or assembly operations;
- the controller has to be integrated inside an instrument panel and it has not to be reachable in order to avoid strokes and impacts;
- if the device is used in a manner not specified by the manufacturer, the rated protection of the device may be compromised.
- in case of failure of the control and of optional boards, please only refer to CAREL service;
- install optional boards and connectors only supplied by CAREL.

1.7 Maintenance

- Disconnect the device (turn OFF) before accessing inside parts or during maintenance;
- all service and/or maintenance operations must be performed by specialist and qualified personnel, in accordance with the safety standards and legislation in force.

2. TECHNICAL SPECIFICATIONS

2.1 Mechanical specifications

dimensions	available in 6 DIN module format 105x115x60 mm
assembly	DIN rail

2.2 Plastic case

- Fitted on DIN rail as per DIN 43880 and IEC EN 50022
- Material: technopolymer
- Flame retardance: V2 (UL94) and 960 °C (IEC 695)
- Ball pressure test 125 °C
- Resistance to creeping current ≥ 250 V
- Colour grey RAL7035

2.3 Electrical specifications

Isolated power supply	DC power supply: 48 Vdc (36 V min to 72 V max)
	AC power supply: 24 Vac +10% to -15 %, 50/60 Hz
	Maximum power input: MEDIUM ver. P=6W, P=8VA, Imax=400mA LARGE ver. P=11W, P=14VA, Imax=700mA
CPU	H8SX/1651 32-bit, 50 MHz
FLASH program memory	2+2 Mbytes
SRAM data memory	512 Kbytes, 16-bit
EEPROM parameter data memory	13 Kbytes + 32 kB
NAND FLASH memory	32 MByte
Duration of working cycle	0.2 s typical (applications of average complexity)
Clock	Available as standard and integrated on main board

Tab. 2.a

Battery specifications

The battery used inside the pCO compact is a "button" sized lithium battery, code CR2430, 3 Vdc, dimensions 24 mm x 3 mm.

2.4 SERIAL specifications

<table>
<tr><th>Item</th><th>Type</th><th>Reference</th><th>Main specifications</th></tr>
<tr><td>Serial ZERO</td><td>PLAN</td><td>J4, J5</td><td>• Integrated on main board
• Not opto-isolated
• HW driver: RS485
• Connectors: Telephone jack + 3-pin plug-in p. 3.81
<table>
<tr><th colspan="4">CABLE LENGHT</th></tr>
<tr><th>Connector</th><th>Shielded cable type</th><th>Lmax (m)</th><th>Power supply</th></tr>
<tr><td>J4</td><td>Telephone</td><td>50</td><td>given by pCO compact (150 mA)</td></tr>
<tr><td>J4</td><td>AWG24</td><td>200</td><td>given by pCO compact (150 mA)</td></tr>
<tr><td>J4</td><td>AWG20/22</td><td>500</td><td>separated by TCONN6J000</td></tr>
<tr><td>J5</td><td>AWG20/22</td><td>500</td><td>-</td></tr>
</table></td></tr>
<tr><td>Serial ONE</td><td>BMS 1</td><td>Serial Card 1</td><td>• Not integrated on main
• HW driver: not featured
• Allows all the pCO family optional BMS cards to be used
• Maximum cable lenght: refer to technical leaflet of the serial card</td></tr>
<tr><td>Serial TWO</td><td>Opto-isolated FIELD Bus</td><td>J8</td><td>• Integrated on main board
• Opto-isolated serial
• HW driver: opto-isolated RS485
• 3-pin plug-in connector p. 3.81
• Maximum lenght of shielded cable AWG20/22: 500 m:</td></tr>
<tr><td></td><td>tLAN</td><td>J6/J7</td><td>Instead of the FieldBus serial, the following can be used:
• tLAN serial available on a 2-pin connector, p. 3.81 (J7)
• connection to a PLD terminal available via special 4-pin connector (J6)
• J7: maximum lenght of shielded cable (2 wires + shield) AWG20/22: 30 m
• J6: maximum lenght of 4-wires cable (see accessories table): 2 m for domestic application, 10 m for residential application</td></tr>
</table>

Tab. 2.b

Note:

Use only STP or S/UTP cable with both extremity of shield connected to PE (see par. "Electrical connections").

- The serial 2 has been designed to be MASTER. This implicates that possible pCO compact SLAVEs, can not be connected using his own serial 2. Nevertheless it is possible connect only one pCO compact using his own serial 2.

2.5 pLAN network/user terminal connection

Type	Asynchronous half duplex RS485
Transmission speed	62.5 Kbps or 115.2 Kbps selected via software
Maximum number of units connectable	Maximum 32 units allowed
Connector for terminal	6-pin shielded telephone (J4)
Connector for pLAN network, Graphic terminal, Aria terminal	3-pin plug-in connector, pitch 3.81 mm (J5)

Tab. 2.c

Note:

- J4 can only be connected to one terminal (pCOT, pCOI, pGD0 and pGD1) or two terminals without using the backlighting for the display.
- The Graphic terminal and Aria terminal must be always powered with separate power supplies.

2.6 tLAN network connection

Type	Asynchronous half duplex 0/5 Vdc, non-differential
Transmission speed	9.6 Kbps or 19.2 Kbps selected via software
Maximum number of units connectable	Maximum 5 units allowed
Connector for tLAN network	2-pin plug-in connector, pitch 3.81 mm (J7)

Tab. 2.d

Note:

- The tLAN serial (J7) can be used as an alternative to either the FieldBus serial available on the 3-pin connector p. 5.08 (J8); or to the PLD terminal connection available on the special 4-pin connector (J6).

2.7 Analogue inputs

Maximum lenght cable	10 m	
Analogue conversion	A/D converter, 10-bit CPU built-in	
Models	TYPE A	TYPE B
CAREL NTC -50T90 °C; R/T 10 kΩ at 25 °C or HT NTC 0T150 °C	B1, B2, B3, B4, B5, B6, B7, B8	B1, B2, B3, B4, B5, B6
Voltage, 0 to 1 Vdc	B1, B2, B3, B4, B5, B6	
Voltage, 0 to 5 Vdc ratiometric	B1, B2, B5, B6	
Voltage, 0 to 10 Vdc	B1, B2, B5, B6	
Current, 0 to 20 mA or 4 to 20 mA	B1, B2	
PT1000 -100T200 °C; R/T 1000 Ω at 0 °C	B3, B4	
Voltage-free digital input (5 mA)	B5, B6, B7, B8	B5, B6
Total	8	6

Tab. 2.e

Warning: for the power supply to any active probes, the +21 V available on the VDC terminal can be used, maximum current available Imax= 60 mA, protected against short-circuits. For the power supply to the 0 to 5 Vdc ratiometric probes, use the +5 VREF, maximum current available Imax= 60 mA, protected against short-circuits.

Specifications

Time constant	0.5 s
Precision	± 0.3 % of full scale
Classification of measuring circuits	Category 1 (IEC EN 61010-1)

Tab. 2.f

Warning: separate as much as possible the probe and digital input signal cables from the cables carrying inductive loads and power cables to avoid possible electromagnetic disturbance.

2.8 Digital inputs

Maximum lenght cable	10 m	
Type	Not optically isolated, voltage free contact	
Power supply	Internal	
Models	TYPE A	TYPE B
Multifunction analogue inputs (see note)	B5, B6, B7, B8	B5, B6
Fast digital input	ID1	ID1
Normal digital input	ID2	ID2
Total	6	4

Tab. 2.g

Note:
Multifunction analogue inputs: these analogue inputs can be programmed via software as digital inputs instead of analogue inputs. All the digital inputs refer to GND.

Specifications of the fast digital input (ID1)

The fast digital input (ID1) can be configured via software in two distinct operating modes, as follows:
- first mode: normal or standard digital input
- second mode: fast digital input

When configured as a fast digital input, ID1 can measure a signal with a maximum frequency of 2 KHz, resolution +/- 1 Hz. This is made possible by the BIOS, which provides the SW application with two variables that the count the number of times the input signal crosses zero and the corresponding frequency in Hz.

Specifications of the normal and fast digital input

The maximum current available to the digital input is 5 mA (consequently the rating of the external contact must be at least 5 mA).

2.9 Analogue outputs

Maximum lenght cable	10 m	
Type	Not optically isolated	
Power supply	Internal	
Models	TYPE A	TYPE B
0 to 10 Vdc analogue output	Y2	Y2, Y3, Y4
PWM analogue output with 5 Vdc pulse of programmable duration	Y1	Y1
Total	2	4

Tab. 2.h

Specifications

Resolution	8 bit
Precision	± 2% of full scale on Y2
Settling time	2 s
Maximum load	1 kΩ (10 mA) for Y2 0 to 10 V, 470 Ω (10 mA) for Y1 PWM

Tab. 2.i

2.10 Digital outputs

pCO compact TYPE A has 7 digital outputs, while pCO compact TYPE B has 6 digital outputs with electromechanical relays or Solid state relay (SSR). To simplify assembly, the common terminals of some relays have been grouped together based on the insulation distance.

Within a group, the outputs have single insulation between them and thus must be powered at the same voltage (generally 24Vac or 110-230Vac). Between the groups there is reinforced insulation, thus the groups can be powered at different voltages.

Output technical specification	Insulation group	Connector	Models				
			Type A	Type A (2 SSR)	Type B	Type B (2 SSR)	Type B (4 SSR)
SPDT relay: UL873: 2,5 A res., 2 A FLA, 12 A LRA, 250 Vac, C300 pilot duty (30.000 cycles) EN60730-1: 2 A res., 2 A inductive cos(phi)=0,6, 2 (2) A (100.000 cycles)	1	J3	1	-	1	-	1
	2	J10	1	-	1	-	1
relè SPST: UL873: 1 A res., 1 A FLA, 6 A LRA, 250 Vac, D300 pilot duty (30.000 cycles) EN60730-1: 1 A res., 1 A inductive, cos(phi)=0,6, 1 (1) A (100.000 cycles)	3	J11	5	5	2	2	-
	4	J12	-	-	2	2	-
Relè Power MOSFET Photovoltaic Operation voltage: 24 Vac/Vdc Maximum power: 10 W	1	J3	-	1	-	1	-
	2	J10	-	1	-	1	-
	3	J11	-	-	-	-	2
	4	J12	-	-	-	-	2
Outputs total			7	7	6	6	6

Tab. 2.j

2.11 USB Port

The USB connections have to be used only during commission and maintenance action.
Removing the cover from the front of the pCO compact devices fitted of USB port, there are 2 types of USB port; one of these has the function of USB SLAVE (USB standard type B connector) and the other USB HOST (USB standard type A connector).

The two connectors cannot be used at the same time.

The USB link can be used to download and upload the BIOS and applications, as well as carry out the commissioning operations.

Configurations available:

		Upload FW		Download FW		
Hardware configuration	Type	USB HOST	USB DEVICE	USB HOST	USB DEVICE	Commissioning
TYPE A	+ USB	with external PGD0/1 terminal only	●	with external PGD0/1 terminal only	logs and parameters only	●
	+ USB+BUILT-IN DISPLAY	●	●	●	logs and parameters only	●
TYPE B	+ USB	with external PGD0/1 terminal only	●	with external PGD0/1 terminal only	logs and parameters only	●
	+ USB+BUILT-IN DISPLAY	●	●	●	slogs and parameters only	●

Note: FW = BIOS and/or Application.
The USB HOST can be used, for example, to connect a memory key; the USB SLAVE can be connected to a PC.

2.12 Summary tables

Hardware configurations available

Models	PWM output	0...10 V output	Analogue inputs	Digital inputs	Group 1 output	Group 2 output	Group 3 output	Group 4 output
TYPE A	Y1	Y2	B1, B2		NO1: - relay (1) - SSR (3)	NO2: - relay (1) - SSR (3)	NO3, NO4, NO5, NO6, NO7: - Relay (2)	-
			B3, B4					
			B5, B6					
			B7, B8					
				ID1 (veloce)				
				ID2				
			Max 8	Max 6				
TYPE B	Y1	Y2, Y3, Y4	B1, B2		NO1: - relè (1) - SSR (3)	NO2: - relè (1) - SSR (3)	NO3, NO4: - Relay (2) - SSR (4)	NO5, NO6: - Relay (2) - SSR (4)
			B3, B4					
			B5, B6					
				ID1 (veloce)				
				ID2				
			Max 6	Max 4				

Tab. 2.k

(1) Note: the relay is present instead of the SSR in the models not designed for having SSR.
Relay specifications:
UL873: 2,5 A res., 2 A FLA, 12 A LRA, 250 Vac, C300 pilot duty (30.000 cycles)
EN60730-1: 2 A res., 2 A inductives, cos(phi)=0,6, 2 (2) A (100.000 cycles)

(2) Note: the relay is present instead of the SSR in the models not designed for having SSR.
Relay specifications:
UL873: 1 A res., 1 A FLA, 6 A LRA, 250 Vac, D300 pilot duty (30.000 cycles)
EN60730-1: 1 A res., 1 A inductives, cos(phi)=0,6, 1 (1) A (100.000 cycles)

(3) Note: the SSR is present instead of the relay in the models designed for having 2 SSR.
SSR specification:
Relay Power MOSFET Photovoltaic, Operation voltage: 24 Vac/Vdc, Maximum power: 10 W

(4) Note: the SSR is present instead of the relay in the models designed for having 4 SSR
SSR specification:
Relay Power MOSFET Photovoltaic, Operation voltage: 24 Vac/Vdc, Maximum power: 10 W

Types of analogue/digital inputs

All the analogue inputs are can be configured via software, according to the following table, in the models TYPE A and TYPE B.

Symbol	NTC	ID	PT1000	4 to 20 mA	0 to 5 V	0 to 1 V	0 to 10 V
B1, B2	•			•	•	•	•
B3, B4	•		•			•	
B5, B6	•	•			•	•	•
B7, B8	•	•					

Tab. 2.o

2.13 Table of accessories

	code	description
1	PCOXCON0A0	plug-in screw connector kit for pCO compact MEDIUM type A
2	PCOXCON0B0	plug-in screw connector kit for pCO compact LARGE type B
3	PCOS00AKY0	pCO sistema smart key
4	0907877AXX	external ferrite for pCO compact power cable
5	PSTCON01B0	pLD terminal connection cable L= 1.5 m
6	PSTCON03B0	pLD terminal connection cable L= 3 m
7	PSTCON05B0	pLD terminal connection cable L= 5 m
8	S90CONN002	pGD terminal connection cable L= 0.8 m
9	S90CONN000	pGD terminal connection cable L=1.5 m
10	S90CONN001	pGD terminal connection cable L= 3 m

Tab. 2.p

2.14 Other specifications

Operating conditions	-10T60 °C, 90% rH non-condensing
Storage and transport conditions	-20T70 °C, 90% rH non-condensing
Index of protection	IP40 front panel only
Environmental pollution	2
Classification according to protection against electric shock	to be integrated into Class 1 and/or 2 appliances
Period of stress across the insulating parts	long
Type of action	1 C
Type of disconnection or microswitching	microswitching
Category of resistance to heat and fire	Category D (UL94–V0)
Immunity against voltage surges	Category 2
Ageing characteristic (operating hours)	80,000
No. of automatic operating cycles	100,000 (EN 60730-1); 30,000 (UL 873)
Software class and structure	Class A
Category of immunity against surges	Category 3 (IEC EN 61000-4-5)

Tab. 2.q

The device is not designed to be hand-held

3. MECHANICAL DIMENSIONS

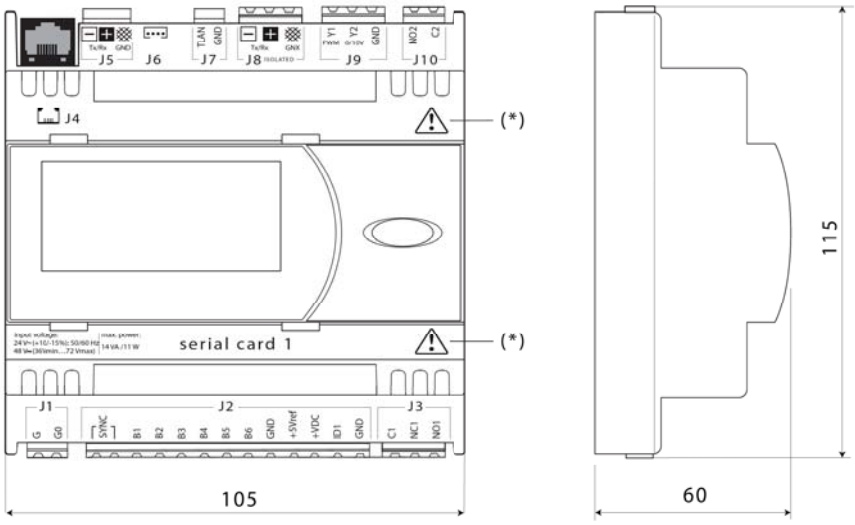
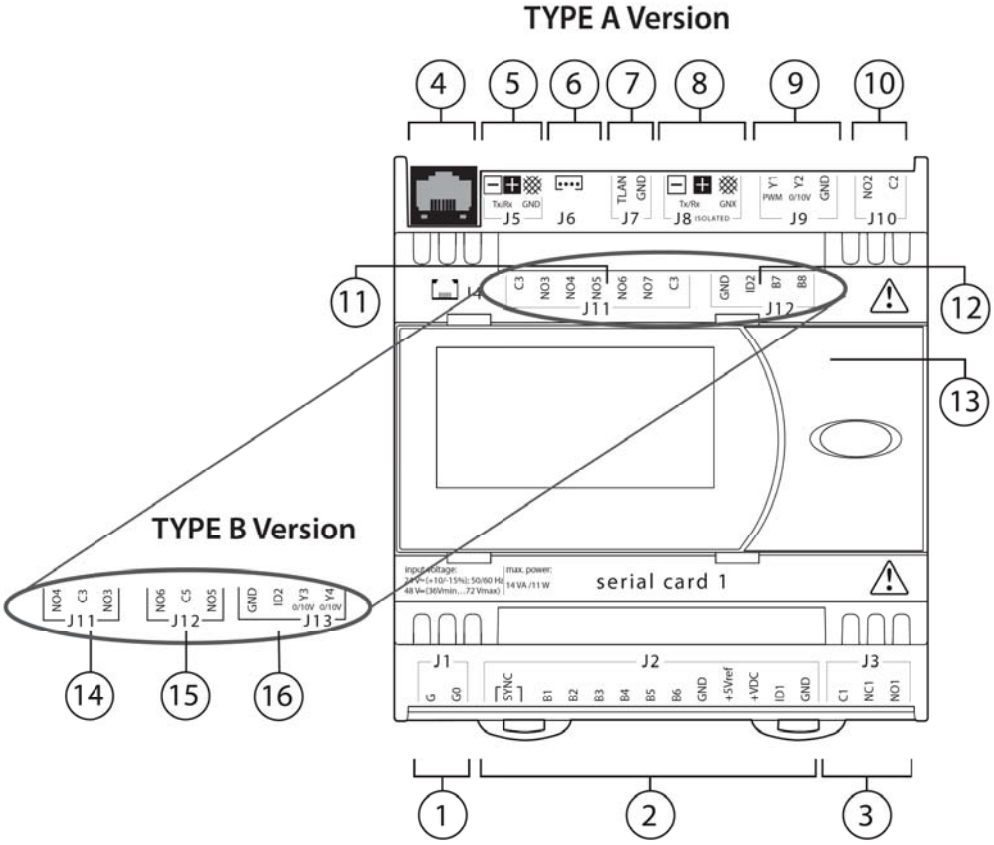


Fig. 3.a

(*) The icon ⚠ means to refert to this techinical leaflet, during the electrical installation.

4. DESCRIPTION OF THE TERMINALS



Legenda:	
1	power supply connector (G, G0) 24 Vac or 48 vdc (36 Vdc min...72 Vdc max)
2	"SYNC" synchronicity inputs for phase control and NTC, 0...1 V, 0 to 5 V, 0 to 20 mA, 4 to 20 mA +5 Vref for probe power supply, 5 V ratiometric and + VDC (+21 Vdc) for active probes
3	digital output
4	connector for all pCO series standard terminals and downloading the application program
5	pLAN connector
6	pLD terminal connector
7	tLAN connector
8	opto-isolated "Field-Bus" serial connector
9	0 to 10 V and PWM (phase control) analogue outputs
10	digital output
11	digital outputs (Type A)
12	NTC analogue inputs and digital inputs (Type A)
13	removable door to access the USB ports
14	digital outputs (Type B)
15	digital outputs (Type B)
16	digital input and analogue outputs 0 to 10 V (Type B)

4.1 Electrical connections

AC power supply

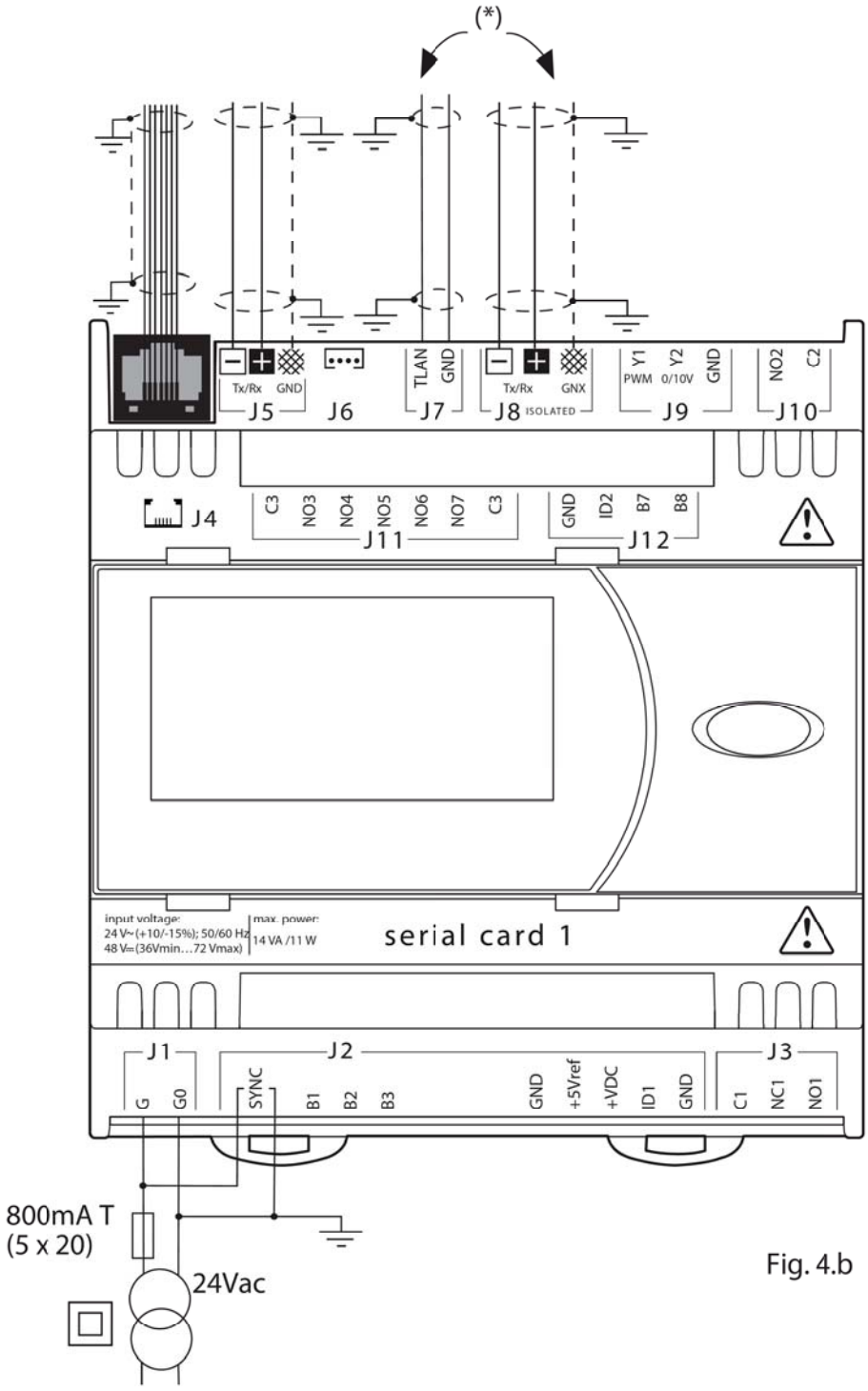


Fig. 4.b

Fig. 4.c

COMMON power supply for controller & SYNC

(*) the use of tLAN port excluded the use of Field Bus port and vice versa.

DC power supply

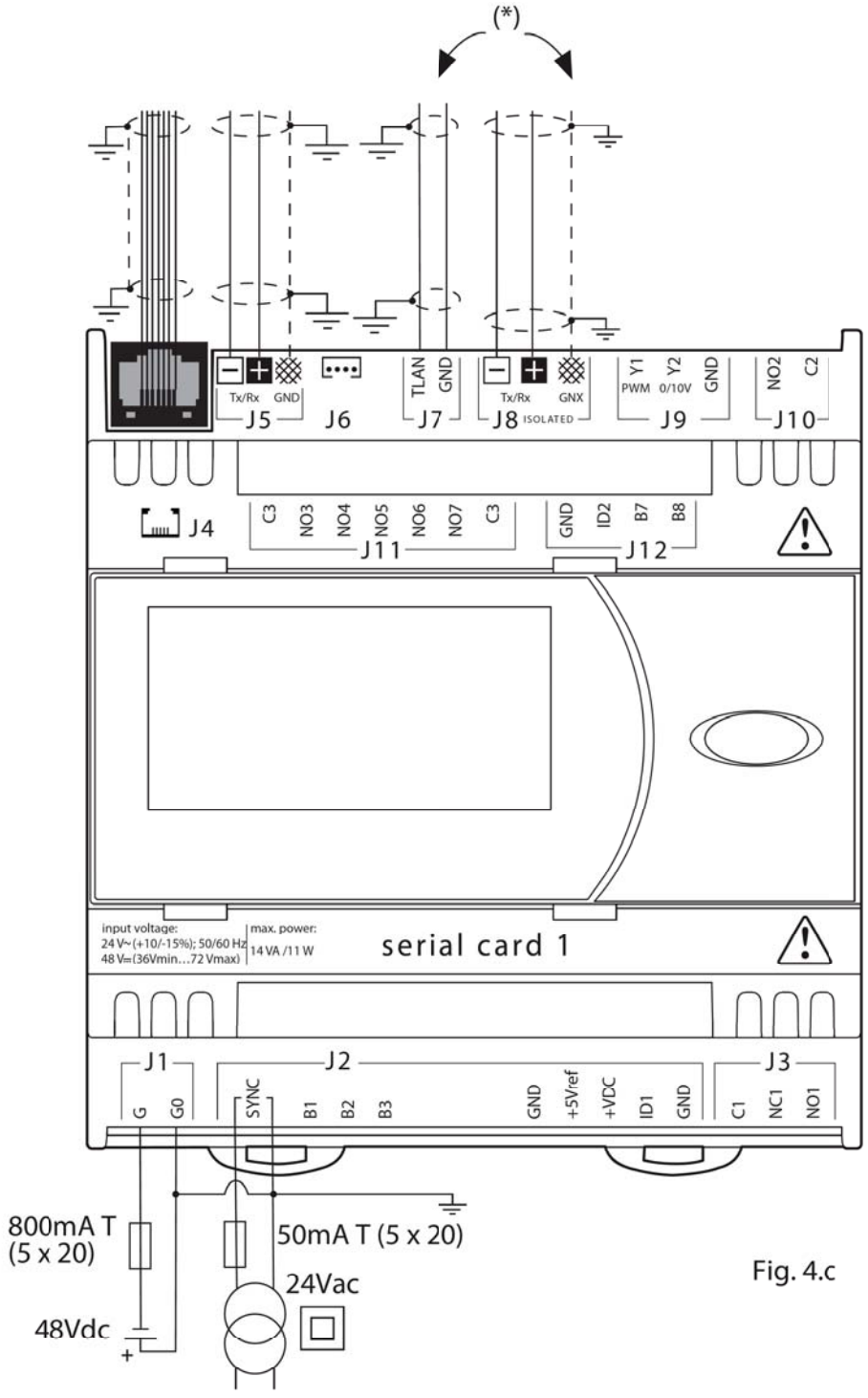


Fig. 4.c

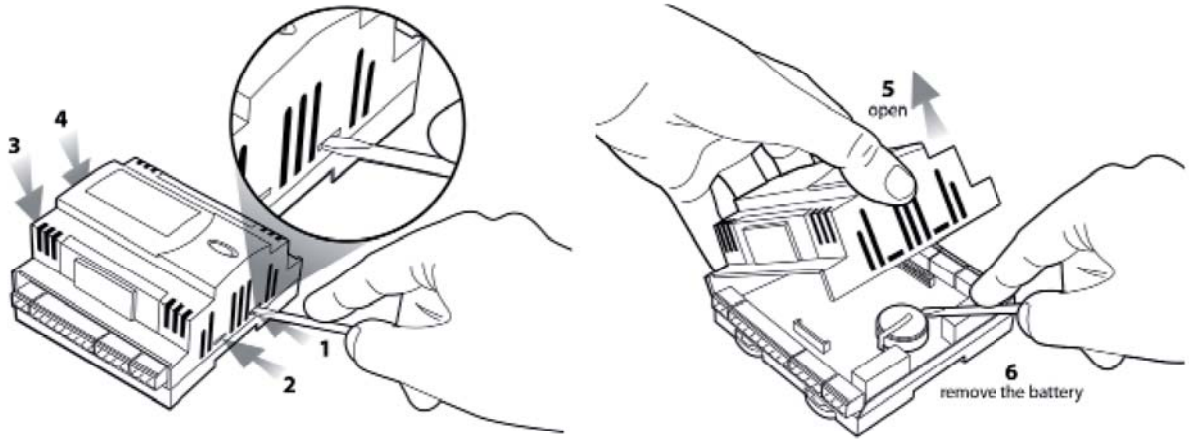
Fig. 4.c

SEPARATE power supply for controller & SYNC

(*) the use of tLAN port excluded the use of Field Bus port and vice versa.

Guidelines for disposal

- Do not dispose of the product as municipal waste; it must be disposed of through specialist waste disposal centres.
- The product contains a battery that must be removed and separated from the rest of the product according to the instructions provided, before disposing of the product.
- Improper use or incorrect disposal of the product may negative effects on human health and on the environment.
- The public or private waste collection systems defined by local legislation must be used for disposal.
- In the event of illegal disposal of electrical and electronic waste, the penalties are specified by local waste disposal legislation.



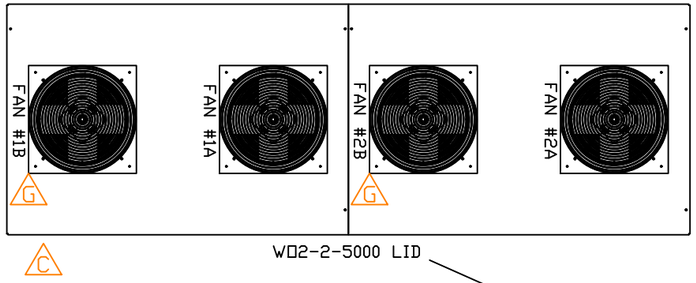
Note:

CAREL

CAREL INDUSTRIES HQs
Via dell'Industria, 11 - 35020 Brugine - Padova (Italy)
Tel. (+39) 049.9716611 - Fax (+39) 049.9716600
e-mail: carel@carel.com - www.carel.com

Agenzia / *Agency*:

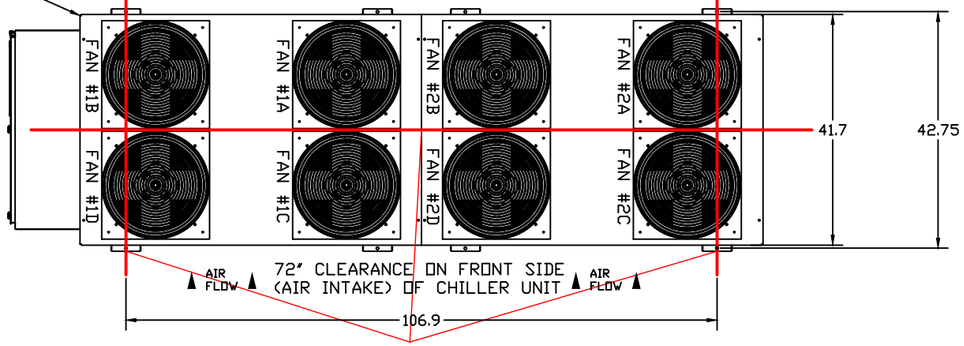
+050003340 - 1.1 - 13.04.2010



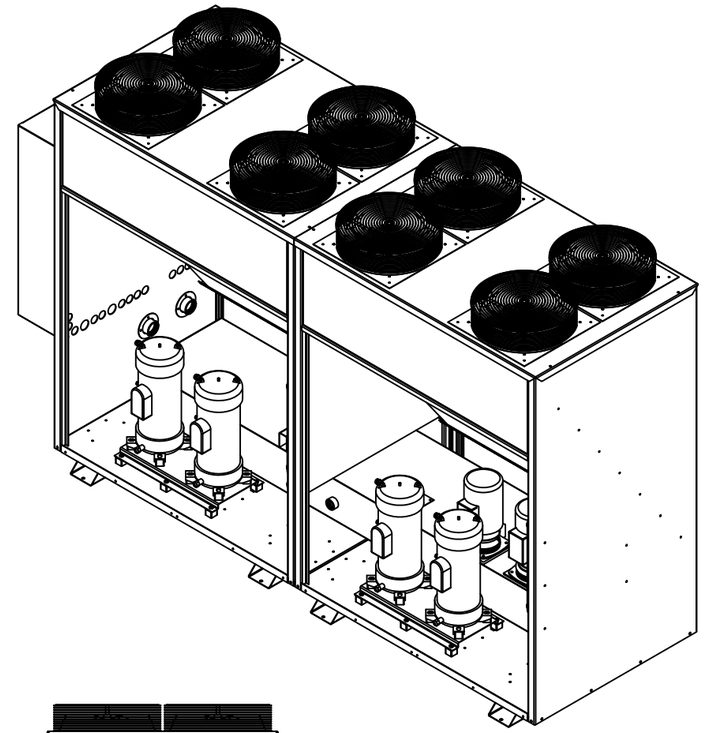
W02-2-5000 LID

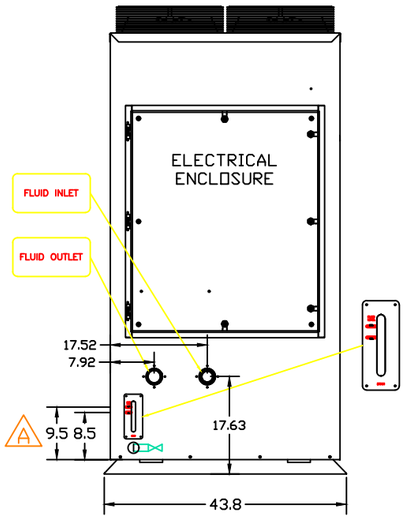
36" SERVICE CLEARANCE ON REAR SIDE OF CHILLER UNIT

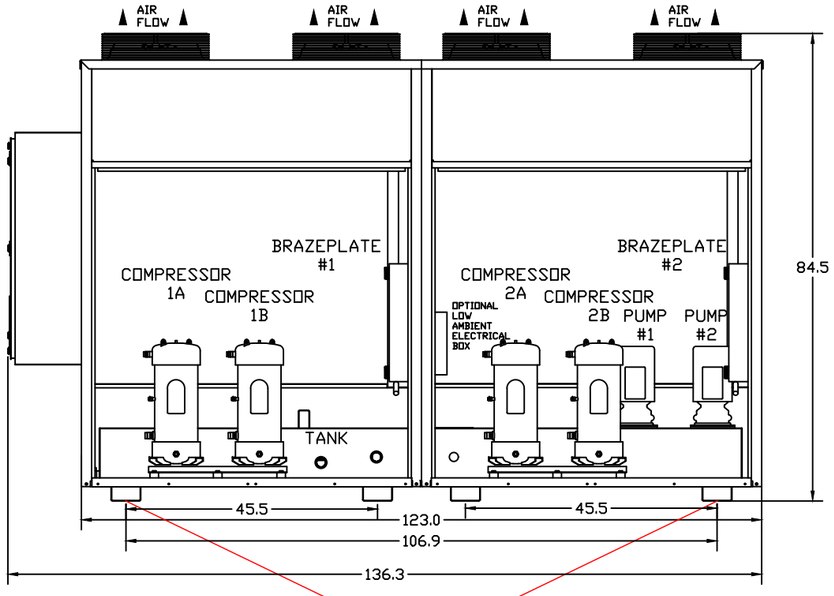
36" SERVICE CLEARANCE IN FRONT OF ELECTRICAL ENCLOSURE

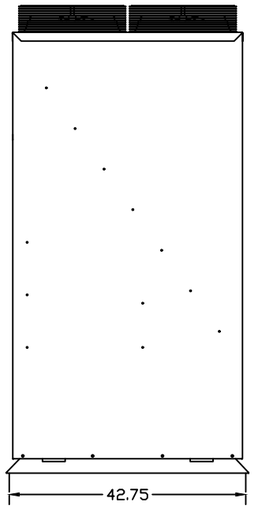


LIFT MACHINE USING STRAPS THROUGH OUTSIDE FEET. BE SURE TO USE SPREADER BAR.









W02-2-10000 UNIT HAS (8) FANS
W02-2-7500 UNIT HAS (8) FANS
W02-2-5000 UNIT HAS (4) FANS

LIFT MACHINE USING STRAPS THROUGH OUTSIDE FEET. BE SURE TO USE SPREADER BAR.

ALL DIMENSIONS ARE IN INCHES

DATE	DESCRIPTION OF REVISION	APPROVED BY
9-13-16	ADDED 10,000 TO MODEL NUMBERS	JMK <K>
4-25-16	ADDED LOW AMBIENT JUNCT BOX	JMK<I,2430>
07-29-11	RED FOLDER	BKS
04/20/10	CHANGED ST LID LABELING	CJH <G>
03/16/10	UPDATED TITLE BLOCK	MAR <F>
03/11/10	REMOVE "CHILLER" FROM TAGS	MAR <E>
03/02/10	SWITCHED FAN #'S A&C, B&D	MAR <D>
02/18/10	ADDED W02-2-5000 LID	MAR <C>
02/18/10	MOVE SIGHT GLASS INSIDE UNIT	MAR <B>
2/10/10	ADDED TAGGING AND SIGHT GLASS	MAR <A>

Dimplex Thermal Solutions

KOOLANT KOOLERS

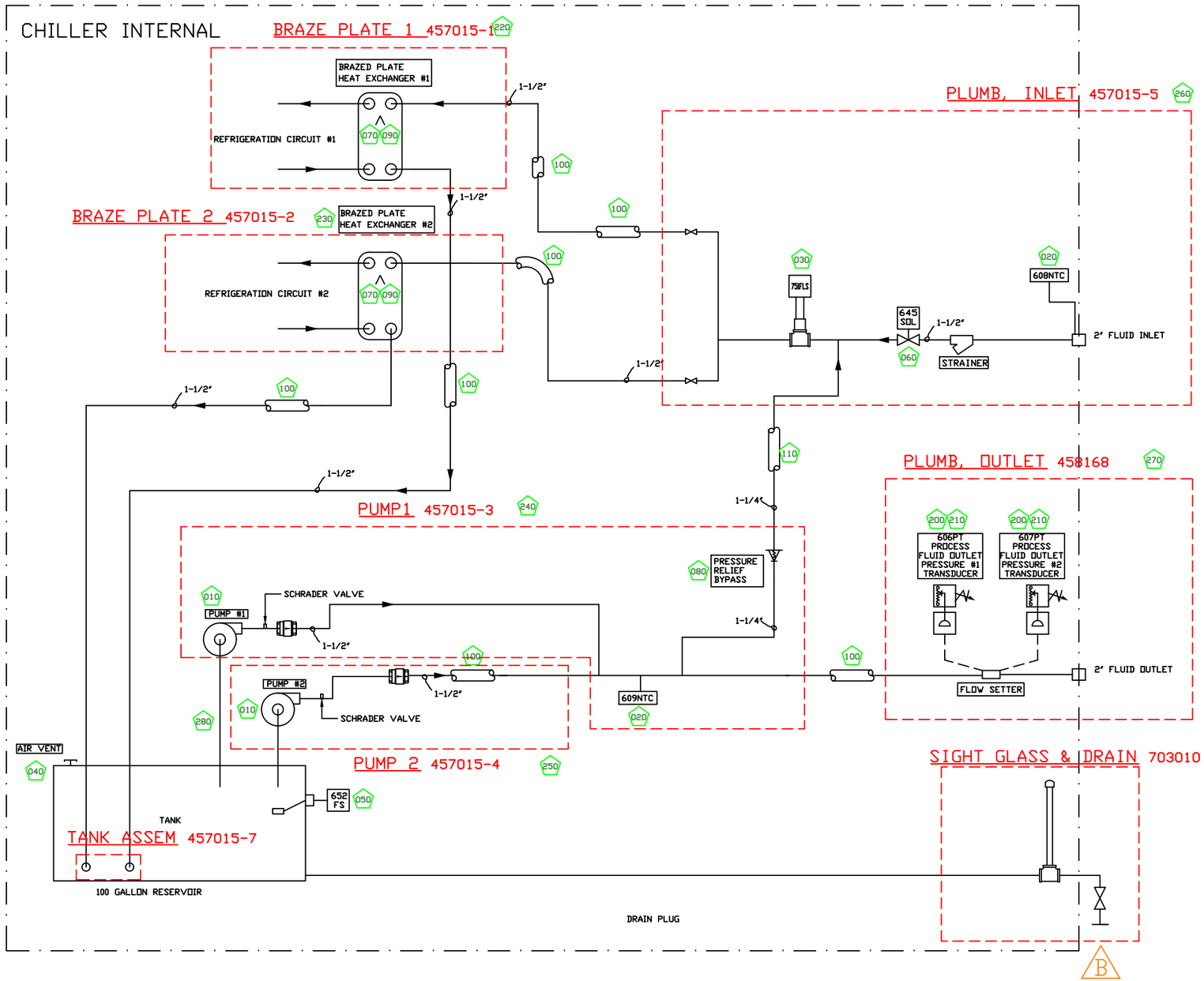
DESIGN BY: MAR | DRAWN BY: MAR | DATE: 01/22/10 | PAGE 1 OF 1

KALAMAZOO, MI.
PH (800) 968-5665
WWW.DIMPLEXTHERMAL.COM

W02-5000/7500/10,000

LAYOUT

DRAWING NO. 443378



NO.	DESCRIPTION	PART#	QTY	TYPE
	W02-2-10000-2P-NF-L-M-R407C MCHNCL	458167		ASSY
010	TPHK8T6-5S PUMP VERTICAL STAINLESS	1785007	2	PC
020	1/2 SENSOR ASSEMBLY FOR CAREL	611318	2	ASSY
1	MPO617671 10K THERMISTOR 10' CAREL	4801215	1	PC
1	COMPRESSION FITTING 1/2 NPT X 3/16	7504920	1	PC
030	SWITCH FLOW	3653015	1	PC
040	PMB-05-10 AIR VENT 3/8 FENNER	4100003	1	PC
050	L-21N/15A/1/B/1.6 FLOAT SWITCH	3896118	1	PC
060	8210G056 VALVE SOL. 1-1/2 24VAC	4804232	1	PC
070	K205*70C BRAZED PLATE H/E 30 TON	2200530	2	PC
080	VALVE BACK PRESS 1-1/4" 35-100 PSI	4189076	1	PC
090	1/2" BP INSLTN FOR K205*70C 2200530	457215	2	ASSY
1	1/2" BP INSULATION FOR K205 FRONT	457211-1	1	PC
1	1/2" BP INSULATION FOR 2200530 MDDL	457215-2	1	PC
1	1/4" BP INSULATION FOR K205 BACK	441227-3	1	PC
100	HOSE 1-1/2 RED 250 PSI	4410004	22	FT
110	HOSE 1-1/4 RED 250 PSI	4410003	6	FT
* 120	TANK INSULATION - 443585	444331	1	ASSY
1	TANK INSULATION SIDE PLAIN - 443585	4449013	1	PC
1	TANK INSUL SIDE CUT OUTS - 443585	4449014	1	PC
1	TANK INSULATION BOTTOM - 443585	4449015	1	PC
1	TANK INSULATION END PLAIN - 443585	4449016	1	PC
1	TANK INSUL END CUT OUT - 443585	4449017	1	PC
* 130	GASKET PUMP RISER TPHK8	9800902	4	PC
* 140	PUMP RISER 1/2 PVC WALRUS TPHK8T	9800919	2	PC
160	SIGHT GLASS 1" & DRAIN 1/2" ASSEMBLY	703010	1	ASSY
1	NIPPLE 1 MPT X CLOSE BRS	7508000	1	PC
1	TEE 1 X 1/2 X 1 FPT BRS	5000982	1	PC
1	ADAPTER 1 MPT X 1 SLIP MALE PVC40	7408701	1	PC
1	PIPE 1 PVC CLEAR **NDT EXCELON*****	7408800	1	FT
1	CAP 1 PVC40	7408900	1	PC
1	NIPPLE 1/2 MPT X 2-1/2 BRS	7504021	1	PC
1	ELBOW 90 1/2 FPT BRS	7504301	1	PC
1	BD-1 VALVE BOILER DRAIN 1/2	4123051	1	PC
1	CAP 3/4 NATIONAL HOSE BRASS	7506504	1	PC
200	P-TRANSDUCER (-15-135PSI) SPKT0013R0	4807736	2	PC
210	SPKC00-5310 CORD SET CAREL 14-1/2'	4807715	2	PC
220	MEDICAL PLUMB - BRAZE PLATE 1	457015-1	1	ASSY
1	ELBOW 45 1-1/2 FPT BRS	7512302	2	PC
1	HOSEBARB 1-1/2 MPT X 1-1/2 HOSE BRS	7512901	2	PC
230	MEDICAL PLUMB 2 - BRAZE PLATE 2	457015-2	1	ASSY
1	ELBOW 45 1-1/2 FPT BRS	7512302	2	PC
1	HOSEBARB 1-1/2 MPT X 1-1/2 HOSE BRS	7512901	2	PC
240	MEDICAL PLUMB 3 - PUMP 1	457015-3	1	ASSY
1	NIPPLE 1-1/4 MPT X 2-1/2 BRS	7510002	1	PC
1	BUSHING 1-1/2 MPT X 1-1/4 FPT BRS	7512605	1	PC
1	60OLF VALVE CHECK FLD 1-1/2 BRONZE	4153151	1	PC
1	NIPPLE 1-1/2 MPT X 2-1/2 BRS	7512002	1	PC
1	TEE 1-1/2 X 1-1/2 X 1-1/2 FPT BRS	7512100	1	PC
1	NIPPLE 1-1/2 MPT X 5 BRS	7512008	1	PC
1	HOSEBARB 1-1/2 MPT X 1-1/2 HOSE BRS	7512901	2	PC
1	TEE 1-1/2 X 1-1/2 X 1-1/4 FPT BRS	7512103	1	PC
1	COMPRESSION FITTING 1/8 NPT X 3/16	7501910	1	PC
1	HOSEBARB 1-1/4 MPT X 1-1/4 HOSE BRS	7510910	1	PC
250	MEDICAL PLUMB 4 - PUMP 2	457015-4	1	ASSY
1	NIPPLE 1-1/4 MPT X 2-1/2 BRS	7510002	1	PC
1	BUSHING 1-1/2 MPT X 1-1/4 FPT BRS	7512605	1	PC
1	60OLF VALVE CHECK FLD 1-1/2 BRONZE	4153151	1	PC
1	NIPPLE 1-1/2 MPT X 2-1/2 BRS	7512002	1	PC
1	ELBOW 90 1-1/2 FPT BRS	7512301	1	PC
1	HOSEBARB 1-1/2 MPT X 1-1/2 HOSE BRS	7512901	1	PC
260	MEDICAL PLUMB 5 - INLET	457015-5	1	ASSY
1	HOSEBARB 1-1/2 MPT X 1-1/2 HOSE BRS	7512901	2	PC
1	VALVE BALL BRASS 1-1/2	4113150	2	PC
1	NIPPLE 1-1/2 MPT X CLOSE BRS	7512000	4	PC
1	ELBOW 45 1-1/2 FPT BRS	7512302	1	PC
1	NIPPLE 1-1/2 MPT X 2 BRS	7512001	1	PC
1	TEE 1-1/2 X 1-1/2 X 1-1/2 FPT BRS	7512100	1	PC
1	ELBOW 90 1-1/2 MPT X FPT BRS	7512300	1	PC
1	NIPPLE 1-1/2 MPT X 8 BRS	7512009	2	PC
1	TEE 1-1/2 X 1-1/2 X 1 FPT BRS	7512102	1	PC
1	TEE 1-1/2 X 1-1/2 X 1-1/4 FPT BRS	7512103	1	PC
1	NIPPLE 1-1/2 MPT X 5 BRS	7512008	1	PC
1	BUSHING 2 MPT X 1-1/2 FPT BRASS	7516601	1	PC
1	NIPPLE 1-1/4 MPT X 2-1/2 BRS	7510002	1	PC
1	ELBOW 90 1-1/4 MPT X FPT BRS	7510301	1	PC
1	HOSEBARB 1-1/4 MPT X 1-1/4 HOSE BRS	7510910	1	PC
1	COMPRESSION FITTING 1/8 NPT X 3/16	7501910	1	PC
1	COUPLING 2 FPT FULL 304SS	7216201	1	PC
1	777SILF-1 1/2 Y-STRAINER FILT BRONZ	4353014	1	PC
270	MEDICAL PLUMB 6 - OUTLET	458168	1	ASSY
1	HOSEBARB 1-1/2 MPT X 1-1/2 HOSE BRS	7512901	1	PC
1	BUSHING 2 MPT X 1-1/2 FPT BRASS	7516601	1	PC
1	A31484 VALVE PURGE 1/4 MPT X 5/16OD	7502952	2	PC
1	YRO200-FT/FT 36 GPM FLOW SETTER	4100076	1	PC
1	NIPPLE 2 MPT X 2-1/2 BRS	7516002	1	PC
1	COUPLING 2 FPT FULL 304SS	7216201	1	PC
280	MEDICAL PLUMB 7 - TANK	457015-7	1	ASSY
1	HOSEBARB 1-1/2 MPT X 1-1/2 HOSE BRS	7512901	2	PC
1	ELBOW 45 1-1/2 FPT BRS	7512302	1	PC
1	NIPPLE 1-1/2 MPT X CLOSE BRS	7512000	1	PC
1	ELBOW 90 1-1/2 MPT X FPT BRS	7512300	1	PC

* PARTS NOT SHOWN ON DRAWING DETAIL

ALL DIMENSIONS ARE IN INCHES

DATE	DESCRIPTION OF REVISION	APPROVED BY
9/15/15	S.G. AND DRAIN INTO SINGLE ASSY	JMN<B, 1432>

Dimplex Thermal Solutions

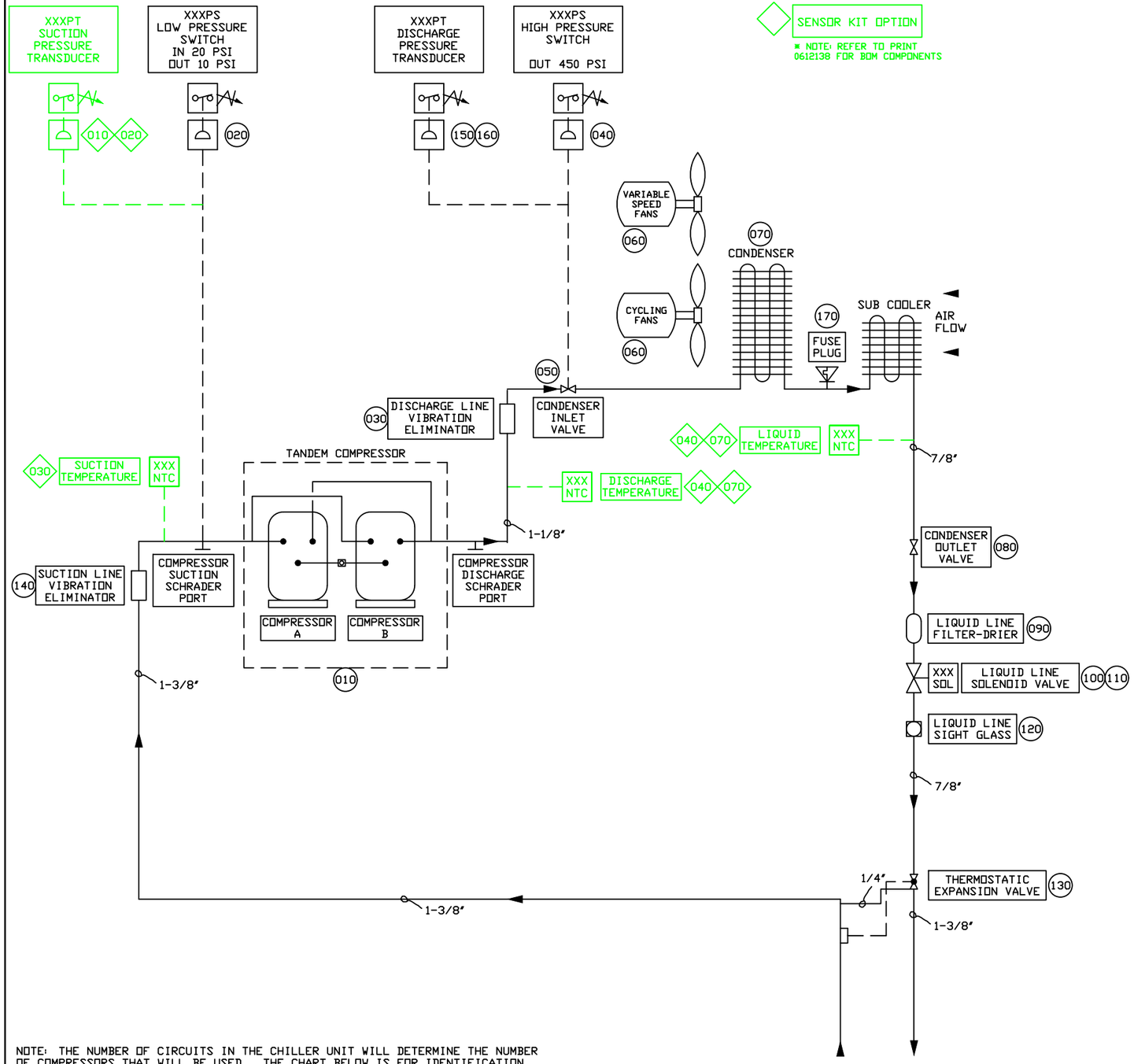
KOOLANT KOOLERS

DESIGN BY: MAR	DRAWN BY: MAR	KALAMAZOO, MI. PH (800) 968-5665 WWW.DIMPLEXTHERMAL.COM
DATE: 12/26/13	PAGE 1 OF 1	

W02-2-10000-2P-NF-L-M

PLUMBING

DRAWING NO. 458167



NOTE: THE NUMBER OF CIRCUITS IN THE CHILLER UNIT WILL DETERMINE THE NUMBER OF COMPRESSORS THAT WILL BE USED. THE CHART BELOW IS FOR IDENTIFICATION REFERENCING ONLY. IT IS POSSIBLE THAT SOME COMPRESSORS ARE NOT USED.

COMPONENT IDENTIFICATION

COMPRESSOR	HIGH PRESSURE SWITCH	DISCHARGE TRANSDUCER	DISCHARGE TEMPERATURE	LIQUID LINE TEMPERATURE	LOW PRESSURE SWITCH	SUCTION TRANSDUCER	SUCTION TEMPERATURE	LIQUID LINE SOLENOID
1A & 1B	715PS	710PT	708NTC	753NTC	752PS	711PT	709NTC	738SOL
2A & 2B	815PS	810PT	808NTC	853NTC	852PS	811PT	809NTC	838SOL
3A & 3B	915PS	910PT	908NTC	953NTC	952PS	911PT	909NTC	938SOL
4A & 4B	1015PS	1010PT	1008NTC	1053NTC	1052PS	1011PT	1009NTC	1038SOL

NO.	DESCRIPTION	PART#	QTY	TYPE
	W02-2-10000 REFRIGERATION 460/3/60	706493		ASSY
010	MED 20T 460/3/60 PKG	706766	1	ASSY
1	COMPRESSOR 10 TON 460/3/60 R-407C**	612004	2	ASSY
2	C-SCN753H8K COMPRESSOR 10 460 R407	1450106	2	PC
2	CRANKCASE HEATER 70 W 460 V 7.25	1298032	2	PC
1	SA-14S SIGHT GLASS 1/2 ODF	2720003	1	PC
1	SUCTION COMPRESSOR 1A	443761	1	ASSY
2	MED SUCTION COMP 1A 0443761	7399217	1	PC
1	SUCTION COMPRESSOR 1B MED	443760	1	ASSY
2	MED SUCTION COMP 1B 0443760	7399218	1	PC
1	DISCHARGE COMP 1B MED PREBENT	443759	1	ASSY
2	MED DISCHARGE COMP 1B 0443759	7399210	1	PC
1	DISCHARGE COMPRESSOR 1A	443762	1	ASSY
2	MED DISCHARGE COMP 1A 0443762	7399216	1	PC
1	TEE, 7/8"C X 7/8"C X 7/8"C, CU	7307390	1	PC
1	W-4048 TEE 1-1/8 C X C X C	7309390	1	PC
1	W-2817 ELBOW 90 1/2 FTG X C LR	7304319	2	PC
1	TUBING 1/2 SOFT COPPER REFRIG.	7304000	1	FT
1	SCREW 3/8-16 X 2-3/4 HEX HEAD CAP	7730276	8	PC
1	WASHER 3/8 FLAT	7735111	8	PC
1	WASHER 3/8 LOCK	7735222	8	PC
1	NUTSERT 3/8-16 RIV NUT FULL HEX	7714026	8	PC
1	MC1ST-20T CDM BKT GALV	439686	1	PC
1	ALUMINUM COMPRESSOR MOUNT	5001965	8	PC
020	LOW PRESSURE SWITCH 10/20	3640006	1	PC
030	VAF-9 VIBRATION ELIMINATOR 1-1/8	2980009	1	PC
040	SWITCH HIGH PRESSURE 450 MANUAL	3640017	1	PC
050	VALVE ANGLE REFRIG 1-1/8	3980004	1	PC
060	FAN ASSEMBLY 16"-5/8 1PH OUTDOOR	608585	4	ASSY
1	048A17OF1H MOTOR 1/2 HP 1PH5/8 KEY	4051311	1	PC
1	61146601 FAN BLADE 16 5/8 KEY	4500036	1	PC
1	FAN GUARD MOUNT 16 DWG #101513	4507016	1	PC
1	FAN GUARD FULL 16 DWG #101514	4507017	1	PC
1	VENTURI 16" GALVANIZED DWG #201676	4504162	1	PC
1	CAP 5/8 DIA X 1-1/2 VINYL	5000667	1	PC
1	SILICONE SEALANT CLEAR	4508976	0.1	PC
1	3231 1/2 CORD GRIP	3800435	2	PC
1	8463 1/2 LOCKNUT	3800609	2	PC
1	CABLE 221603 16/3 TRAY II	3899128	10	FT
1	STG-50 O-RING GASKET 1/2 NEOPRENE	3800203	2	PC
070	COIL 20 TON REMOTE HEADER (.50)	1413086	1	PC
080	VALVE ANGLE REFRIG 7/8	3980003	1	PC
090	C-417-S SUCTION FILTER DRIER 7/8"	2730039	1	PC
100	24ORA9T7-VLC VALVE SOLENOID	2610004	1	PC
110	ASC2 24V AC SOLENOID COIL DIN 50/60	2640018	1	PC
120	SA-17S SIGHT GLASS 7/8 ODF	2720005	1	PC
130	DNE-20-C VALVE EXPANSION R407C	2760008	1	PC
140	VAF-10 VIBRATION ELIMINATOR 1-3/8	2980010	1	PC
150	P-TRANSDUCER (0-500psi) SPKT0033R0	4807739	1	PC
160	SPKC00-5310 CORD SET CAREL 14-1/2'	4807715	1	PC
170	FUSE TUBE COPPER/SOLDER	7399201	1	PC
* 180	TUBING 1/4 SOFT COPPER REFRIG.	7302000	2	FT
* 190	TUBING 7/8 HARD COPPER ACR	7307010	2	FT
* 200	TUBING 1-3/8 HARD COPPER ACR	7311010	10	FT

* PARTS NOT SHOWN ON DRAWING DETAIL

ALL DIMENSIONS ARE IN INCHES

DATE	DESCRIPTION OF REVISION	APPROVED BY
11/14/16	#010 WAS 656189	SK<B, 3207>
9-13-16	FROM 458742, BUT CHANGE COND	JMK <A>

Dimplex Thermal Solutions

KOOLANT KOOLERS

DESIGN BY: JMK	DRAWN BY: JMK
DATE: 9-13-16	PAGE 1 OF 1

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PH (800) 968-5665
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W02-2-10000

REFRIGERATION

DRAWING NO. 706493

TAGGING INSTRUCTIONS

- [x] A) MANUALS MUST SHIP WITH MACHINE OR MACHINE DOES NOT SHIP.
- [ ] B) PLACE ADDITIONAL TAGS INSIDE THE MACHINE.
- [ ] C) PLACE ADDITIONAL TAGS INSIDE THE ELECTRICAL ENCLOSURE MOUNTED ON TAG RAILS WHICH ARE RIVETED TO THE PANEL. ADD NOTE TO ELECTRICAL PRINTS.
- [ ] D) TAGS OUTSIDE AND OUTSIDE THE ELECTRICAL ENCLOSURE NEED TO BE RIVETED.
- [ ] E) TAGS INSIDE THE MACHINE NEED TO BE RIVETED.
- [ ] F) SEQUENCE OF OPERATION TAG REQUIRED
- [ ] G) INLET AND OUTLET TAGS ONLY TO BE RIVETED.
- [ ] H) SPECIAL LANGUAGE TAGS ARE REQUIRED.
  - [ ] FRENCH
  - [ ] GERMAN
  - [ ] SPANISH
  - [ ] OTHER (SEE SPECIAL INSTRUCTIONS)

SPECIAL INSTRUCTIONS:

NO.	DESCRIPTION	PART#	QTY	TYPE
	W02-2-10000-2P-NF-L-M-407C 460/3/60	801304		ASSY
010	W02-2-10000-2P-NF-L-M-R407C MCHNCL	458167	1	ASSY
020	W02-2-10000 REFRIGERATION 460/3/60	706493	2	PC
030	WD 15000 GALVANIZED PACKAGE	612183	1	ASSY
040	WD TANK 100 GALLON GE	443585	1	PC
010	W02-2-10000-M ELECTRICAL 460/3/60	702924	1	PC
010	REFRIGERANT R407C 115LB CYLINDER	2990030	60	LB
020	CAREL LOGIC PROGRAM #0905136A	905136	1	PC
010	REMOTE PGD ASSEMBLY FOR GE	702352	1	ASSY
020	FILTER 28-7/8 X 57	4300142	4	PC

* PARTS NOT SHOWN ON DRAWING DETAIL

ALL DIMENSIONS ARE IN INCHES

DATE	DESCRIPTION OF REVISION	APPROVED BY
9-13-16	CREATED FROM 800850	JMK (A)

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DATE: 9-13-16	PAGE 1 OF 1	

W02-2-10000-2P-NF-L-M-407C

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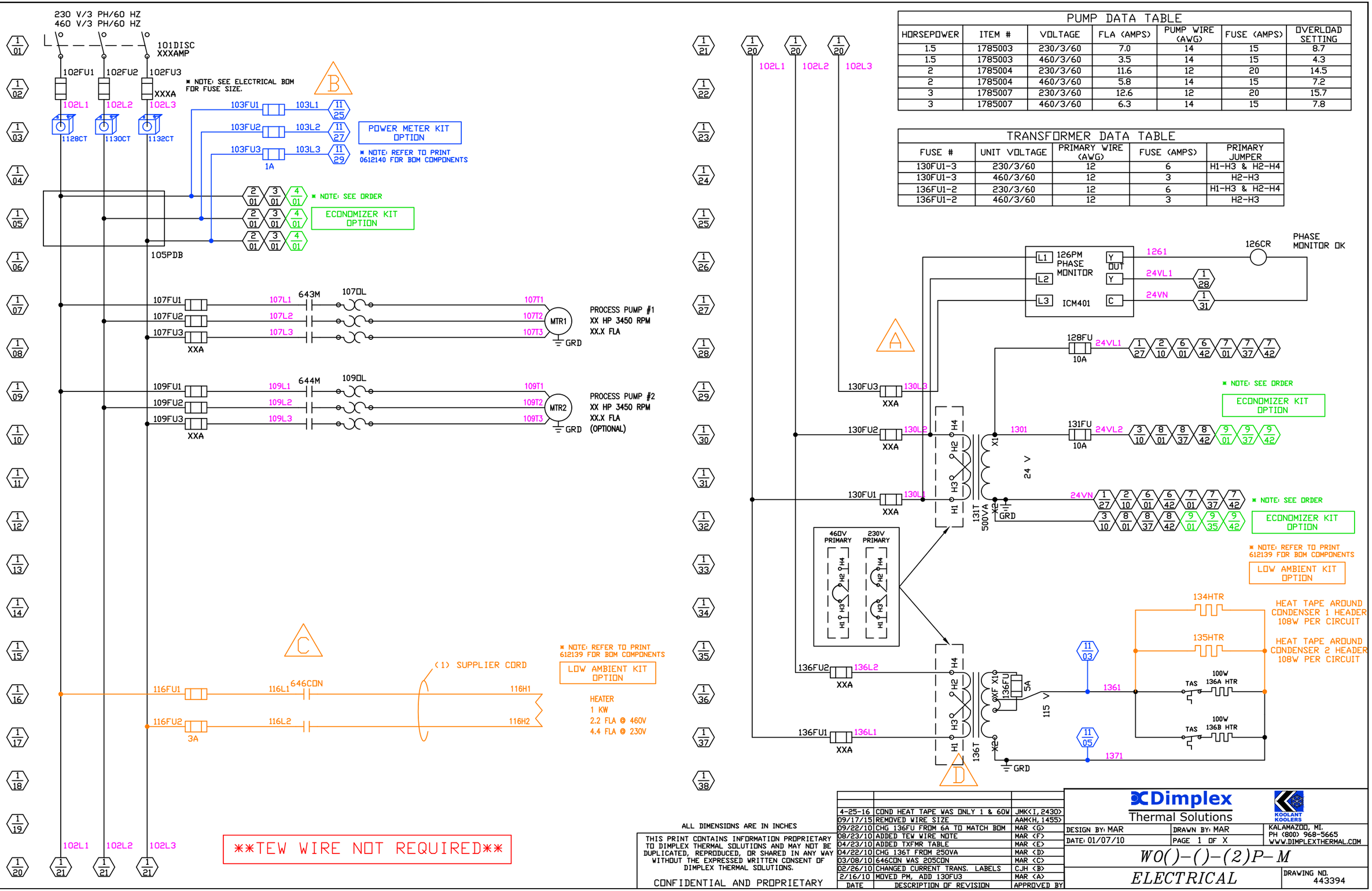
DRAWING NO. 801304



PUMP DATA TABLE						
HORSEPOWER	ITEM #	VOLTAGE	FLA (AMPS)	PUMP WIRE (AWG)	FUSE (AMPS)	OVERLOAD SETTING
1.5	1785003	230/3/60	7.0	14	15	8.7
1.5	1785003	460/3/60	3.5	14	15	4.3
2	1785004	230/3/60	11.6	12	20	14.5
2	1785004	460/3/60	5.8	14	15	7.2
3	1785007	230/3/60	12.6	12	20	15.7
3	1785007	460/3/60	6.3	14	15	7.8

TRANSFORMER DATA TABLE				
FUSE #	UNIT VOLTAGE	PRIMARY WIRE (AWG)	FUSE (AMPS)	PRIMARY JUMPER
130FU1-3	230/3/60	12	6	H1-H3 & H2-H4
130FU1-3	460/3/60	12	3	H2-H3
136FU1-2	230/3/60	12	6	H1-H3 & H2-H4
136FU1-2	460/3/60	12	3	H2-H3

DATE	DESCRIPTION OF REVISION	APPROVED BY
4-25-16	COND HEAT TAPE WAS ONLY 1 & 60W	JMK<I,2430>
09/17/15	REMOVED WIRE SIZE	AAMCH,1455>
09/22/10	CHG 136FU FROM 6A TO MATCH BOM	MAR <G>
08/23/10	ADDED TEW WIRE NOTE	MAR <F>
04/23/10	ADDED TXFMR TABLE	MAR <E>
04/22/10	CHG 136T FROM 250VA	MAR <D>
03/08/10	646CON WAS 205CON	MAR <C>
02/26/10	CHANGED CURRENT TRANS. LABELS	CJH <B>
2/16/10	MOVED PM, ADD 130FU3	MAR <A>

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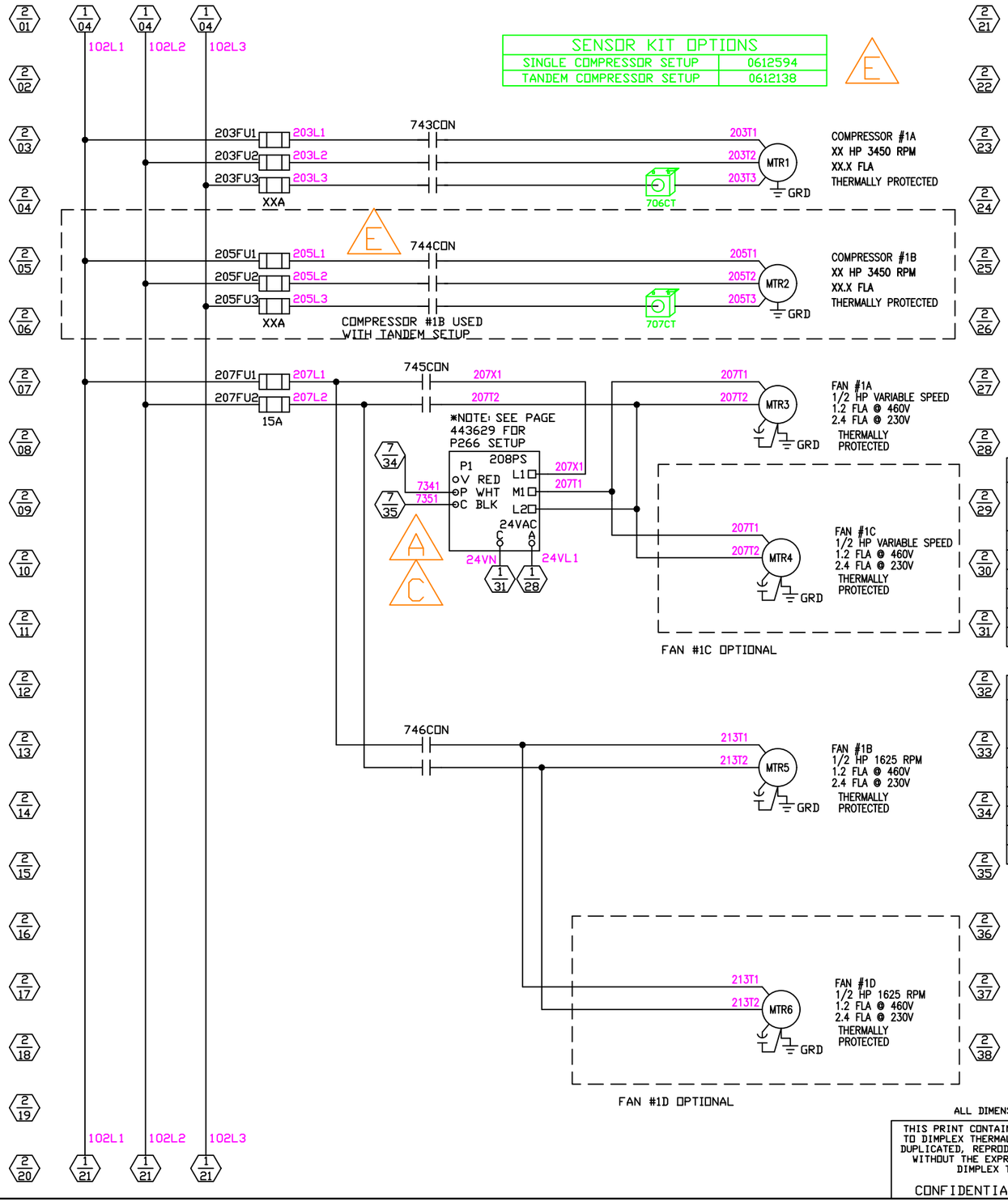
DATE: 01/07/10	PAGE 1 OF X

WO()-()-(2)P-M

ELECTRICAL

DRAWING NO. 443394



SINGLE COMPRESSOR INFO

COMPRESSOR (HP)	VOLTAGE (VOLTS)	COMPRESSOR FLA (AMPS)	203FU1-3 (AMPS)	CIRCUIT FLA	WIRE (AWG)
5	230	23.6	30	33.5	10
5	460	11.8	20	16.8	14
7.5	230	33	45	42.9	8
7.5	460	16.5	25	21.5	10
10	230	40	50	49.9	8
10	460	20	25	25	10

TANDEM COMPRESSOR INFO

COMPRESSOR (HP)	VOLTAGE (VOLTS)	COMPRESSOR FLA (AMPS)	203FU1-3/205FU1-3 (AMPS)	CIRCUIT FLA	WIRE (AWG)
5	230	23.6	30	57.4	10
5	460	11.8	20	28.7	14
7.5	230	33	45	76.2	8
7.5	460	16.5	25	38.1	10
10	230	40	50	90.2	8
10	460	20	25	45.1	10

ALL DIMENSIONS ARE IN INCHES

DATE	DESCRIPTION OF REVISION	APPROVED BY
09/17/15	REMOVED WIRE SIZES	AAM<F, 1455>
05/16/13	ADD SINGLE COMPRESSOR INFO	TR <E>N/A
07-29-11	RED FOLDER	BKS
01/06/11	CORRECTED P266 PWR WIRING	TM <C>
05/04/10	5HP 460V COMP WAS 12 AWG	MAR <B>
01/21/10	UPDATED 208PS WIRING	MAR <A>

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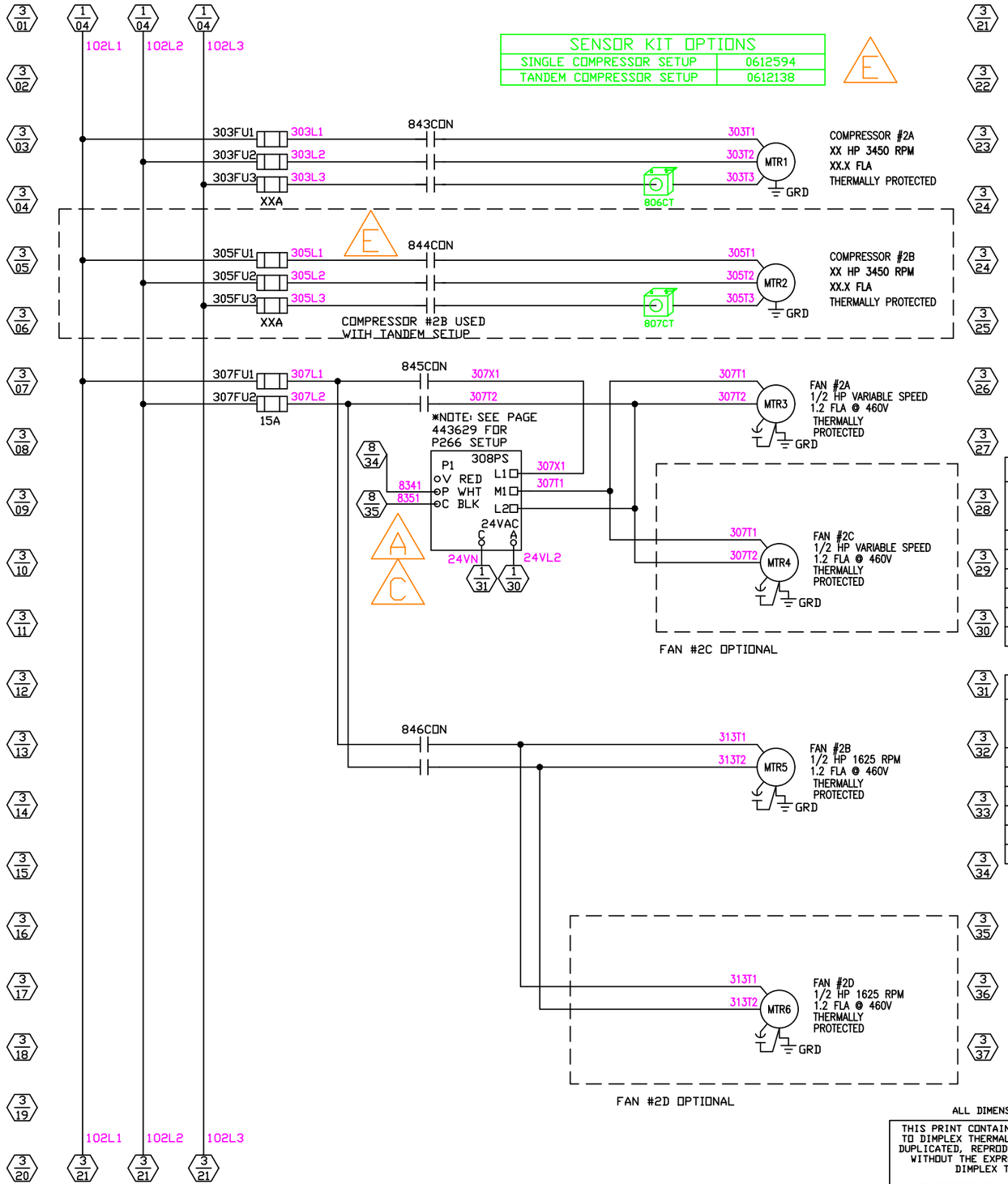
DATE: 01/07/10 | PAGE 2 OF X

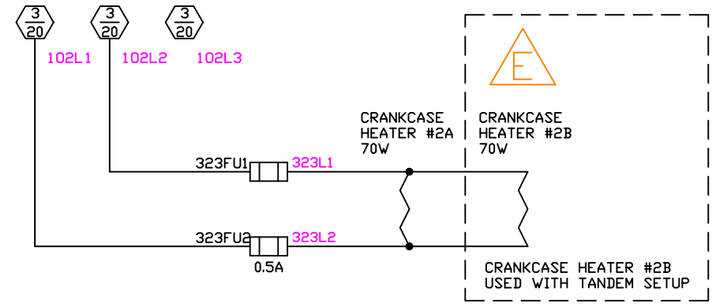
WO()-()-(2)P-M

ELECTRICAL

DRAWING NO. 443395

SENSOR KIT OPTIONS	
SINGLE COMPRESSOR SETUP	0612594
TANDEM COMPRESSOR SETUP	0612138





SINGLE COMPRESSOR INFO					
COMPRESSOR (HP)	VOLTAGE (VOLTS)	COMPRESSOR FLA (AMPS)	303FU1-3 (AMPS)	CIRCUIT FLA	WIRE (AWG)
5	230	23.6	30	33.5	10
5	460	11.8	20	16.8	14
7.5	230	33	45	42.9	8
7.5	460	16.5	25	21.5	10
10	230	40	50	49.9	8
10	460	20	25	25	10

TANDEM COMPRESSOR INFO					
COMPRESSOR (HP)	VOLTAGE (VOLTS)	COMPRESSOR FLA (AMPS)	303FU1-3/305FU1-3 (AMPS)	CIRCUIT FLA	WIRE (AWG)
5	230	23.6	30	57.4	10
5	460	11.8	20	28.7	14
7.5	230	33	45	76.2	8
7.5	460	16.5	25	38.1	10
10	230	40	50	90.2	8
10	460	20	25	45.1	10

ALL DIMENSIONS ARE IN INCHES

DATE	DESCRIPTION OF REVISION	APPROVED BY
09/17/15	REMOVED WIRE SIZES	AAM<F, 1455>
05/16/13	ADD SINGLE COMPRESSOR INFO	TR <E>N/A
07-29-11	RED FOLDER	BKS
01/06/11	CORRECTED 308PS REF & WIRE #	TM <C>
05/04/10	5HP 460V COMP WAS 12 AWG	MAR <B>
01/21/10	UPDATED 308PS WIRING	MAR <A>

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W02-()-(2)P-M

ELECTRICAL

DRAWING NO. 443396

J1 POWER SUPPLY
G 24VDC+ — 24VL1
G0 24VDC− — 24VN

J2 ANALOG INPUTS 1,2,3,4
SYNC
SYNC
B1 — 6061 — 606PT (5V, GND, SIG) — FLUID OUTLET PRESSURE #1 0.5VDC-4.5VDC
B2 — 6071 — 607PT (5V, GND, SIG) — FLUID INLET PRESSURE #2 0.5VDC-4.5VDC
B3 — 6081 — 608NTC SENSOR — FLUID RETURN TEMPERATURE
B4 — 6091 — 609NTC SENSOR — FLUID OUTLET TEMPERATURE
B5 — 6101 — 107OL — PROCESS PUMP #1 OVERLOAD
B6 — 6111 — 109OL — PROCESS PUMP #2 OVERLOAD (OPTIONAL AS RECIRCULATING PUMP OVERLOAD)
GND — 6121
+5VREF — 6131 — (6/06) (6/07)
+24VDC — N/C
ID1 — 6151 — (6/60) REMOTE START SIGNAL
GND — 6161 — (6/61)

J3 DIGITAL OUTPUT 1
C1 — 6181 — (6/62) CHILLER OK/FAULT COMMON
NC1 — 6191 — (6/63) CHILLER FAULT CONTACT
NO1 — 6201 — (6/64) CHILLER OK CONTACT

J5 PLAN NETWORK
TX — PL-TX — (7/22)
RX — PL-RX — (7/23)
GND — PL-G — (7/24)

J7 TLAN BUS
TLAN — N/C
GND — N/C

J8 FIELDBUS CONNECTOR
TX — FB-TX — (6/65) (11/13)
RX — FB-RX — (6/66) (11/14)
GND — FB-G — (6/67) (11/11)

J9 ANALOG OUTPUTS
Y1(PWM) — N/C
Y2 — N/C
GND — N/C

J10 RELAY OUTPUT
NO2 — N/C
C2 — N/C

J11 DIGITAL OUTPUTS
C3 — 24VL1 — (1/28)
NO3 — 6431 — 643M — 24VN (1/32) — PROCESS PUMP #1 CONTACTOR
NO4 — 6441 — 644M — PROCESS PUMP #2 CONTACTOR (OPTIONAL AS RECIRCULATING PUMP)
NO5 — 6451 — 645SOL — ANTI-BACKFLOW SOLENOID
NO6 — 6461 — 646TAS — 6462 — 646CON — HEATER CONTACTOR
NO7 — N/C
C3

LOW AMBIENT KIT OPTION
* NOTE: REFER TO PRINT 0612139 FOR BOM COMPONENTS

J12 ANALOG/ DIGITAL INPUTS
GND — 6501
ID2 — 6511 — 126CR — PHASE MONITOR
B7 — 6521 — 652FS — LOW TANK LEVEL SWITCH
B8 — 6531 — 653NTC SENSOR — AMBIENT TEMPERATURE

INTERLOCKS

DTS WIRING	FIELD WIRING	
(6/15)	6151	REMOTE START SIGNAL (RELAY CONTACT) OPEN = NO RUN CLOSED = RUN
(6/16)	6161	
(6/18)	6181	CHILLER OK/FAULT COMMON (MAX 2A LOAD @ 250VAC)
(6/19)	6191	CHILLER FAULT CLOSE ON FAULT (MAX 2A LOAD @ 250VAC)
(6/20)	6201	CHILLER OK OPEN ON FAULT (MAX 2A LOAD @ 250VAC)
(6/29)	FB-TX	MODBUS SLAVE CONNECT RTU - RS485
(6/30)	FB-RX	
(6/31)	FB-G	
	SPARE	
	SPARE	
	SPARE	

ALL DIGITAL INPUTS, ANALOG INPUTS, AND ANALOG OUTPUTS USE BLUE WIRE.

PHONE CABLE-150'

PGD1 DISPLAY ADDRESS #32

pCO COMPACT ADDRESS #1
J6 J7 J8 J9 J10 J11
J1 J2 J3 J4

03/26/15	REMOVED WIRE COLORS	CM(J, 00289)
12-2-14	607PT WAS LABELED OUTLET	JMK
07-29-11	RED FOLDER	BKS
01/06/11	REMOVED COMP VFD OUTPUT	TM (G)
01/06/11	CORRECTED BUBBLING TO STANDARD	TM (F)
01/06/11	ADDED WIRING NOTE	TM (E)
01/06/11	CORRECTED REFERENCE	TM (D)
03/12/10	ADD 646TAS	MAR (C)
03/09/10	ADDED 646CON	MAR (B)
2/16/10	PHASE MON RELAY WAS 112CR	MAR (A)
DATE	DESCRIPTION OF REVISION	APPROVED BY

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DATE: 01/07/09 | PAGE 6 OF X

W02-()-(2)P-M
ELECTRICAL
DRAWING NO. 443397

J1 POWER SUPPLY
G 24VDC+ — 24VL1
G0 24VDC− — 24VN

J2 ANALOG INPUTS 1,2,3,4
SYNC
SYNC
B1 — 7061 — 706CT — C — COMPRESSOR A CURRENT
B2 — 7071 — 707CT USED WITH TANDEM SETUP — 707CT — F — COMPRESSOR B CURRENT
B3 — 7081 — 708NTC SENSOR — DISCHARGE TEMPERATURE 150°C NTC
B4 — 7091 — 709NTC SENSOR — SUCTION TEMPERATURE 90°C NTC FA
B5 — 7101 — 710PT (5V GND SIG) — DISCHARGE PRESSURE 0.5VDC = 15 PSI 4.5VDC = 425PSI
B6 — 7111 — 711PT (5V GND SIG) — SUCTION PRESSURE 0.5VDC = −14.5PSI 4.5VDC = 134.5PSI
GND — 7121
+5VREF — 7131
+24VDC — 7141
ID1 — 7151 — 715PS — HIGH PRESSURE SWITCH
GND — 7161

J3 DIGITAL OUTPUT 1
C1 N/C
NC1 N/C
NO1 N/C

J5 PLAN NETWORK
TX — PL-TX
RX — PL-RX
GND — PL-G

J7 TLAN BUS
TLAN N/C
GND N/C

J8 FIELDBUS CONNECTOR
TX N/C
RX N/C
GND N/C

J9 ANALOG OUTPUTS
Y1(PWM) N/C
Y2 — 7341 — VARIABLE SPEED FAN OUTPUT (0-10VDC) — A
GND — 7351

J10 RELAY OUTPUT
NO2 — 24VL1
C2 — 7381 — 738SOL — 24VN — LIQUID LINE SOLENOID

J11 DIGITAL OUTPUTS
C3 — 24VL1
NO3 — 7431 — 743CON — 24VN — COMPRESSOR 1A CONTACTOR
NO4 — 7441 — 744CON — COMPRESSOR 1B CONTACTOR — COMPRESSOR #1B USED WITH TANDEM SETUP
NO5 — 7451 — 745CON — FAN #1A & #1C (VARIABLE)
NO6 — 7461 — 746CON — FAN #1B & #1D CONTACTOR (CYCLING)
NO7 N/C
C3

J12 ANALOG/ DIGITAL INPUTS
GND — 7501
ID2 — 7511 — 751FLS — FLOW SWITCH
B7 — 7521 — 752PS — LOW PRESSURE SWITCH
B8 — 7531 — 753NTC SENSOR — LIQUID LINE TEMPERATURE 150°C NTC

ALL DIGITAL INPUTS, ANALOG INPUTS, AND ANALOG OUTPUTS USE BLUE WIRE.

SENSOR KIT OPTIONS	
SINGLE COMPRESSOR SETUP	0612594
DUAL COMPRESSOR SETUP	0612138

pCO COMPACT ADDRESS #2
J6 J7 J8 J9 J10 J11
pCO built-in terminal
Prg Esc
J1 J2 J3 J4

ALL DIMENSIONS ARE IN INCHES

DATE	DESCRIPTION OF REVISION	APPROVED BY
05/16/13	ADD SINGLE COMPRESSOR INFO	TR <F>N/A
07-29-11	RED FOLDER	BKS
01/06/11	CORRECTED BUBBLING TO STANDARD	TM <D>
02/24/10	UPDATE WIRING OF CT'S	MAR <C>
02/16/10	ADDED WIRE NOTE	CJH <B>
02/16/10	UPDATED BUBBLING	CJH <A>

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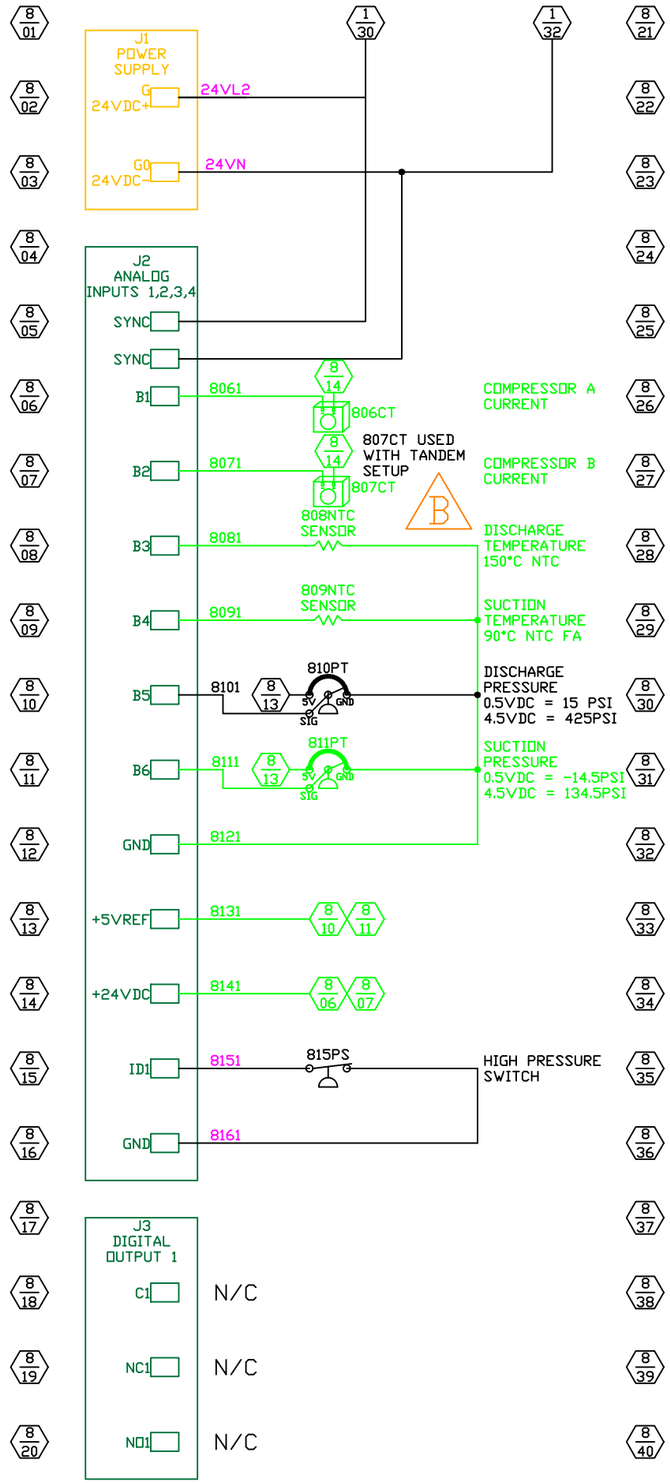
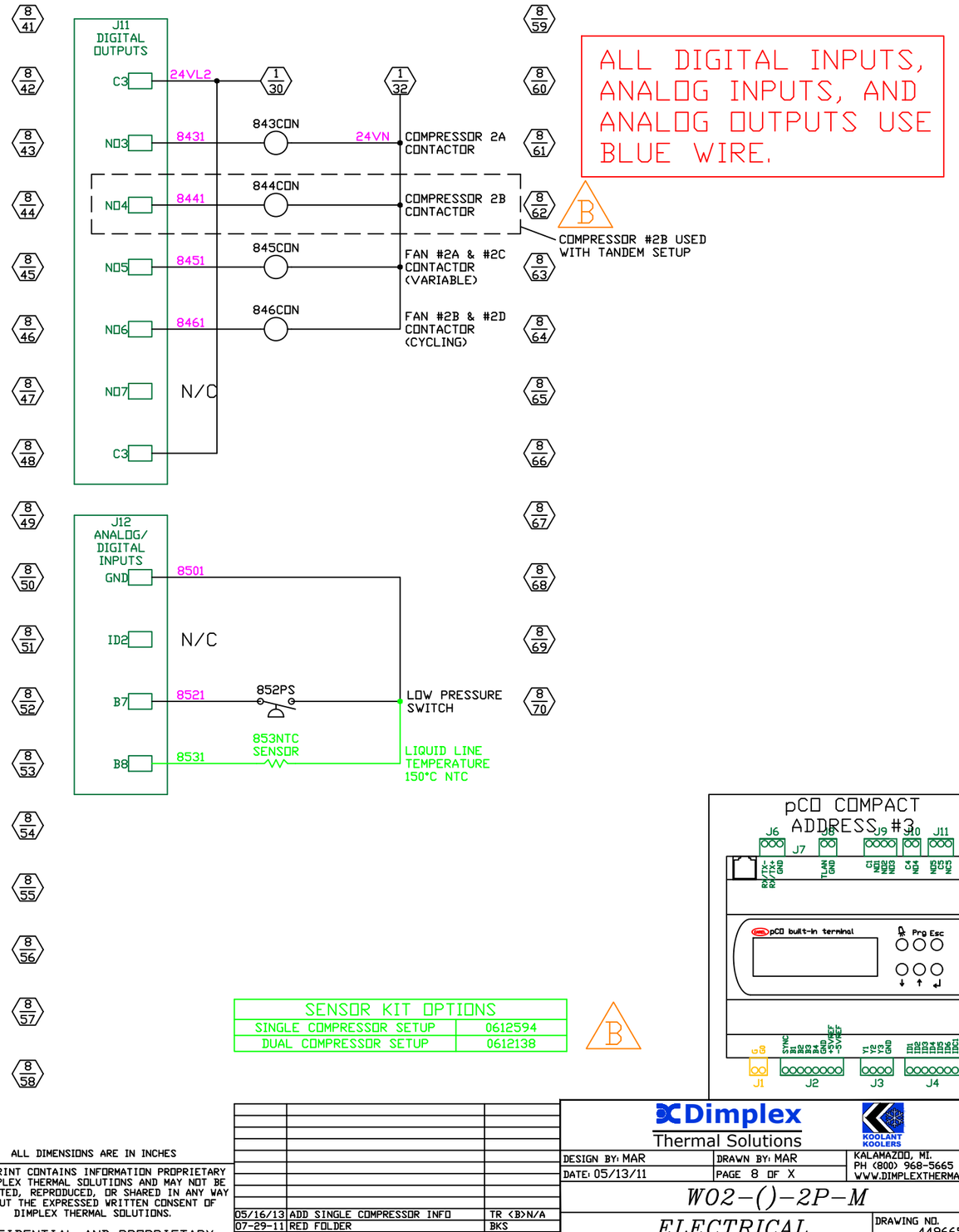
W02-()-(2)P-M
ELECTRICAL
DRAWING NO. 443398





ALL DIGITAL INPUTS, ANALOG INPUTS, AND ANALOG OUTPUTS USE BLUE WIRE.

SENSOR KIT OPTIONS	
SINGLE COMPRESSOR SETUP	0612594
DUAL COMPRESSOR SETUP	0612138

ALL DIMENSIONS ARE IN INCHES

DATE	DESCRIPTION OF REVISION	APPROVED BY
05/16/13	ADD SINGLE COMPRESSOR INFO	TR <B>N/A
07-29-11	RED FOLDER	BKS

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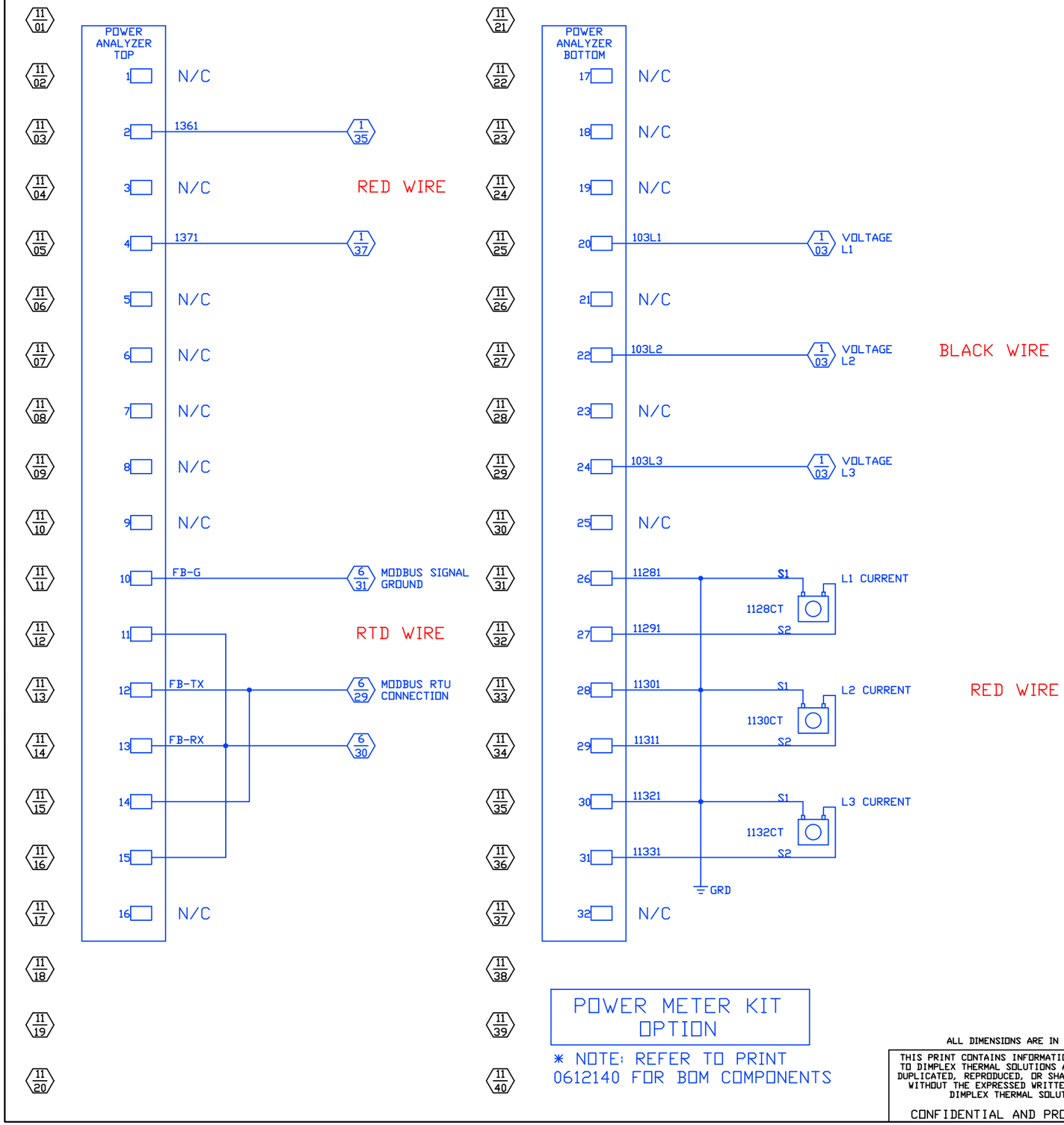
W02-()-2P-M

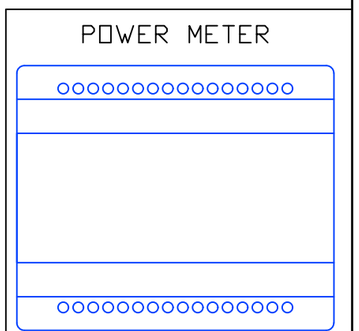
ELECTRICAL

DRAWING NO. 449665



POWER METER KIT OPTION

* NOTE: REFER TO PRINT 0612140 FOR BOM COMPONENTS



ALL DIMENSIONS ARE IN INCHES

DATE	DESCRIPTION OF REVISION	APPROVED BY
04/03/12	UPDATE METER WIRING	JRW
07-29-11	RED FOLDER	BKS
02/16/10	ADDED WIRE DESCRIPTIONS S1 & S2	CJH <C>
02/16/10	ADDED WIRE COLOR DIRECTIONS	CJH <B>
01/22/10	UPDATED METER WIRING	MAR <A>

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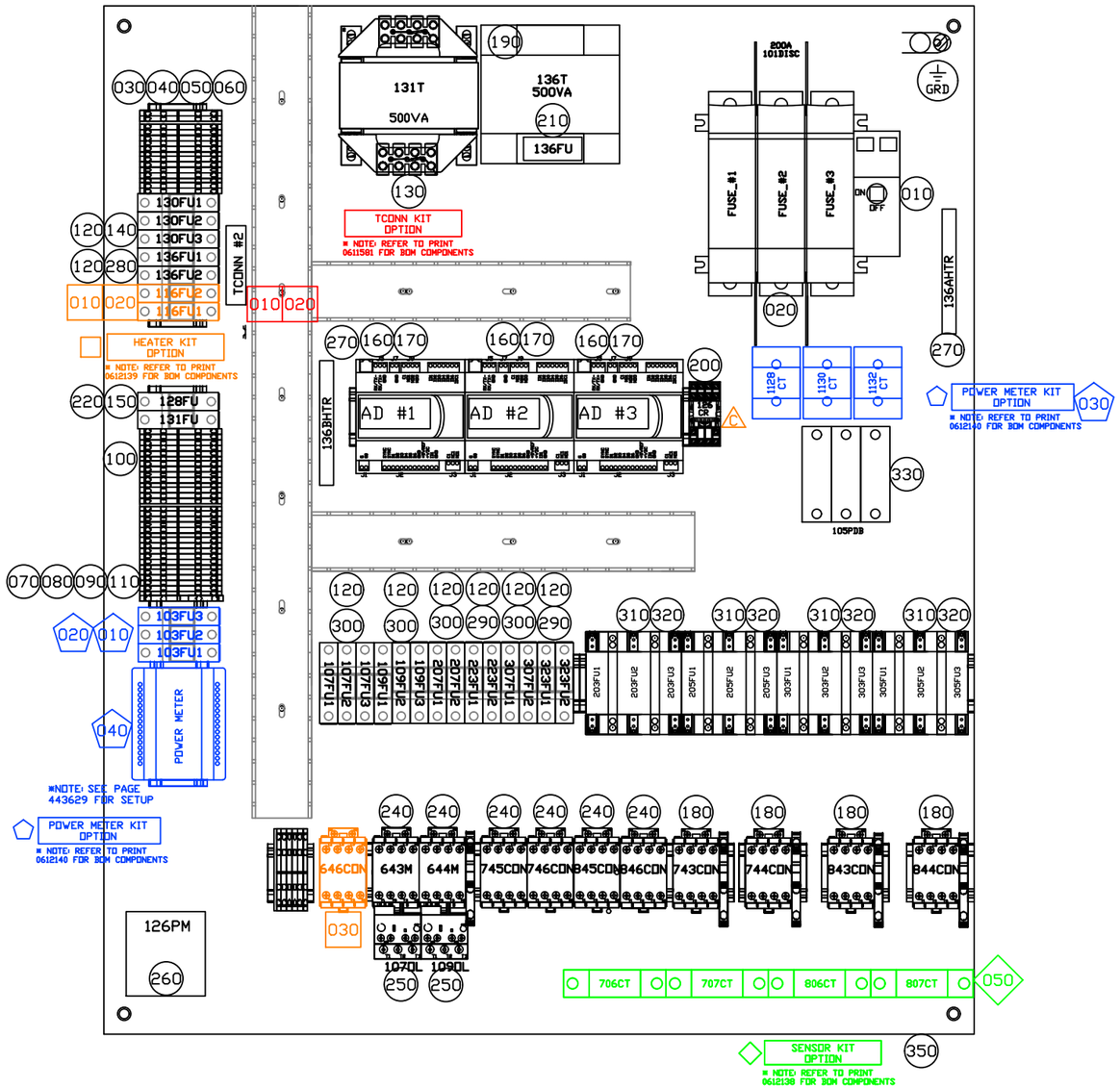
POWER METER LOGIC

ELECTRICAL

DRAWING NO. 443503

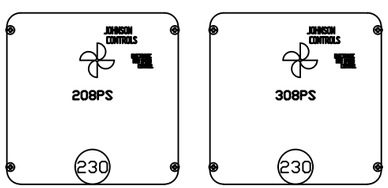
ELECTRICAL PANEL



TAG TO ES-002 STANDARD

WIRE TO SBP-WIRESTD UNLESS OTHERWISE SPECIFIED

PROGRAM #0905136a



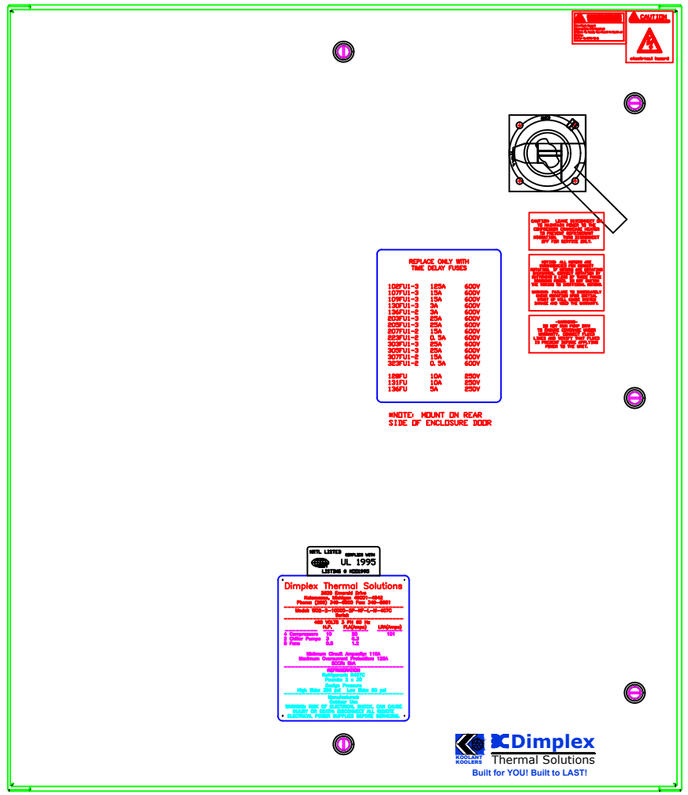
TCONN IS OPTIONAL. INCLUDE ONLY IF LONG DISTANCE REMOTE DISPLAY BOX IS SOLD WITH UNIT. PART IS LOCATED ON REMOTE BOX ASSEMBLY. CONNECT TO CONTROLLER WITH pCO COMPACT ADDRESS #1

*NOTE: P266 VARIABLE SPEED CONTROLLERS ARE MOUNTED INSIDE MACHINE BEHIND ELECTRICAL ENCLOSURE.

653NTC

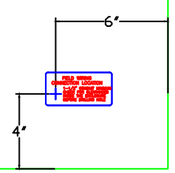
*NOTE: MOUNT AMBIENT SENSOR INSIDE CHILLER UNIT BEHIND AIR FILTERS.

FRONT VIEW OF ENCLOSURE



BOTTOM VIEW OF ENCLOSURE

ENCLOSURE
GALVANIZED = 3444094
STAINLESS STEEL = 3444096



* PARTS NOT SHOWN ON DRAWING DETAIL

NO.	DESCRIPTION	PART#	QTY	TYPE
	W02-2-10000-M ELECTRICAL 460/3/60	702924		ASSY
010	200 AMP DISCONNECT ASSEMBLY	612584	1	ASSY
1	194R-J200-1753 DISCONNECT 200A	3110029	1	PC
1	194R-HM4E HANDLE OPERATING	3113003	1	PC
1	194R-R7 CONNECTING ROD IEC	3114012	1	PC
1	194R-LNC31 LINE SHIELD FOR 200ADISC	3110027	2	PC
1	194R-TL1 TERMINAL LUG KIT	3127218	2	PC
020	AJT125 OR LPJ125 FUSE	3500923	3	PC
030	1492-L3Q TERMINAL BLOCK (20 AMP)	3123021	14	PC
040	1492-EBL3Q END BARRIER (20 AMP)	3123086	2	PC
050	1492-ERL35 END ANCHOR(20/50 AMP)	3123087	11	PC
060	1492-LG3Q GROUNDING BLOCK (20 AMP)	3123017	3	PC
070	1492-L3Q TERMINAL BLOCK (20 AMP)	3123021	35	PC
080	1492-EBL3Q END BARRIER (20 AMP)	3123086	2	PC
090	1492-LG3Q GROUNDING BLOCK (20 AMP)	3123017	3	PC
100	199-DR1 MOUNTING RAIL	3127100	2	PC
110	1492-CJK5I0 JUMPER (20 AMP)	3123095	0.5	PC
120	CHCC1D FUSE HOLDER 30A CC CLASS	3511203	19	PC
130	1497-G-BAJK-0-N TRANSFORMER 500VA	3160015	1	PC
140	ATDR3 OR FNQR3 FUSE	3500970	3	PC
150	TRM10 OR FNM10 FUSE	3500091	2	PC
160	PCDXOOOBAO COMPACT BOARD CAREL	4807776	3	PC
170	PCDXCONOAO PCDC SCREW TERMINALS	4807777	3	PC
180	100-C23KJ10 CONTACTOR 24 VAC COIL	3100403	4	PC
190	HC-0500-41 TRANSFORMER 500VA	3842502	1	PC
200	RU4 RELAY ASSEMBLY 24VAC	611215	1	ASSY
1	RU4S-A24 RELAY 24VAC 4ND 4NC	3805001	1	PC
1	SU4S-11L RELAY SOCKET	3805006	1	PC
210	TRM5 OR FNM5 FUSE	3500050	1	PC
220	CHM1D FUSED TERMINAL BLOCK BUSSMAN	3510900	2	PC
230	P266BCA-100C 460VAC FAN SPEED CTL**	3646040	2	PC
240	100-C09KJ10 CONTACTOR 24 VAC COIL	3100400	6	PC
250	193-ED1DB RELAY 3.2 - 16 AMP	3103505	2	PC
260	ICM401 PHASE MONITOR 190-600VAC	3813419	1	PC
270	100 WATT ENCLOSURE HEATER 120V	3835106	2	PC
280	ATDR3 OR FNQR3 FUSE	3500970	2	PC
290	ATDR 1/2 OR FNQR 1/2 FUSE	3500973	4	PC
300	ATDR15 OR FNQR15 FUSE	3500960	10	PC
310	60358SJ FUSE BLOCK 3 POLE 30A AJT	3501043	4	PC
320	AJT25 OR LPJ25 FUSE	3500911	12	PC
330	1492-PDE1142 SINGLE PWR DIST BLOCK	3505028	3	PC
340	MP0617671 10K THERMISTOR 10" CAREL	4801215	1	PC
350	W02-2-5000 EBOX PANEL 42X36	443803	1	PC

ALL DIMENSIONS ARE IN INCHES

DATE	DESCRIPTION OF REVISION	APPROVED BY
11/18/16	MOVED 126CR NEXT TO CARELS	ND<C,N/A>
10-28-16	MOVED PM TO USE PRE PUNCHED BOX	JMK/MG <F>
4-3-15	ADDED OPTIONAL T CON	JMK <B>
02/02/15	UPDATE BOM FROM SYSTEM 21	TR<A,N/A>
02/02/15	UPDATE TITLE BLOCK & ADD TAGGING NOTE	TR<A,N/A>
02/02/15	MOVE PGD DISPLAY TO SHIP LOOSE	TR<A,N/A>
01/08/14	CHG PDB FROM 3899410 QTY 1	MAR

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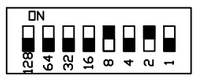
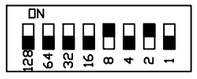
W02-2-10000-2P-NF-L-M-407C

ELECTRICAL

DRAWING NO. 702924

P266 PARAMETERS

SETUP: TO SET YOUR PARAMETERS, FIRST ADJUST THE DIP SWTICHES AS INDICATED BELOW, THEN HOLD THE PUSH-BUTTON. ONCE THE LED FLASHES THE APPROPRIATE NUMBER OF TIMES, RELEASE THE PUSH-BUTTON. REPEAT FOR EACH SETTING BELOW.

SETTING	DIP SWITCH SETTING	RELEASE BUTTON AFTER	VALUE
START VOLTAGE VALUE		TWO FLASHES	10
START PRESSURE VALUE		THREE FLASHES	10
END PRESSURE VALUE		FOUR FLASHES	240
FINAL POSITION OF DIP SWITCHES		DO NOT PRESS	N/A

POWER METER PARMETERS

SETTING	DESCRIPTION	VALUE	VALUE DESCRIPTION
n_p	NEW PASSWORD	0	CHANGE PASSWORD
SYS	SYSTEM TYPE	3P	3-PHASE UNBALANCED WITHOUT NEUTRAL
Ct.r	CT RATIO	20	100A/5A = 20A FROM CT
Ut.r	VT Ratio	1	460V/460V = 1 FROM VOLTAGE
p.i.t	POWER INTEGRATION TIME	15	
A.i.t	CURRENT INTEGRATION TIME	1	
thd	HARMONIC ANALYSIS	YES	ENABLE
ou.1	OUTPUT #1	nd	NORMALLY DISABLED
ou.2	OUTPUT #2	nd	NORMALLY DISABLED
SEt			
Fis	FILTERING RANGE	2	
FIC	FILTERING COEFFICIENT	2	
Adr	SERIAL ADDRESS	1	
Bdr	BAUD RATE	19200	
H.rE	HOURS COUNTER RESET		
E.tr	TOTAL ENERGY COUNTERS RESET		
End	CONFIRM SELECTED VALUES		

When Low Ambient Kit (GE Models E8911CC, E8911CD, E8912CC, E8912CD) is Purchased Configure the Following Settings:

Configuration

Low Ambient: Yes

Configuration Heater
Enable Heater: Yes
System Off Heat: Yes
Run Pump: Yes
Heater on Diff: 10.0°F

E-Box Torque Settings					
Item	*WO2-2-5000-2P-NF-L-M-R407C 460 volt (lb-in)*	*WO2-2-7500-2P-NF-L-M-R407C 460 volt (lb-in)*	*-10% (lb-in) *low and high end of range*	*+10% (lb-in) *low and high end of range*	*Torque Setting*
Pump/fan contactor power term.	22	22	19.8	24.2	20
Pump contactor overload term.	12	12	10.8	13.2	11
Pump/fan contactor control term.	8.9-13	8.9-13	8.01	14.3	11
Pump overload power terminals	22	22	19.8	24.2	20
Pump overload control term.	5	5	4.5	5.5	5
Compressor contactor power	13.3-22	13.3-22	11.97	24.2	20
Compressor contactor control	8.9-13	8.9-13	8.01	14.3	11
Carel Connectors - Large	5	5	4.5	5.5	5
Carel Connectors - Small	2	2	1.8	2.2	2
Fused terminal	25	25	22.5	27.5	25
Disconnect wire terminal	35	35	31.5	38.5	35
Disconnect fuse screw	35	35	31.5	38.5	35
Disconnect shaft set screw	12	12	10.8	13.2	11
Fuse block terminal	35	35	31.5	38.5	35
Transformer Allen Bradley	10	10	9	11	11
Transformer Dongan	16-18	16-18	14.4	19.8	20 *
Power Dist. Block Primary	120	120	108	132	120
Power Dist. Block Secondary #8	25	25	22.5	27.5	25
Power Dist. Block Sec #10-#14	20	20	18	22	20
Control relay socket terminals	5-9	5-9	4.5	9.9	5

*** Decision made at 20 lb-in for practicality.**

Torque Gun Settings: 5 lb-in 11 lb-in 20 lb-in 25 lb-in 35 lb-in 120 lb-in

CURRENT TRANSDUCER PARAMETERS

COMPRESSOR (HP)	VOLTAGE	SETTING
5	230/3/60	40
5	460/3/60	20
7.5	230/3/60	40
7.5	460/3/60	20
10	230/3/60	40
10	460/3/60	40

ALL DIMENSIONS ARE IN INCHES

DATE	DESCRIPTION OF REVISION	APPROVED BY
07-29-11	RED FOLDER	BKS
07/12/10	UPDATED CAREL TORQUE SETTINGS	MAR (E)
05/07/10	ADDED TORQUE SETTINGS	MAR (D)
03/25/10	UPDATED START VALUE TO 10	MAR (C)
02/17/10	MOVED FINAL POSITION OF SWITCH'S ON	CJH (B)
01/21/10	UPDATED 208PS WIRING	MAR (A)

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WO()-()-(2)P-M

ELECTRICAL

DRAWING NO. 443629