

Technical Data Manual

TDM

Group: Chiller
Part Number: CLIM LC MDT
Date: 6 junio 2023

CLIM LC Series Water Cooling Unit

Model

7.5 to 62.5 TR

Refrigerant HFC-410A

50/60 Hz



SAFETY WARNINGS.....3
GENERAL DESCRIPTION.....4
FEATURES / BENEFITS.....5
TECHNICAL INFORMATION.....7
DESIGN PARAMETERS.....9
ELECTRICAL INFORMATION.....12

Manufactured in an ISO 9001 certified facility



©2023 Clima Flex. Illustration and data cover the Clima Flex product at the time of publication and we reserve the right to make changes in design and construction at any time without notice.

SAFETY WARNINGS

This manual provides information on the technical data of the Clima Flex CLIM LC series.

NOTE: Installation and maintenance should be performed only by qualified personnel who are familiar with local codes and regulations and who have experience with this type of equipment.

⚠ DANGER ⚠

LOCK OUT/LABEL all power sources before starting, pressurizing, depressurizing or shutting down the chiller. Disconnect electrical power before servicing equipment. More than one disconnection may be required to deenergize the unit. Failure to follow this warning to the letter can result in serious injury or death. Be sure to read and understand the installation, operating and service instructions in this manual.

⚠ WARNING ⚠

Electric shock danger. Improper handling of this equipment can cause personal injury or equipment damage. This equipment must be properly grounded. Control panel connections and maintenance should be performed only by personnel knowledgeable in the operation of the equipment being controlled. Disconnect electrical power before servicing equipment. Be sure to install a earth leakage breaker. Failure to install a earth leakage breaker may result in electric shock or fire.

⚠ CAUTION ⚠

Static sensitive components. Static discharge during handling of the electronic circuit board can cause damage to components. Use a static strap before performing any service work. Never unplug any cables, circuit board terminal blocks, or power plugs while power is applied to the panel.

⚠ CAUTION ⚠

When moving refrigerant to/from the cooler using an auxiliary tank, a grounding strap should be used. An electrical charge builds up when halo-carbon refrigerant travels in a rubber hose. A grounding strap should be used between the auxiliary refrigerant tank and the cooler end sheet (ground to ground), which will safely carry the charge to ground. Failure to follow this procedure may result in damage to sensitive electronic components.

⚠ WARNING ⚠

If refrigerant leaks from the unit, there is a potential choking danger as the refrigerant will displace air in the immediate area. Be sure to follow all applicable published industry-related standards and local, state, and federal statutes, regulations, and codes if refrigerant is produced. Avoid exposing refrigerant to an open flame or other ignition source.

⚠ WARNING ⚠

Polyolester oil, commonly referred to as POE oil, is a synthetic oil used in many refrigeration systems and may be present in this Clima Flex product. POE oil, if it ever comes in contact with PCV/CPVC, will coat the inside wall of the PVC/CPVC pipe and cause environmental stress fractures. Although there is no PCV/CPCV pipe in this product, keep this in mind when selecting piping materials for your application, as system failure and property damage could occur. Consult the pipe manufacturer's recommendations to determine appropriate pipe applications.

DANGER IDENTIFICATION INFORMATION

⚠ DANGER ⚠

Danger indicates a dangerous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING ⚠

Warning indicates a potentially dangerous situation which may result in property damage, personal injury or death if not avoided

⚠ CAUTION ⚠

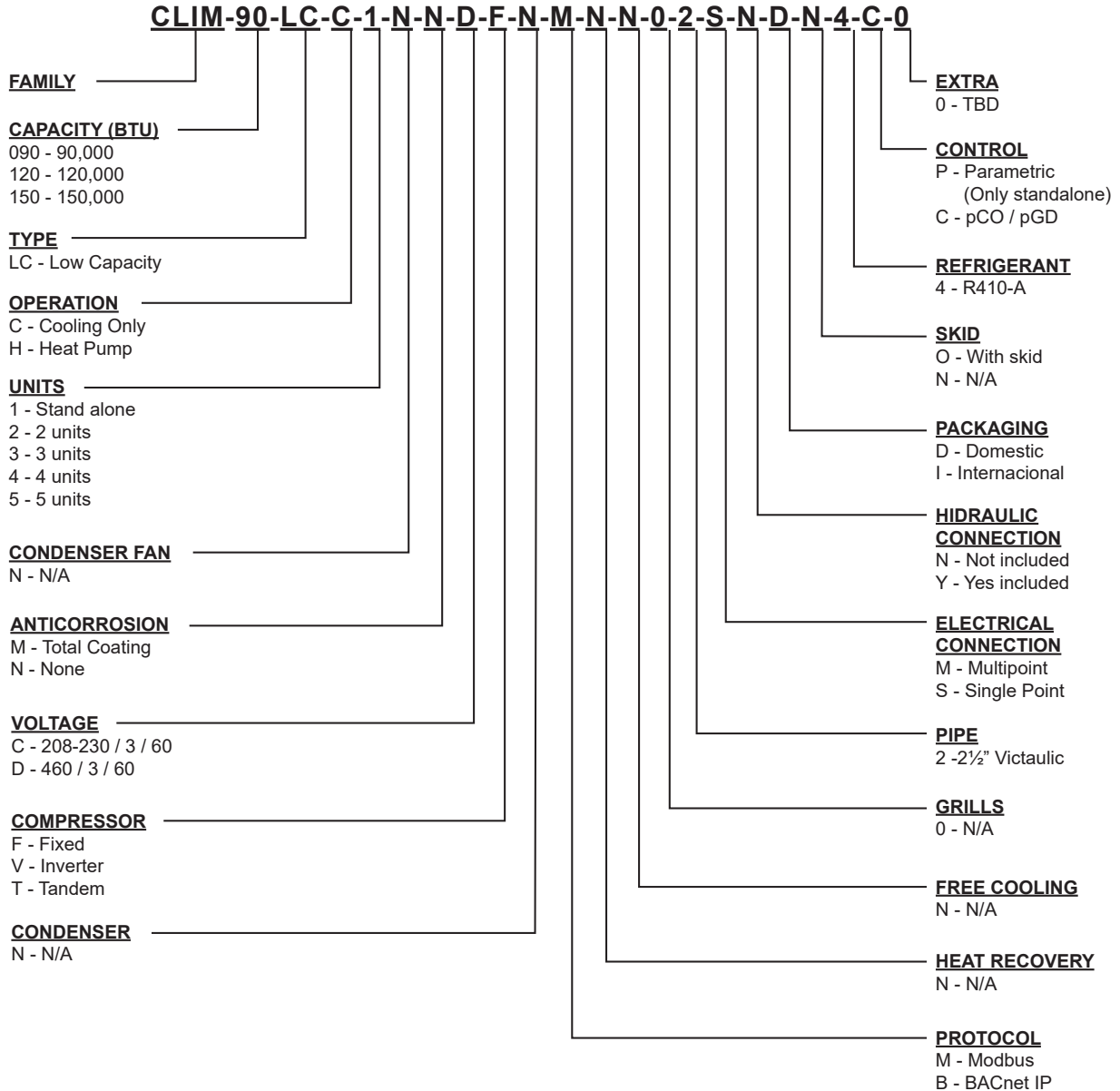
Caution indicates a potentially dangerous situation which may result in minor injury or equipment damage if not avoided.

NOTES: Indicate important details or clarifying statements for the information presented.

Our units are designed to effectively meet the HVAC needs of any project. Our units feature controls, logic routines and digital sensors that continuously monitor the system to adapt its operation

to the level necessary to maintain optimal system conditions at all times, thus achieving maximum performance and energy savings in a system that is simple to operate and maintain.

NOMENCLATURE



FEATURES / BENEFITS

EFFICIENCY

Our units are designed to efficiently meet the air conditioning needs of any project. Our units have controls, logic routines and digital sensors that continuously monitor the system to adapt its operation to the level necessary to maintain optimal system conditions at all times, thus achieving maximum performance and energy savings in a system that is simple to operate and maintain.

All temperature sensors are calibrated and adjusted at the factory prior to shipment.

The start-up of the equipment must be carried out by a qualified technician, during the initial start-up the unit will be adjusted to the local conditions and all operating points will be checked.

Once the unit has been properly installed, the operation is a matter of pressing the digital start and stop button, until making sure that the unit works properly, after this the unit will operate automatically, turning on by itself according to the demand of the system and local conditions.

FLEXIBILITY

Through intelligent processors and digital sensors, our equipment automatically modulates the operation of the system to maintain the water temperature at optimal operating conditions.

Our equipment was designed to be coupled with each other and to be combined to satisfy different load variations (Tandem Installation). Up to 8 modules can be combined in a single installation; these combinations can be made with Water Chiller Units of different capacities ranging from 3 to 30 tons of refrigeration.

The system capacity will then vary depending on the number and type of units installed in it.

SAFETY

The structures of our units are made of galvanized steel sheet, coated with baked electrostatic powder paint (meets the ASTM-B117 1500 hour salt spray test) to ensure long durability and absence of corrosion under any weather conditions, such as direct solar light, rain and wind.

All our units are designed to fit into a reduced installation space, thus eliminating large installation areas. We only use high-quality components to ensure durability and safety, even in harsh environmental conditions.

NOTE: For applications in highly corrosive climates our units can be coated inside and out with extra protection against corrosion. Ask your sales agent for more information.

Our units have AHRI performance and efficiency certifications, and ETL safety certifications, in addition to complying with all industry safety standards.

We are members of the American Society of Air Conditioning, Refrigeration and Heating Engineers (ASHRAE).

To show our commitment to our clients and stakeholders; our equipment has a 1-year warranty after commissioning and start up. Our units use R410A refrigerant, which is harmless to the ozone layer and the most eco-friendly option possible.

All of our units are designed and manufactured with a focus on safety, performance and quality.

DESIGN

The work carried out by our Engineering and Development department has resulted in equipment with high design efficiency and optimum performance during operation. The selection of high quality main components, our quality processes and the control system during manufacturing, guarantee a high performance and safe unit.

All main components are rigorously tested and validated before being installed. Each designed unit has undergone long hours of rigorous testing to ensure the efficiency, safety, durability and quality of the entire system.

All external paint is baked and meets the strictest quality standards (1500 hour salt spray test ASTM-B117).

The selection of high-end compressors and heat exchangers ensure the capacity and high efficiency of the unit.

Optional water pumps* are specially designed to function properly with minimal vibration and noise.

All our units have a reduced footprint, which facilitates installation and maintenance maneuvers, by being able to use stairs, doors and service elevators to move them.

* Ask your sales rep about factory integrated pump options.

COMMUNICATION

The units can be controlled independently (Individual Mode) or they may be connected to a central control unit (Tandem mode).

The operation and user access will be done through a color touch screen *

Our units can be connected / integrated through different communication protocols; such as TCP / IP, ModBUS and BacNet **, the most common protocols used in the Air Conditioning industry.

Our units keep track of all programmable variables in real time, such as load monitoring in the system, specific alarms of the refrigeration cycle, water cycle and the electrical system. As well as detection of external factors such as fire or flood (optional sensors). The control system ensures the correct operation of the equipment by monitoring in real time the condition of the major components (high or low pressure of the refrigerant and conditions of the compressor, etc.).

In case of failure, the event alarm will be recorded for later analysis, facilitating the location of a possible failure and its solution.

* Depends on the type of control.

** The communication protocols available depend on the type of control.

INSTALLATION

The units have been designed for easy and simple installation. Victaulic type (grooved) fittings provide a simple and safe way to make water pipe connections. These connections are located on both sides of the equipment, which provides great flexibility for water connections. The individual assembly of the equipment reduces the cost of installation, the units have a rigid base that balances the weight of the unit and allows easy installation.

MAINTENANCE

The simplicity in the design of the unit allows maximum ease when performing preventive / corrective maintenance on them. All major components are available to the maintenance personnel by simply opening the service panels. If an emergency stop occurs, the digital control of the unit will indicate in detail the cause of the alarm, helping to facilitate and speed up its solution.

TESTING

Before leaving the factory, our units are tested multiple times. Pressure and vacuum tests are performed to detect possible leaks. Once the unit is verified to be leak free, the refrigerant is charged accurately for proper operation based on customer installation conditions. All units are evaluated and tested at full load operation, with water flow, thermal load and line voltage under the current conditions in which the equipment operates in the field.

NOTE: The warranty policy requires that the commissioning be carried out by qualified personnel authorized by the company.

INSITUM® CORROSION PROTECTION

Spray for coating hvac/r products

Coating is a flexible, water-based, water-reducible, synthetic polymer corrosion coating designed specifically for the protection of HVAC/R coils and components. Insitu® Spray Applied Coating contains ES2 (embedded stainless steel pigment) technology, an anti-corrosion coating specifically designed for the protection of coils mounted in corrosive areas.

HVAC/R coils, components and enclosures will have a permanent water-based synthetic coating with ES2 pigment applied to all areas of the coating surface with no bridging of material between fins. Therefore, ES2 pigments are suitable for even the most corrosive environments and will maintain their appearance after many years of exposure. UV degradation ES2 pigments form a multilayer structure throughout the paint film.

This creates a barrier layer that reflects sunlight away from the paint film preventing UV rays from penetrating. As a result, UV degradation of individual polymer molecules is eliminated, film integrity is maintained and the pigment particles remain well anchored to the substrate.

The resulting smooth, hard finish prevents dirt build-up. The multilayer structure of ES2 pigments delays the passage of water molecules into the film and acts as an effective moisture barrier.



Ideal applications for Insitu® spray-applied coatings.

- Mini-splits
- Packaged enclosures
- Condensing units
- Modular air handlers
- Air-cooled chillers
- Indoor and outdoor HVAC cabinets and copper tubing
- Heat exchange coils (water, condenser, evaporator, DX)

TECHNICAL INFORMATION

Figure 1. Unidad CLIM LC 7.5 TR



Selection Conditions	
Head (ft)	0
Condenser water inlet temperature (°F)	95°
Water injection temperature (°F)	44°

Cooling mode	
Rated capacity (BTU/hr)	90,000
Cooling capacity (BTU/hr)	78,773
EER (BTU/W*hr)	9.216

Electrical	
Power supply (V,Hz)	200-230/3/60
MOP (A)	168
MCA (A)	94
Total amperage (A)	26.19
Total consumption (kW)	8.547

Standard features

- Limited Warranty Clima Flex units
- 1 year warranty on functional parts of the equipment

Unit Data	
Refrigerant Type	R-410A (Charged)
Refrigerant charge (lbs)	6.16
Noise Level (Db)	68.0
Net Weight (lbs)	728
Operating Weight (lbs)	747
Controller	Digital (pCO)
Total Pressure Drop	31.5

Dimensions	
Length (in)	32.2500
Depth (in)	40
Height (in)	47.0000
Water inlet and outlet diameter (in)	2.5000

Compressor	
Type	Fixed
Quantity	1
Consumption (kW)	8.547
Amperage (A)	26.19

Evaporator	
Type	Stainless steel plates
Water flow (GPM)	15.75
Water inlet temperature (°F)	54°
Water outlet temperature (°F)	44°

Condenser	
Type	Stainless steel plates
Water flow (GPM)	6,000
Area (ft²)	8.61

NOTE: The document is subject to change without notice.

NOTE: For more technical information go to the "Software Selection" page. <http://www.clima-flex.com/chillers/index.php>

Flowcon Balancing Valve

Figure 2. Automatic Balancing Valve.



General Description

Flowcon automatic balancing valves are designed to balance heating and air conditioning terminal units by providing a constant flow rate with the added feature of being adjustable.

With these automatic balancing valves, flow can be controlled with two different cartridges: an internal composite cartridge or an externally adjustable E-JUST cartridge. Both types of cartridges maintain constant flow, even when system pressure conditions change.

The E-JUST cartridge can be externally adjusted to one or 41 flow rates even when the system is in operation. The cartridge is tamper-proof, as the adjustment is made by means of a special flowcon key. In addition, the adjustment can be sealed with a top cap.

Technical Data (Valve)

Working Pressure/ Temperature:	2500 kPa / -30° C to +100° C
Material	
Cartridge	Polyoxymethylene
Diafragma	Acrylonitrile-butadiene rubber hydrogenated or EPDM depending on type
Body	Forged Brass ASTM CuZn39Pb2
O-Rings	EPDM
End Connection	Female ISO
Body Sockets	¼" ISO
Rango de Flujo	0.0081 l/s - 1.43 l/s (Standard Compound)
	0.0278 l/s - 1.39 l/s (E-JUST)

NOTES: For further information see <http://www.flowcon.com/>

		A/AB DN15/20/25 ABV DN15/20/25				AB DN25/32 ABV DN25/32/40				AB DN40/50
Static Pressure	(kPa)	2500								
	(psi)	360								
Temperature Ranges (average/ambient)	(°C)	-20 to +120 / 0 to +50								
	(°F)	-4 to +248 / +32 to +122								
Pressure drop information		NOTE: For pump hopper calculations, add the minimum pressure differential for the index circuit for pressure losses from other components (i.e. coil valves, etc.).								
Valve Body	(Kv-value)	3.1				12.5				23
	(Cv-value)	3.6				14.5				30.4
Stainless Steel Insert		F3601xx	F3602xx	F3604xx	F3608xx	F3611xx	F3612xx	F3614xx	F3618xx	
Insert Size	(mm)	20	20	20	20	40				N/A
	(inch)	3/4"	3/4"	3/4"	3/4"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	
Pressure	(kPaD)	10 a 95	22 a 210	40 a 390	90 a 880	10 a 95	22 a 210	40 a 390	90 a 880	
Difference	(psid)	1 a 14	2 a 32	4 a 57	8 a 128	1 a 14	2 a 32	4 a 57	8 a 128	
Flow Rate	(l/sec)	0.0210 a 0.315	0.0347 a 0.505	0.0473 a 0.631	0.0694 a 1.01	189.0 a 0.925	0.284 a 1.39	0.379 a 1.85	0.568 a 2.78	
	(GPM)	0.333 a 5.00	0.550 a 8.00	0.750 a 10.0	1.10 a 16.0	3.00 a 14.7	4.50 a 22.0	6.00 a 29.3	9.00 a 44.0	
Standard Composite Insert		ABV1.Y.x grey/red/blue/black/green		ABV1.G.x grey/red/blue/black/green		ABV2.X.x red/white	ABV2.C.x red/white	ABV2.D.x red/white		
Insert Size	(mm)	20		20		40	40	40		N/A
	(inch)	3/4"		3/4"		1 1/2"	1 1/2"	1 1/2"		
Pressure	(kPaD)	15 a 130		30 a 400		15 a 130	22 a 300	30 a 400		
Difference	(psid)	2.2 a 18.9		4.4 a 58		2.2 a 18.9	3.2 a 43.5	4.4 a 58		
Flow Rate	(l/sec)	0.0081 a 0.273		0.0117 a 0.408		0.17 a 0.85	0.23 a 1.21	0.27 a 1.43		
	(GPM)	0.128 a 4.33		0.185 a 6.46		2.69 a 13.5	3.65 a 19.2	4.28 a 22.7		
Inserto E-JUST		E-JUST1.Y.x black/green	E-JUST1.Y.R red	E-JUST1.G.R red	E-JUST1.G.x black/green	E-JUST2.Y.G green			E-JUST3.G.B negro	
Insert Size	(mm)	20	20	20	20	40			50	
	(inch)	3/4"	3/4"	3/4"	3/4"	1 1/2"			2"	
Pressure	(kPaD)	17 a 210	17 a 200	30 a 400	35 a 400	17 a 400			20 a 400	
Difference	(psid)	2.5 a 30	2.5 a 29	4.4 a 58	5.1 a 58	2.5 a 58			2.9 a 58	
Flow Rate	(l/sec)	0.0278 a 0.169	0.0767 a 0.229	0.113 a 0.352	0.0383 a 0.249	0.149 a 1.62			0.883 a 4.48	
	(GPM)	0.44 a 2.68	1.22 a 3.60	1.79 a 5.57	0.67 a 3.95	2.36 a 25.7			14.0 a 70.9	

DESIGN PARAMETERS

Figure 3. Dimensional configuration clim 7.5 TR

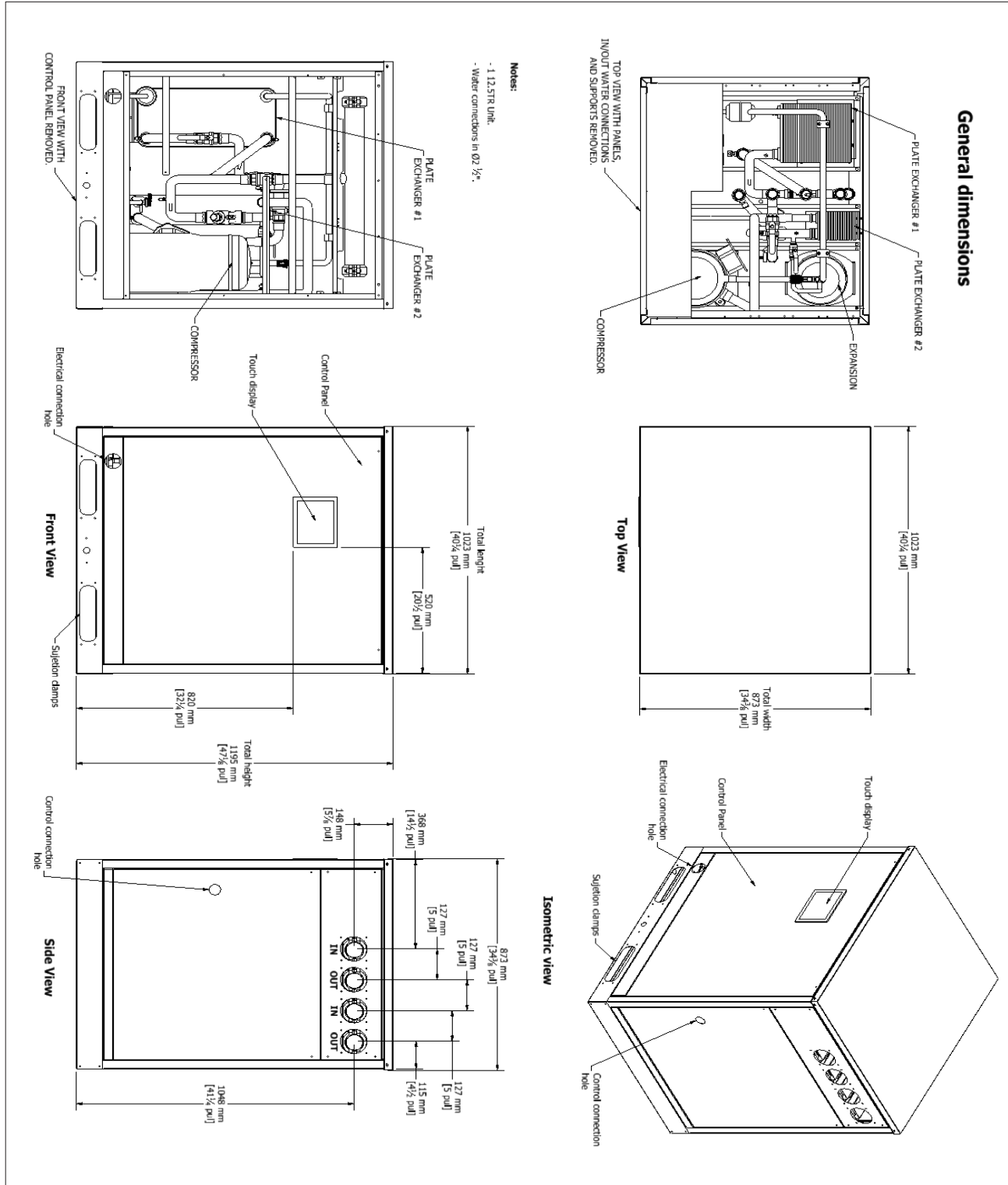
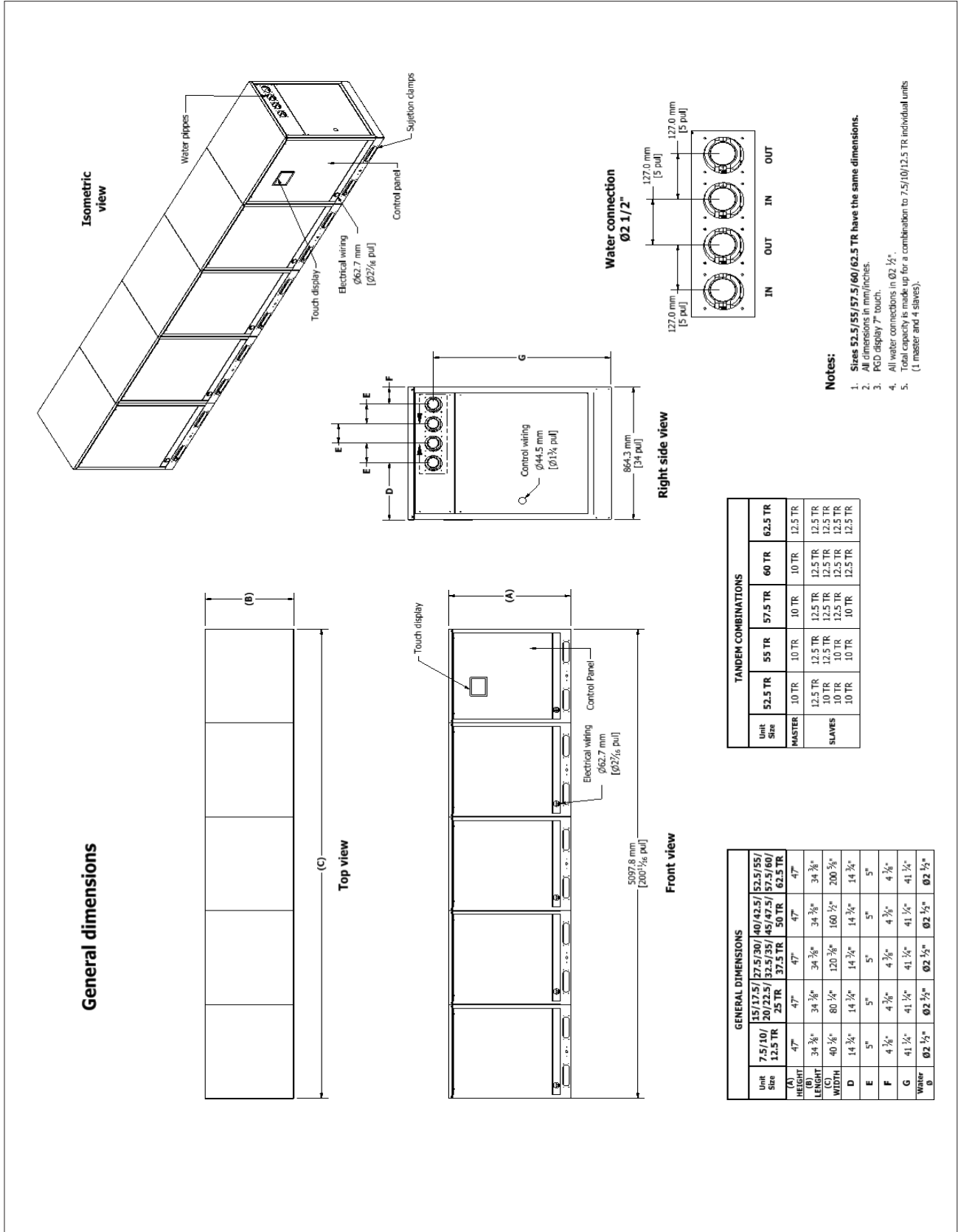


Figure 4. Tandem dimensional configuration.

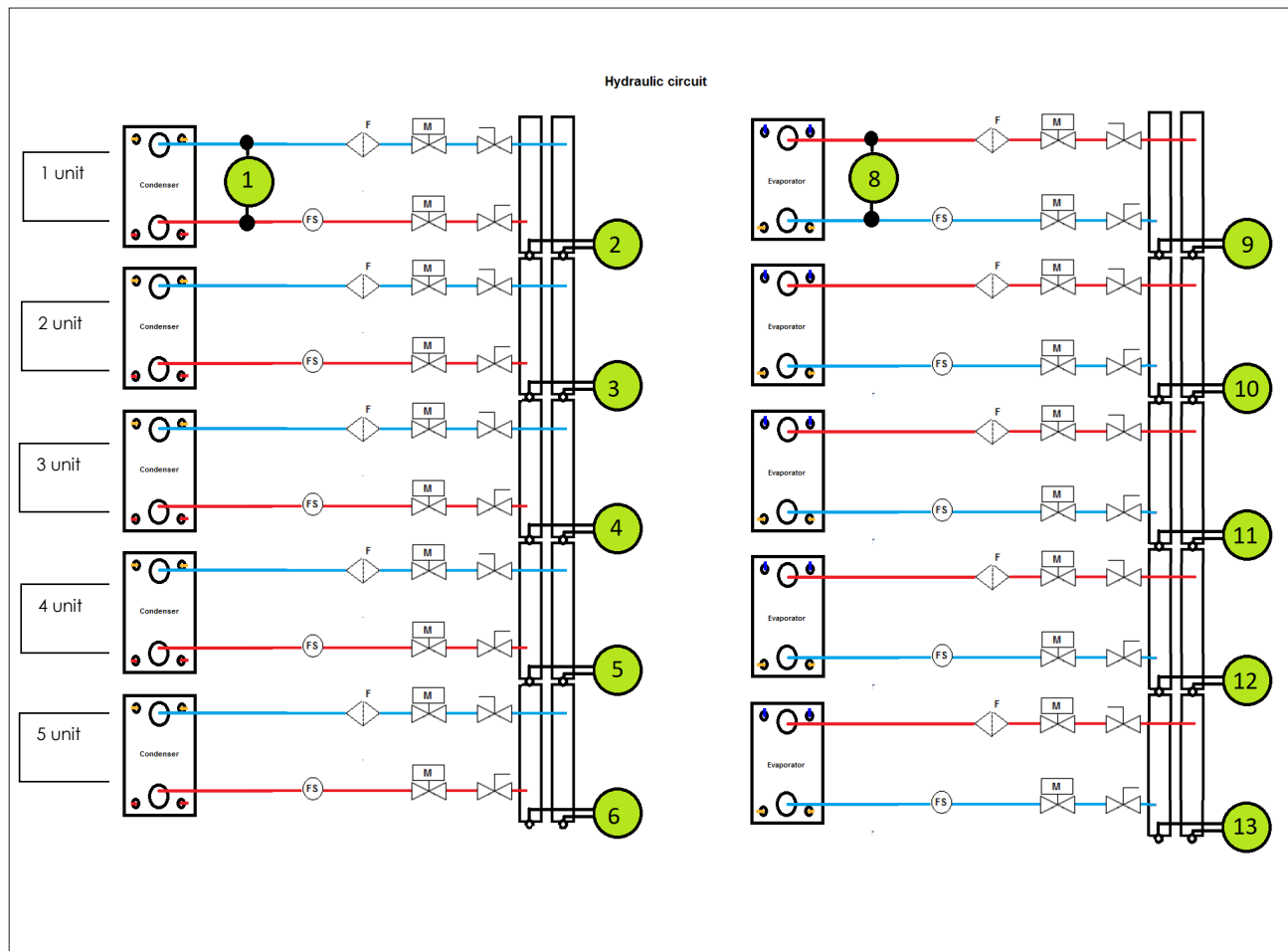


DESIGN PARAMETERS

Table 2. Pressure drop data.

POINT	CONDENSER	POINT	EVAPORATOR
	DP (FT WG)		DP (FT WG)
1	6.93	8	7.1
2	31.5	9	31.65
3	31.8	10	31.8
4	32.6	11	32.59
5	34.1	12	34.08
6	36.5	13	36.48

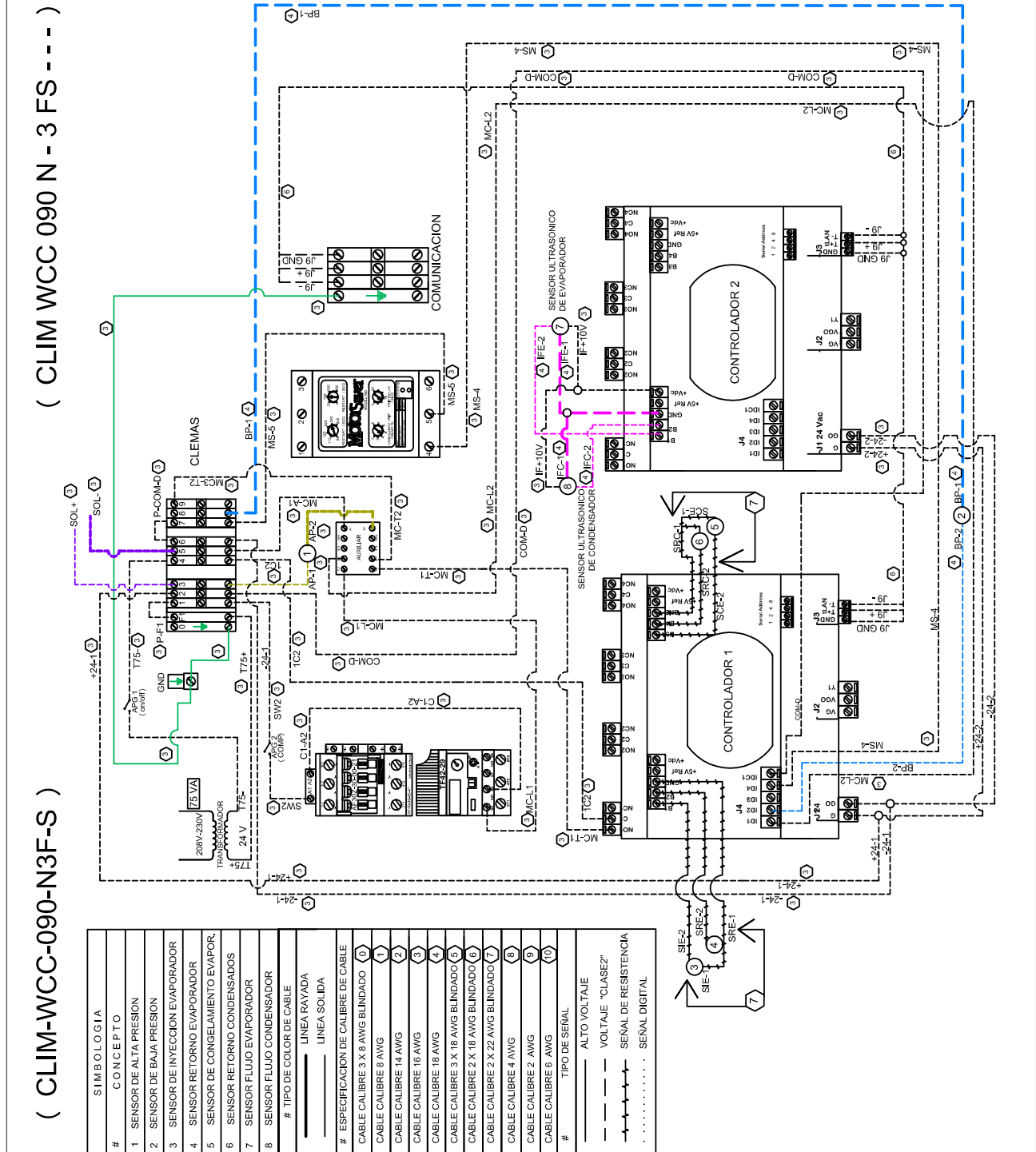
Figure 5. Hydraulic circuit configuration.



⚠ WARNING ⚠

Electric shock hazard. Improper handling of this equipment can cause personal injury or damage to the equipment. This equipment must be properly grounded. Connections and servicing of the control panel should be performed only by personnel knowledgeable in the operation of the equipment being controlled. Disconnect electrical power before servicing the equipment. Be sure to install a residual current circuit breaker. Failure to install a residual current circuit breaker may result in electric shock or fire.

Figure 6. Diagram cooling only 7.5 RT (Son 220V)



ELECTRICAL INFORMATION

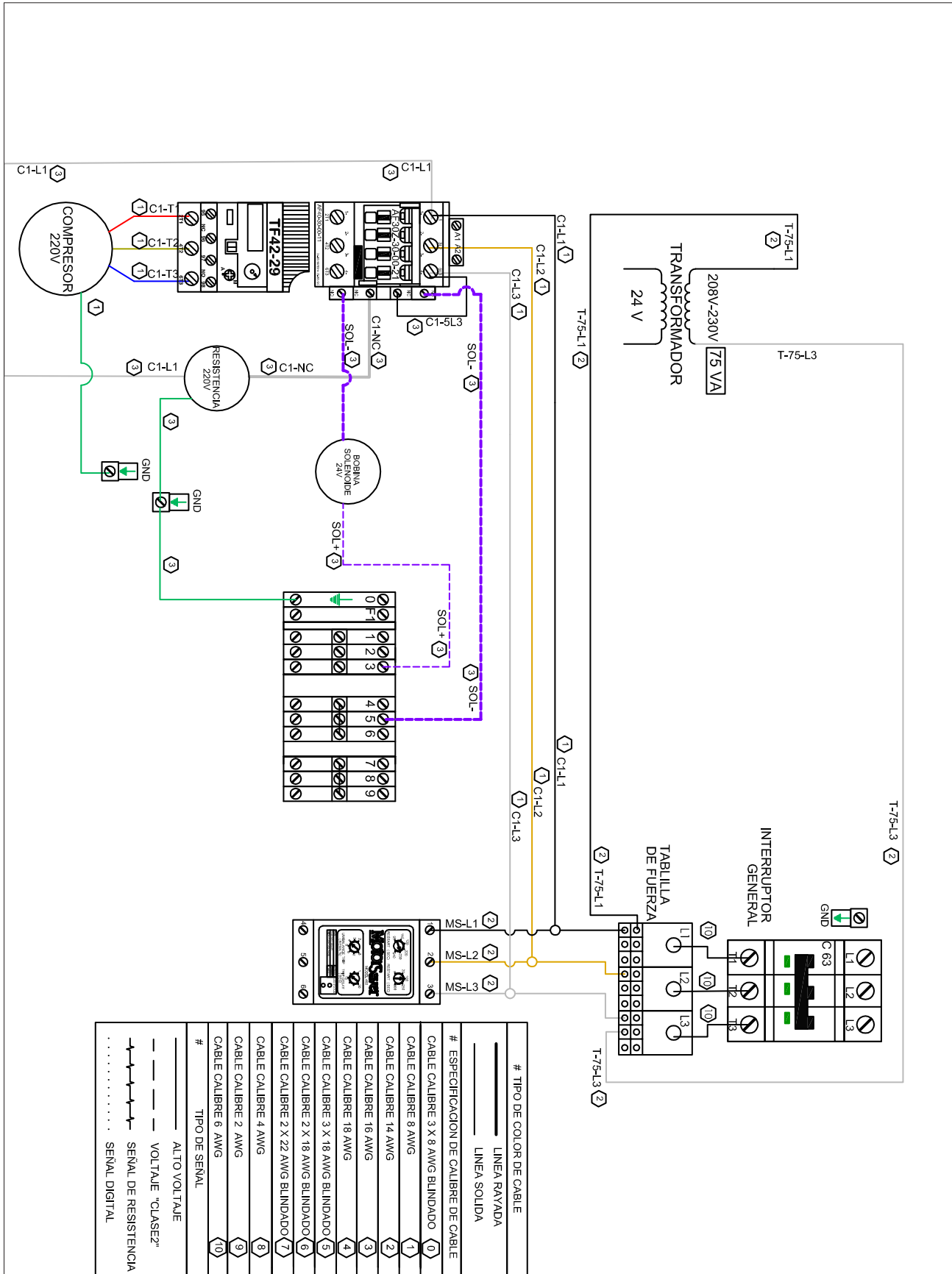
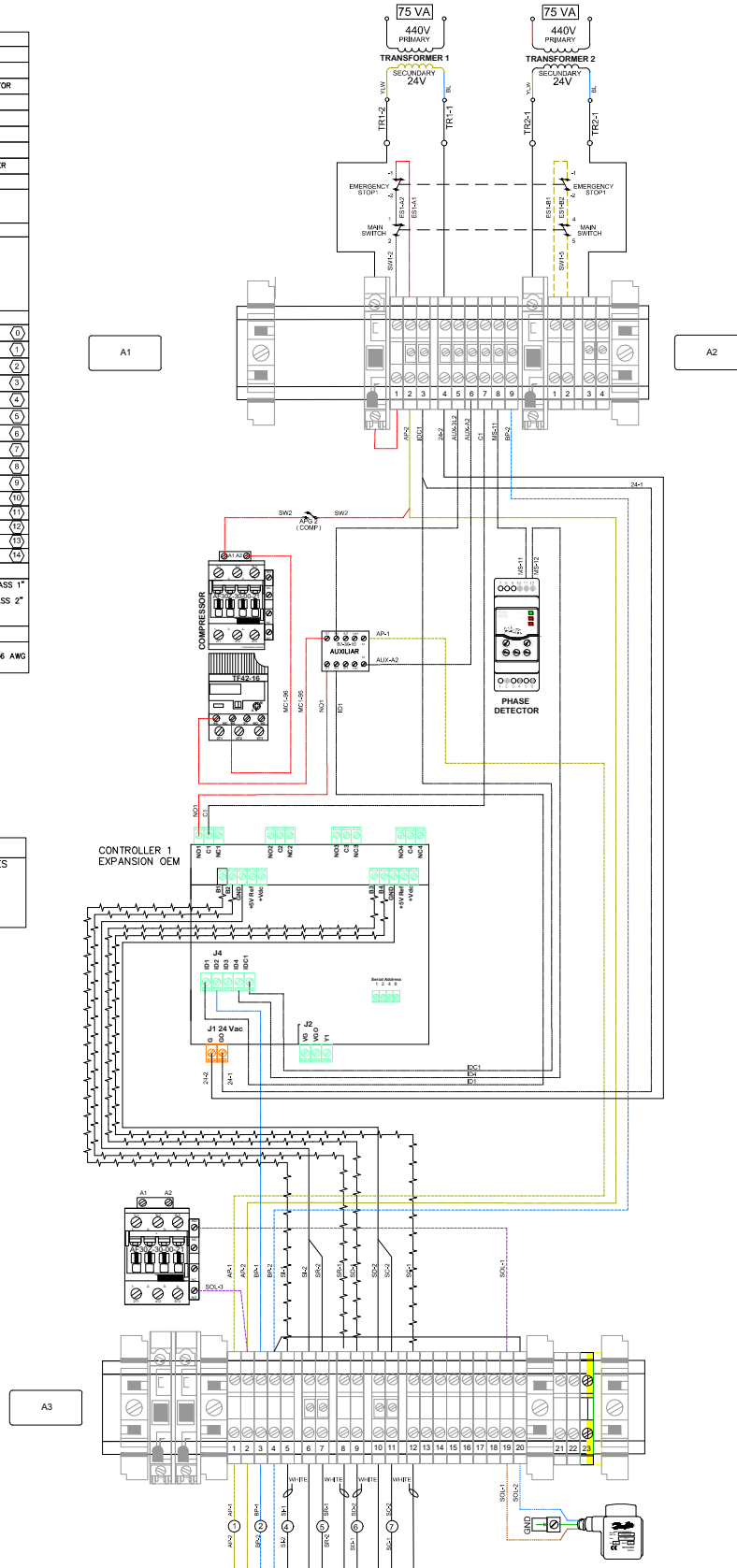


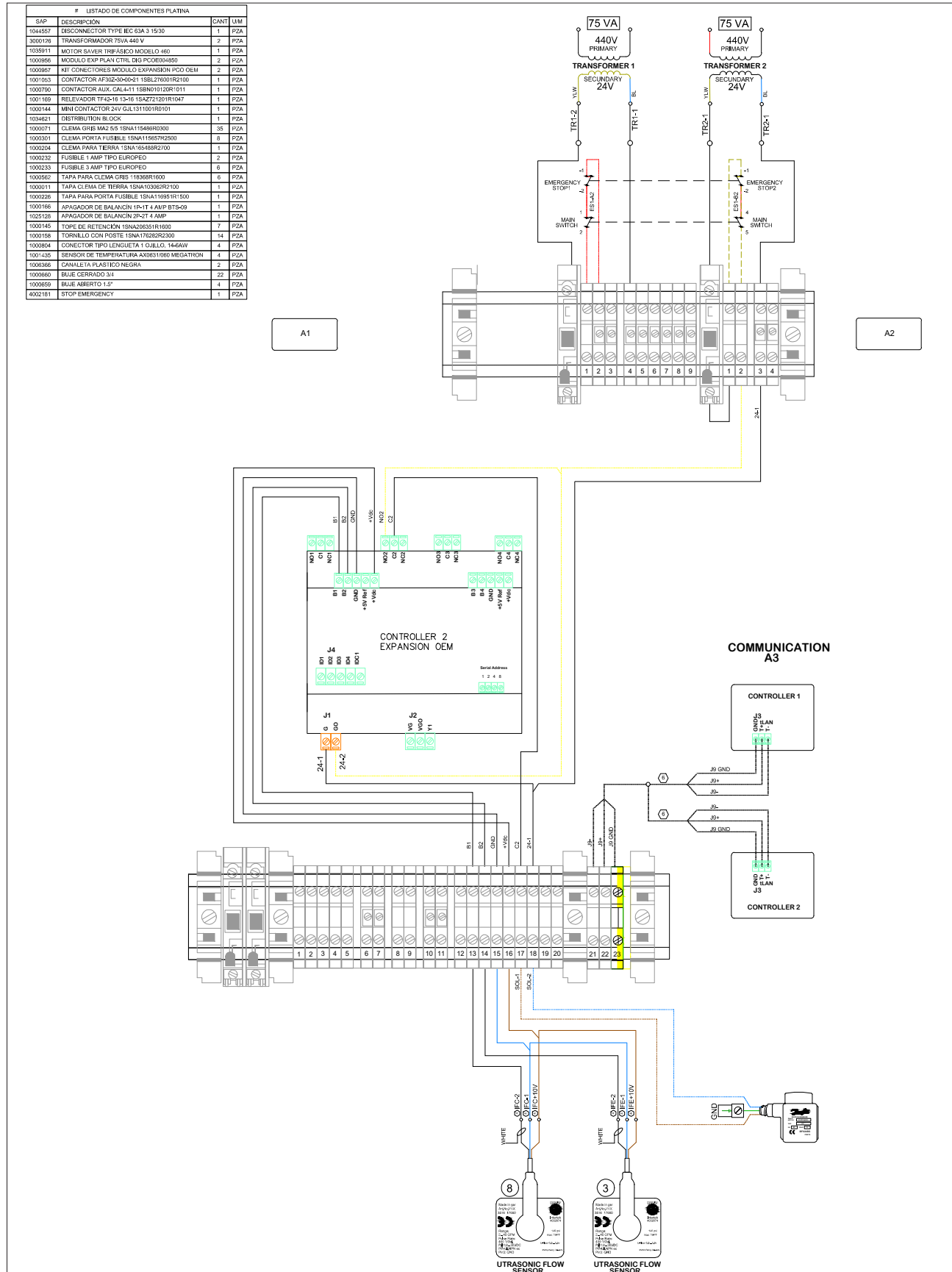
Figure 7. Diagram cooling only 7.5 RT (Son 440V)

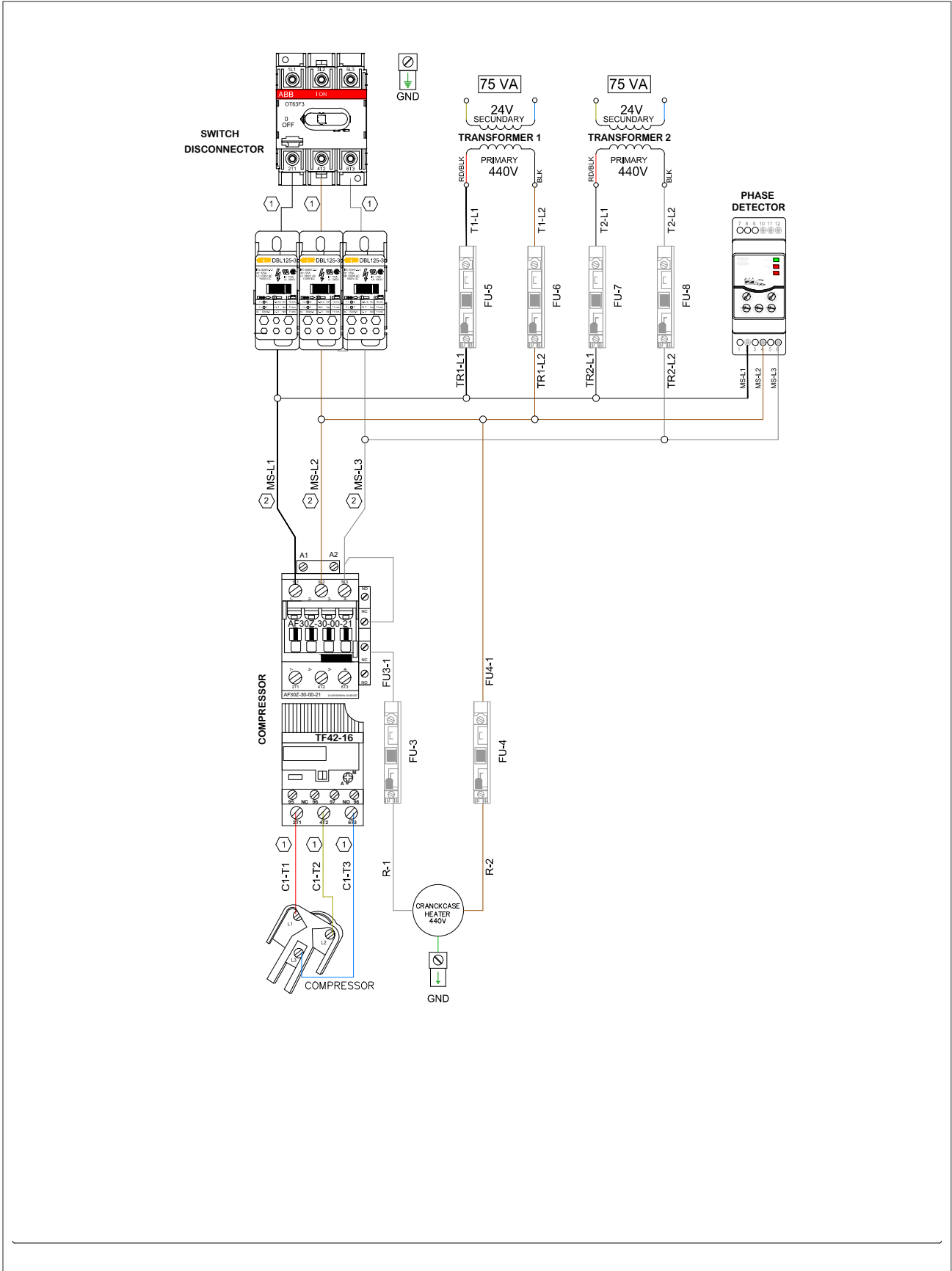
# CONCEPT	
①	HIGH PRESSURE SWITCH
②	LOW PRESSURE SWITCH
③	ULTRASONIC FLOW SENSOR EVAPORATOR
④	INLET SENSOR
⑤	OUTLET SENSOR
⑥	FREEZING SENSOR
⑦	CONDENSER SENSOR
⑧	ULTRASONIC FLOW SENSOR CONDENSER
# WIRE COLOR CODE	
---	STRIPED WIRE
---	WIRE COLOR SOLID
# SYMBOLOLOGY	
---	WIRE COLOR INDICATOR/#
⚡	1P 1T SWITCH
⬇	CONEXION A TIERRA
WIRE SPEC	
WIRE # 3 X 8 AWG SHIELDED	(0)
WIRE # 8 AWG	(1)
WIRE # 14 AWG	(2)
WIRE # 16 AWG	(3)
WIRE # 18 AWG	(4)
WIRE # 3 X 18 AWG	(5)
WIRE # 2 X 18 AWG SHIELDED	(6)
WIRE # 2 X 22 AWG	(7)
WIRE # 4 AWG	(8)
WIRE # 2 AWG	(9)
WIRE # 6 AWG	(10)
WIRE # 10 AWG	(11)
WIRE # 3 X 2 AWG SHIELDED	(12)
WIRE # 4 X 14 AWG USD RUDDO	(13)
WIRE # 3 X 16 AWG USD RUDDO	(14)
# TIPO DE SENAL	
---	HIGH VOLTAGE "CLASS 1"
---	LOW VOLTAGE "CLASS 2"
# NOTE	
DEFAULT CONTROL WIRE MUST BE IN #16 AWG	

# NOTA	
COLOR CODE FOR COMMUNICATION WIRES "ONLY SHIELDED WIRE 2X18"	
J3+, J9+	: WHITE
J3-, J9-	: BLACK
J3GND, J9GND	: BARE



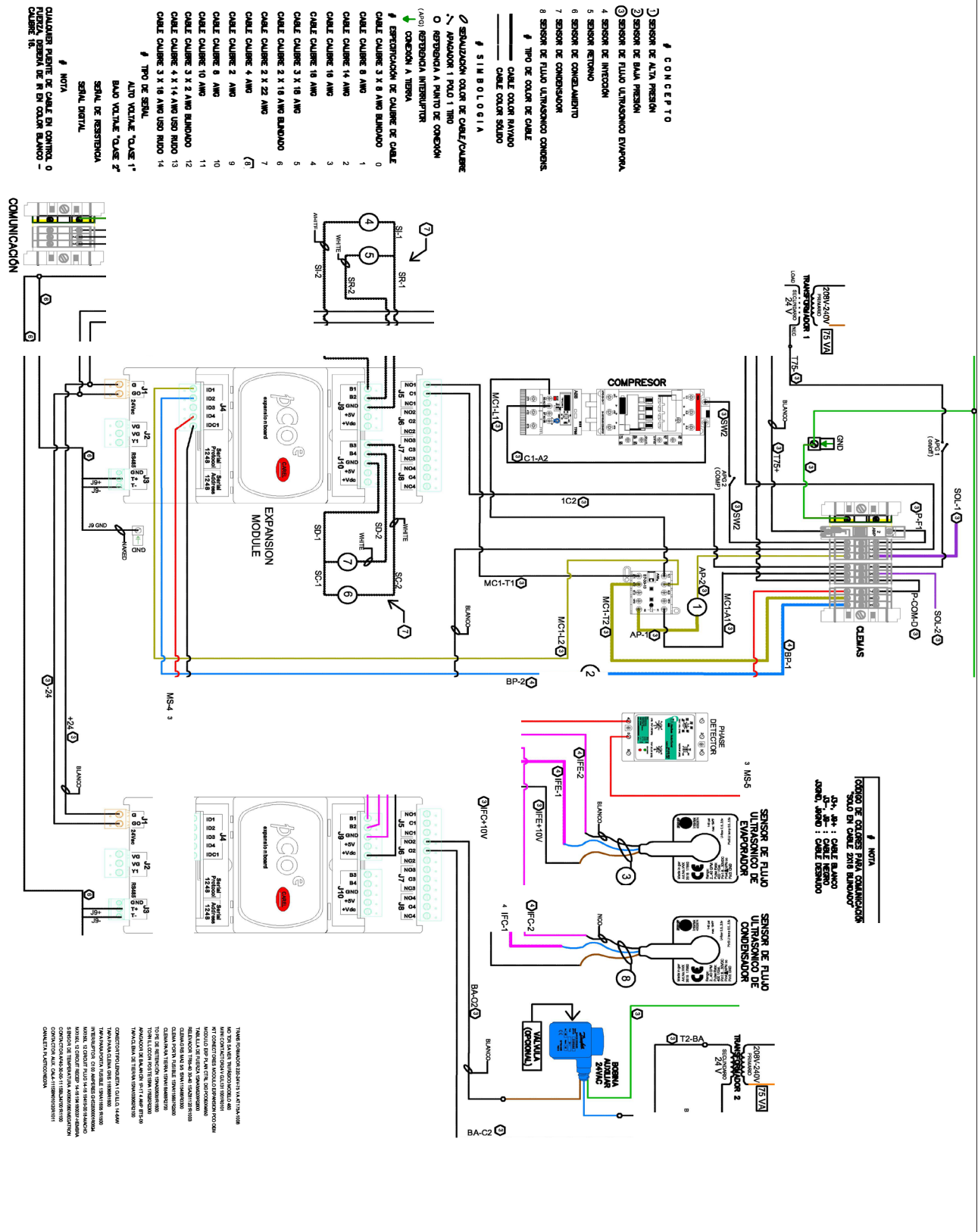
ELECTRICAL INFORMATION

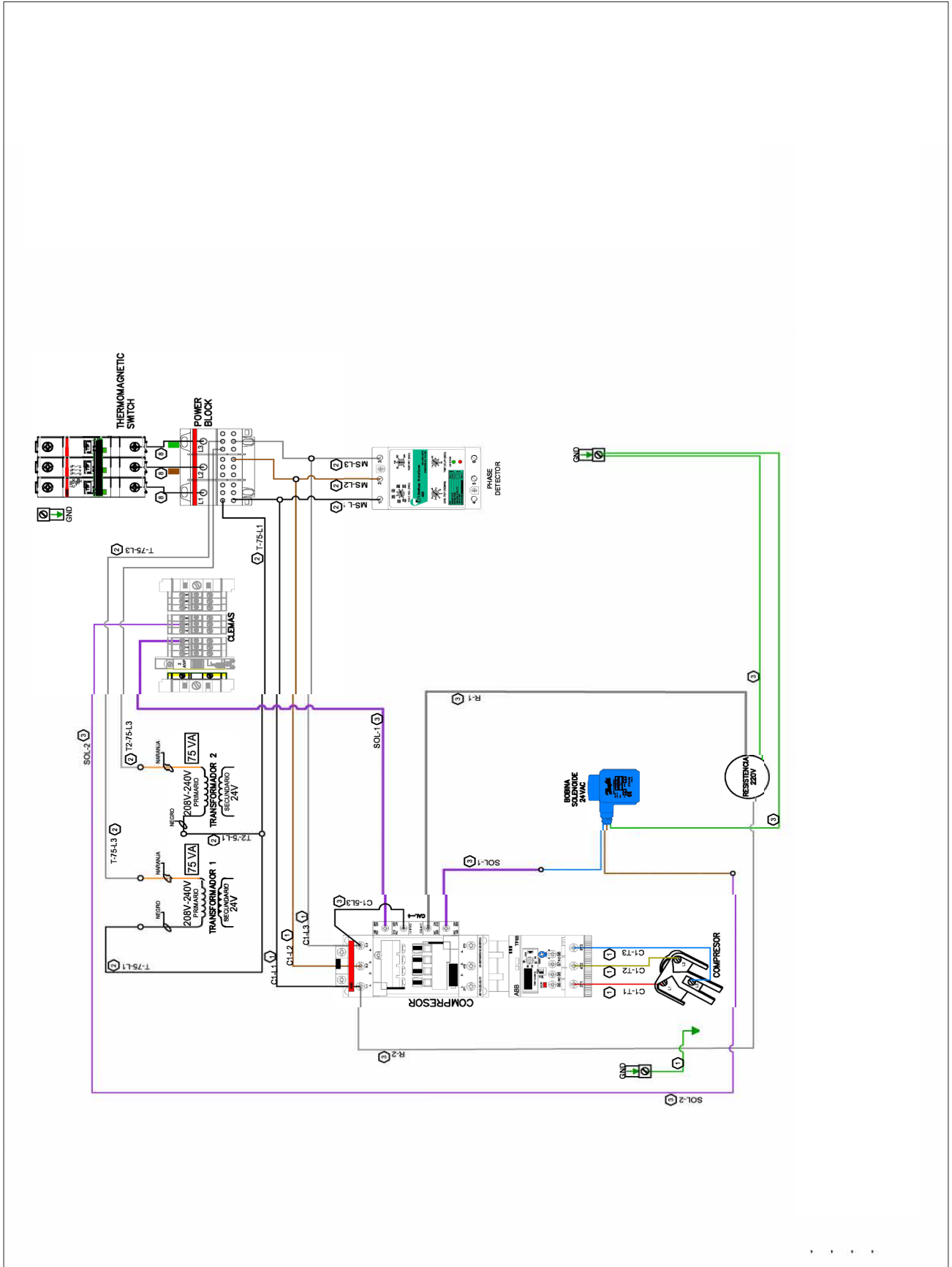




ELECTRICAL INFORMATION

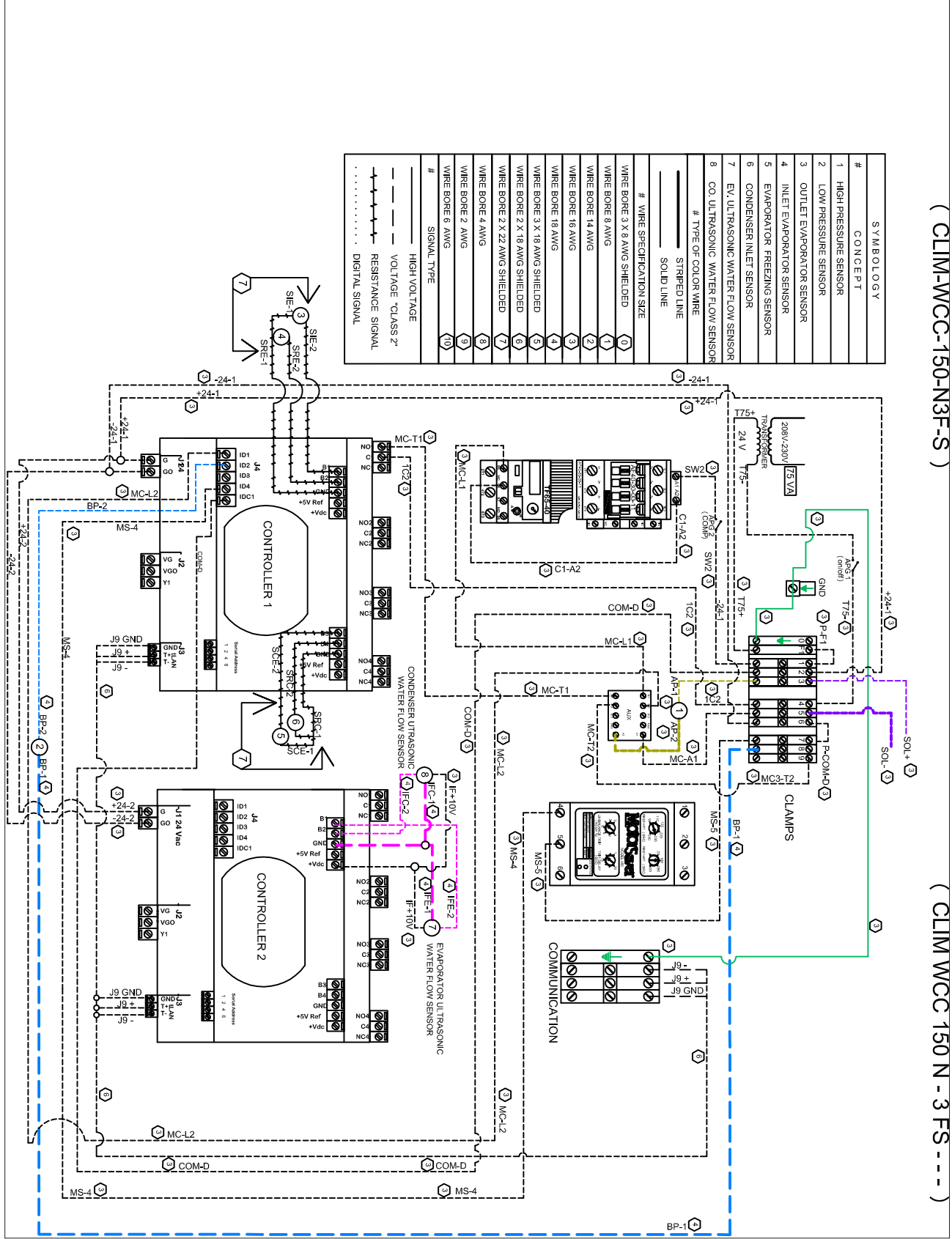
Figure 8. Diagram cooling only 10 RT (Son 220V)



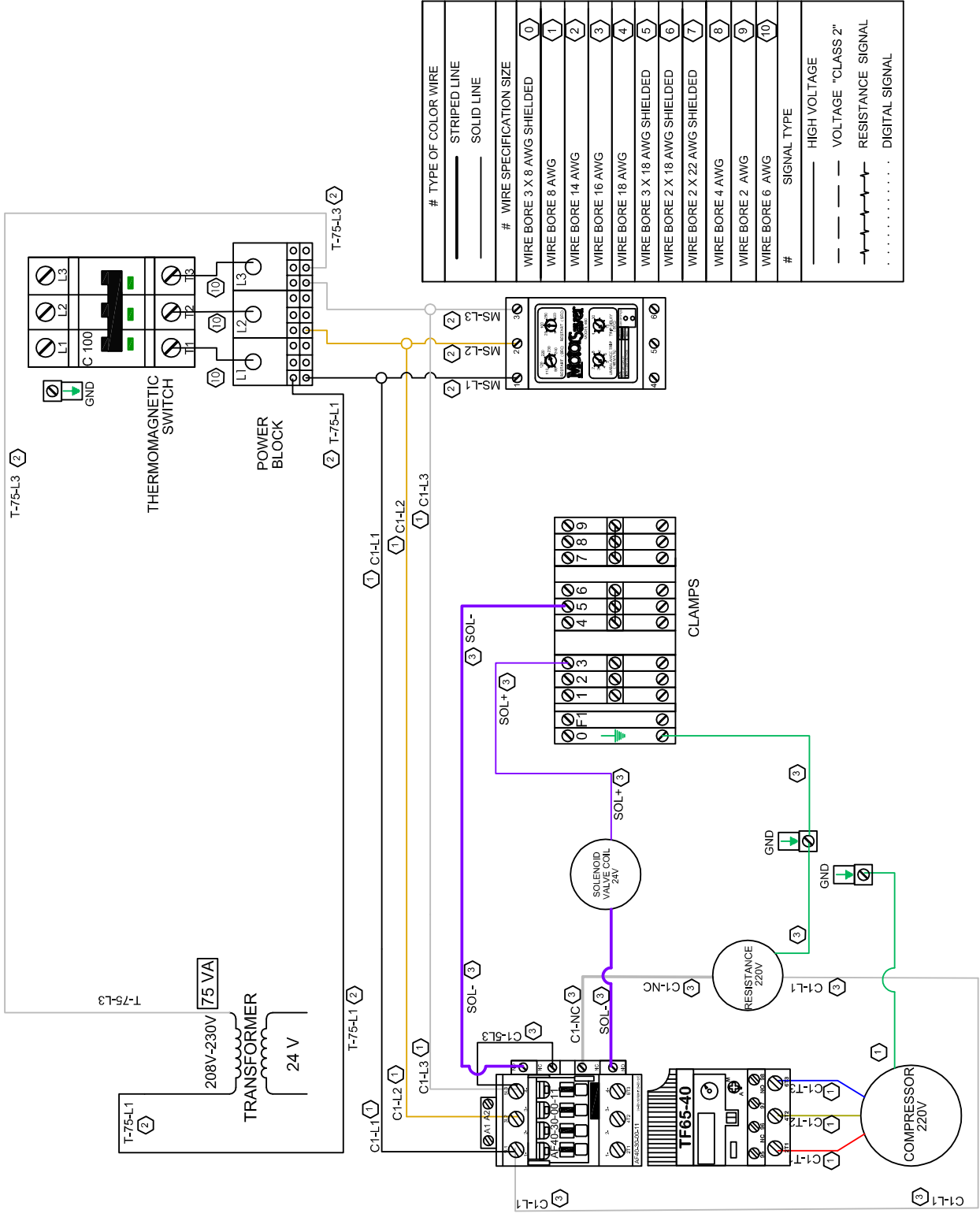


ELECTRICAL INFORMATION

Figure 9. Diagram cooling only 12.5 RT (Son 220V)



(CLIM-WCC-150-N3F-S) (CLIMWCC 150 N - 3 FS - - -)



ELECTRICAL INFORMATION

Table 3. Maximum overcurrent protection and Minimum circuit amperage (208-230 / 3 / 60)

# EQ	RT/UN	RT Total	MCA	MOP
1	5	5	42	75
1	7,5	7,5	94	168
1	10	10	94	168
1	12,5	12,5	110	198
2	10	20	140	215
3	10	30	186	261
4	10	40	232	307
5	10	50	279	354
5	12,5	62,5	307	395

Table 4. Maximum overcurrent protection and Minimum circuit amperage (460 / 3 / 60)

# EQ	RT/UN	RT Total	MCA	MOP
1	5	5	19	35
1	7,5	7,5	47	84
1	10	10	47	84
1	12,5	12,5	55	99
2	10	20	68	105
3	10	30	88	126
4	10	40	109	146
5	10	50	130	167
5	12,5	62,5	149	193

