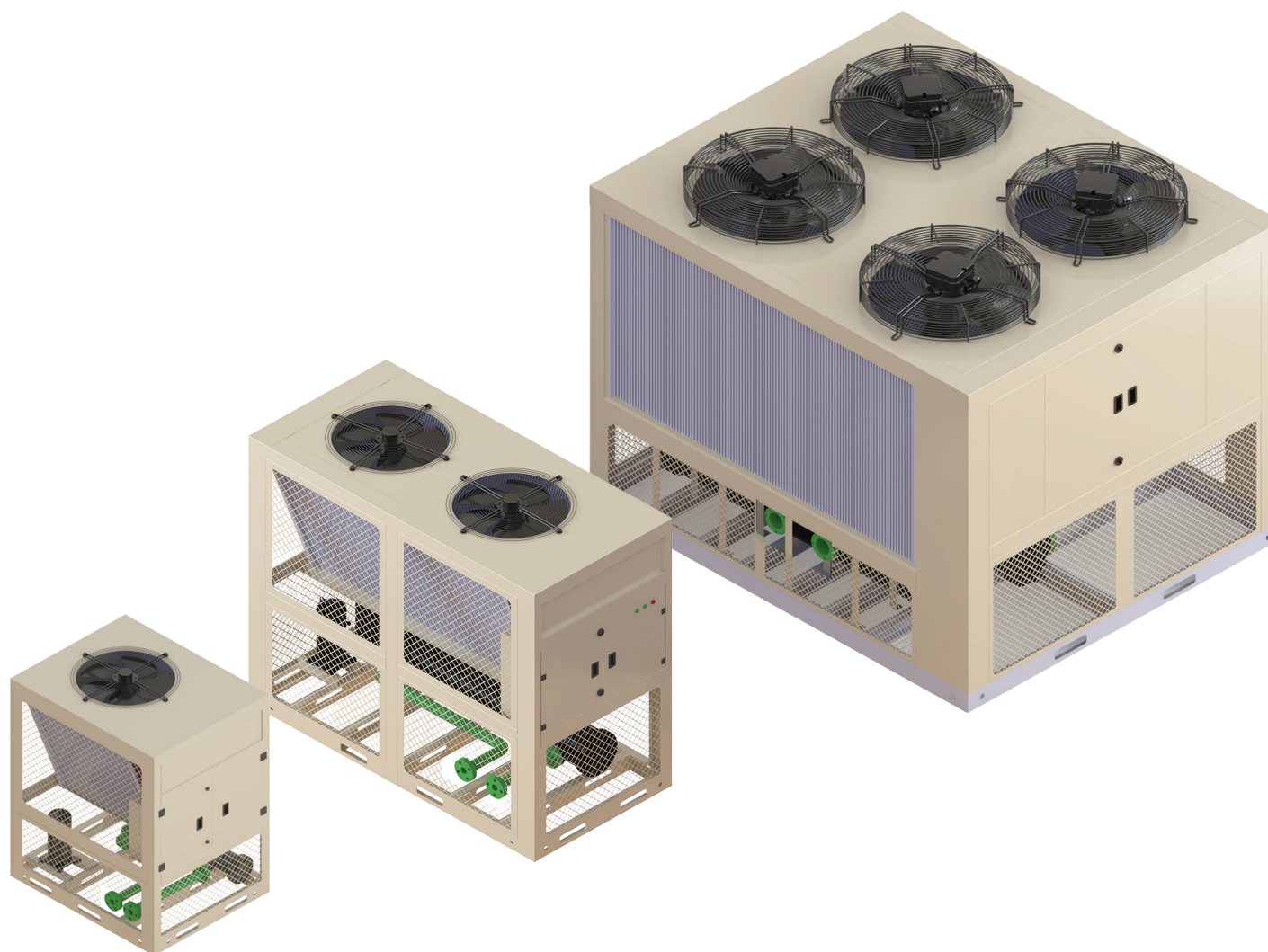




Commercial Manual
AQ410 SERIES
Air-Cooled Water Chiller
7,5 TON - 60 TON



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Precautions

In this document, you will find a series of key recommendations to ensure proper start-up, efficient operation, and adequate maintenance of your water cooling system (Chiller). Preventive care will not only guarantee the optimal functioning of the equipment, but it will also extend its useful life, optimize its performance, and help you save time and money in the long run.

By following these simple maintenance and operation steps, you can keep your HVAC system in the best operating conditions possible, maximizing its energy efficiency and avoiding unnecessary and costly breakdowns. Remember, regular maintenance not only improves comfort in your space, but also contributes to the well-being in general and the safety of everyone who uses it.



DANGER



Incorrect mounting, lifting, or movement may cause damage to the unit, property damage, serious personal injuries, or even death. Consult the weight and center of gravity data indicated in the project documentation to know the weights and center of gravity of the unit.



WARNING



An installation, adjustment, alteration, service, or incorrect maintenance may result in personal injury, death, or property damage. Therefore, all services or maintenance must be performed by a licensed professional contractor or an authorized service agency.



WARNING



Disconnect power source(s) before performing maintenance. Service must be performed by qualified personnel.
Risk of electric shock! May cause injury or death!



ADVERTENCIA



To prevent the release of refrigerant into the atmosphere, the refrigeration circuit of this unit must be serviced only by technicians who meet local, state, and federal competency requirements.



WARNING



The installation of the system and all components, parts, and associated accessories that form part of the installation must be carried out in accordance with the regulations of ALL pertinent authorities and MUST comply with all applicable codes. It is the responsibility of the contractor/installer to determine and comply with ALL applicable regulations and codes.



WARNING



This device is not designed to be used by persons (including children) with physical, sensory, or mental limitations, or with lack of experience and knowledge, unless they have received supervision or instruction regarding the use of the device by a person responsible for their safety.



WARNING



The lifting angle must not exceed 30 degrees from the vertical, as the unit may become unstable, which could result in unit damage, property damage, serious personal injuries, or death.



WARNING



Drain pans must be cleaned periodically. Accumulated material such as dirt may cause illnesses or death. Cleaning must be performed by qualified personnel.



WARNING



Keep in mind that the center of gravity is not necessarily located in the geometric center of the unit. Additional lifting elements must not be attached or secured to the unit, as this may affect the center of gravity and cause personal injuries or death, as well as damage to property or the unit. Qualified personnel must determine and verify, according to weight data, the lifting center of the unit, the location of the center of gravity, and lifting details according to the unit configuration.



WARNING



Children must NOT play with the equipment without supervision.



CAUTION



Lifting mechanisms must not come into contact with the unit beyond the lifting points. Care must always be taken when lifting the unit to avoid damaging control panels, unit housings, tubing, and unit structure.



CAUTION



Do not store or install the units in corrosive environments or in places exposed to extreme temperatures or humidity. Corrosive conditions, high temperatures, or humidity can significantly affect performance, reliability, and service life. Always move and store units in a vertical position. Tilting units may cause damage to the equipment.



CAUTION



RISK OF CUT – Failure to follow this precaution may cause personal injury. Metal parts may have sharp edges or burrs. Be careful and use proper protective clothing, safety glasses, and gloves when handling parts and performing unit maintenance to avoid injuries.



CAUTION



To extend equipment life, do not use these units as a heat source during the drying process of construction. Mechanical components and filters may become clogged quickly with dust and construction debris, which may damage the system and void the product warranty.



NOTICE



Maintenance must be carried out in accordance with the manufacturer's recommendations.



NOTICE



Only install in places not accessible to the general public.

Improper handling due to lack of knowledge of instructions or recommendations contained in this document may cause damage to equipment, reduced performance, and shortened service life. We are not responsible for damage caused by incorrect handling, unauthorized modifications, or consequences arising from using unauthorized modifications that alter the correct operation of the equipment. To guarantee safe and efficient operation, it is essential to follow all recommendations in this manual and use only original spare parts. The manufacturer reserves the right to make technical changes or add updates to improve HVAC system operation.

The following information refers to the AQ410 series. The supplied equipment may have varied features according to customer requirements. For more detailed information about the purchased equipment, please review the technical specifications and the equipment's nameplate.

Construction

Air-cooled water chillers are designed for heavy-duty service. Their construction ensures a fully stable structure, capable of uniformly supporting and distributing the static and dynamic loads of the internal components.

- Manufactured from heavy-gauge galvanized steel sheet, corrosion-resistant
- Compact unit
- Pre-painted sheet with corrosion resistance (up to 1000 hours in salt spray)
- Easy-access service panels
- Insulated hydraulic system
- Heavy-gauge protective mesh

Fans and Motors

Air-cooled water chillers feature a wide variety of options in fan and motor selection in different ranges and capacities, always ensuring ideal operation according to user requirements.

Motors

- Capacities according to design criteria and customer requirements
- Electric motor at 220V / 440V
- Protection rating IP54/IP55
- Optional: classified area duty, Explosion Proof, or aggressive environments
- High-efficiency motors (IE3 / IE4) available to reduce energy consumption

Components

- Mounting terminal blocks for control
- Programmable Logic Controller (PLC)
- High-capacity filter drier
- Liquid indicator
- Access valves for pressure checks and system charging
- Thermostatic Expansion Valve (TXV)
- Condenser coil: copper tube with aluminum fins
- Safety and emergency prevention switches:
 - Pressure switches, transducers, flow switch
- Condenser Fan:
 - Axial type

Water Cooling

Air-cooled water chillers are equipped with copper tube/ aluminum fin heat exchangers. Available in different sizes and refrigerant circuit configurations, they provide the required transfer area

- Different coil configurations to maximize heat transfer area (V, W, L)
- Available in Copper/Aluminum and Copper/Copper
- Galvanized steel support structure
- Polypropylene (PP) hydraulic piping system
- Optional: anti-corrosive coating for outdoor applications

Control and Operation

- Programmable Logic Controller
- Electrical power panel 220V/440V
- Optional control system with HMI touchscreen for local monitoring and configuration
- Automatic protections against overcurrent, overpressure, and incorrect phase sequence (optional)

Maintenance and Safety

- Easy side access to all components for inspection and maintenance tasks
- Fans, compressors, and coils accessible without special tools
- Warning signage and clear identification of electrical connections and critical components
- Installation and maintenance manual included

AQ 410 2C - 120 - 4 -

Equipment Series

AQ Water Chiller

Refrigerant

410 R-410A
32 R32
290 R290

Operating System

(Blank) Common System (On/Off)
VS Variable Speed System

Condensation Type

(Blank) Air-Cooled
WC Water-Cooled

Number of Cooling Circuits

(Blank) One (1) Circuit
2C Two (2) Circuits
3C Three (3) Circuits
4C Four(4) Circuits

Nominal Capacity

120	10 TON	600	50 TON
240	20 TON	660	55 TON
360	30 TON	720	60 TON
480	40 TON		

Power Supply

1 220V / 1Ph / 60Hz
2 110V / 1Ph / 60Hz
3 220V / 3Ph / 60Hz
4 440V / 3Ph / 60Hz
5 380V / 3Ph / 50Hz
7 380V / 3Ph / 60Hz
8 220V / 3Ph / 50Hz
9 440V / 3Ph / 50Hz

Revision / Additional Options

(Blank) No Additional Revisions - Standard Equipment
X (Letter A - Z) Design Version - Specified on the Drawing / Order / Data Sheet

MODEL	AQ410-090-3	AQ410-090-4
GENERAL DATA		
Cooling Capacity (BTU/h)	90000	90000
Tons of Refrigeration	7.5	7.5
CONDENSER FAN		
Number of Fans	1	1
Type	Axial	Axial
Number of motors	1	1
Current (A)	4.27	2.41
Power (W)	1205	1466
RPM	1081	1055
Fan Diameter (mm)	710	710
CONDENSER COIL		
Type (Tube / Fin)	Copper / Aluminum	Copper / Aluminum
Face Area (ft ²)	26.0	26.0
Rows	3	3
Fins per Inch	13	13
HYDRAULIC SYSTEM		
Required Flow Rate (GPM)	18	18
Water Inlet ^[2] (in)	1 - 1 / 4	1 - 1 / 4
Water Outlet ^[2] (in)	1 - 1 / 4	1 - 1 / 4
COMPRESSOR		
Refrigerant	R-410A	R-410A
Quantity	1	1
Type	Scroll	Scroll
RLA ^[2] (A)	25.0 / 27.9	12.2 / 13.6
LRA ^[3] (A)	164.0	100.0
ELECTRICAL DATA		
V / Ph / Hz	220 / 3 / 60	440 / 3 / 60
Operating Current (A)	33.0	16.5
Minimum Circuit Ampacity (A)	40.0	20.0
Max. Overload Protection (A)	67.5	33.5
DIMENSIONS [L x H x W] (mm)	1500 x 1900 x 1200	1500 x 1900 x 1200
NET WEIGHT (kg)	335	335
GROSS WEIGHT (kg)	340	340

Notes: ¹ Data corresponds to a specific condition. ² Connection using a galvanized union. ³ This data (RLA / MCC / LRA) corresponds to a single compressor. The information provided in the table is subject to change without prior notice. The equipment color is subject to change without prior notice. Chiller for use with R-410A refrigerant. Centrifugal pump not included.

MODEL	AQ410-120-3	AQ410-120-4
GENERAL DATA		
Cooling Capacity (BTU/h)	120000	120000
Tons of Refrigeration	10	10
CONDENSER FAN		
Number of Fans	1	1
Type	Axial	Axial
Number of motors	1	1
Current (A)	4.27	2.41
Power (W)	1205	1466
RPM	1081	1055
Fan Diameter (mm)	710	710
CONDENSER COIL		
Type (Tube / Fin)	Copper / Aluminum	Copper / Aluminum
Face Area (ft ²)	26.0	26.0
Rows	4	4
Fins per Inch	13	13
HYDRAULIC SYSTEM		
Required Flow Rate (GPM)	24	24
Water Inlet ^[2] (in)	1 - 1 / 2	1 - 1 / 2
Water Outlet ^[2] (in)	1 - 1 / 2	1 - 1 / 2
COMPRESSOR		
Refrigerant	R-410A	R-410A
Quantity	1	1
Type	Scroll	Scroll
RLA ^[3] (A)	33.3 / 37.1	17.9 / 20.0
LRA ^[4] (A)	239.0	125.0
ELECTRICAL DATA		
V / Ph / Hz	220 / 3 / 60	440 / 3 / 60
Operating Current (A)	43.0	24.0
Minimum Circuit Ampacity (A)	52.0	30.0
Max. Overload Protection (A)	90.0	50.0
DIMENSIONS [L x H x W] (mm)	1500 x 1900 x 1200	1500 x 1900 x 1200
NET WEIGHT (kg)	352 Aprox.	352 Aprox.
GROSS WEIGHT (kg)	357 Aprox.	357 Aprox.

Notes: ¹ Data corresponds to a specific condition. ² Connection using a galvanized union. ³ This data (RLA / MCC / LRA) corresponds to a single compressor. The information provided in the table is subject to change without prior notice. The equipment color is subject to change without prior notice. Chiller for use with R-410A refrigerant. Centrifugal pump not included.

MODEL	AQ4102C-240-3	AQ4102C-240-4
GENERAL DATA		
Cooling Capacity (BTU/h)	240000	240000
Tons of Refrigeration	20	20
CONDENSER FAN		
Number of Fans	2	2
Type	Axial	Axial
Number of motors	2	2
Current (A)	4.27	2.41
Power (W)	1205	1466
RPM	1081	1055
Fan Diameter (mm)	710	710
CONDENSER COIL		
Type (Tube / Fin)	Copper / Aluminum	Copper / Aluminum
Face Area (ft ²)	52.0	52.0
Rows	4	4
Fins per Inch	13	13
HYDRAULIC SYSTEM		
Required Flow Rate (GPM)	48	48
Water Inlet ^[2] (in)	2	2
Water Outlet ^[2] (in)	2	2
COMPRESSOR		
Refrigerant	R-410A	R-410A
Quantity	2	2
Type	Scroll	Scroll
RLA ^[2] (A)	33.3 / 37.1	17.9 / 20.0
LRA ^[3] (A)	239.0	125.0
ELECTRICAL DATA		
V / Ph / Hz	220 / 3 / 60	440 / 3 / 60
Operating Current (A)	83.0	45.0
Minimum Circuit Ampacity (A)	93.0	50.0
Max. Overload Protection (A)	130.0	70.0
DIMENSIONS [L x H x W] (mm)	1200 x 2150 x 2500	1200 x 2150 x 2500
NET WEIGHT (kg)	700	700
GROSS WEIGHT (kg)	710	710

Notes: ¹ Data corresponds to a specific condition. ² Connection using a galvanized union. ³ This data (RLA / MCC / LRA) corresponds to a single compressor. The information provided in the table is subject to change without prior notice. The equipment color is subject to change without prior notice. Chiller for use with R-410A refrigerant. Centrifugal pump not included.

MODEL	AQ4102C-300-3	AQ4102C-300-4
GENERAL DATA		
Cooling Capacity (BTU/h)	300000	300000
Tons of Refrigeration	25	25
CONDENSER FAN		
Number of Fans	2	2
Type	Axial	Axial
Number of motors	2	2
Current (A)	6.37	3.71
Power (W)	1918	2143
RPM	1057	1055
Fan Diameter (mm)	800	800
CONDENSER COIL		
Type (Tube / Fin)	Copper / Aluminum	Copper / Aluminum
Face Area (ft ²)	56.6	56.6
Rows	3	3
Fins per Inch	13	13
HYDRAULIC SYSTEM		
Required Flow Rate (GPM)	60	60
Water Inlet ^[2] (in)	2	2
Water Outlet ^[2] (in)	2	2
COMPRESSOR		
Refrigerant	R-410A	R-410A
Quantity	2	2
Type	Scroll	Scroll
RLA ^[2] (A)	51.3 / 57.1	23.1 / 25.7
LRA ^[3] (A)	300.0	150.0
ELECTRICAL DATA		
V / Ph / Hz	220 / 3 / 60	440 / 3 / 60
Operating Current (A)	127.0	60.0
Minimum Circuit Ampacity (A)	142.0	66.0
Max. Overload Protection (A)	200.0	92.0
DIMENSIONS [L x H x W] (mm)	1200 x 2290 x 2700	1200 x 2290 x 2700
NET WEIGHT (kg)	715	715
GROSS WEIGHT (kg)	725	725

Notes: ¹ Data corresponds to a specific condition. ² Connection using a galvanized union. ³ This data (RLA / MCC / LRA) corresponds to a single compressor. The information provided in the table is subject to change without prior notice. The equipment color is subject to change without prior notice. Chiller for use with R-410A refrigerant. Centrifugal pump not included.

MODEL	AQ4102C-360-3	AQ4102C-360-4
GENERAL DATA		
Cooling Capacity (BTU/h)	360000	360000
Tons of Refrigeration	30	30
CONDENSER FAN		
Number of Fans	2	2
Type	Axial	Axial
Number of motors	2	2
Current (A)	6.37	3.71
Power (W)	1918	2143
RPM	1057	1055
Fan Diameter (mm)	800	800
CONDENSER COIL		
Type (Tube / Fin)	Copper / Aluminum	Copper / Aluminum
Face Area (ft ²)	56.6	56.6
Rows	4	4
Fins per Inch	13	13
HYDRAULIC SYSTEM		
Required Flow Rate (GPM)	72	72
Water Inlet ^[2] (in)	2 - 1 / 2	2 - 1 / 2
Water Outlet ^[2] (in)	2 - 1 / 2	2 - 1 / 2
COMPRESSOR		
Refrigerant	R-410A	R-410A
Quantity	2	2
Type	Scroll	Scroll
RLA ^[2] (A)	55.8 / 62.1	26.9 / 30.0
LRA ^[3] (A)	340.0	173.0
ELECTRICAL DATA		
V / Ph / Hz	220 / 3 / 60	440 / 3 / 60
Operating Current (A)	140.0	70.0
Minimum Circuit Ampacity (A)	155.0	78.0
Max. Overload Protection (A)	218.0	108.0
DIMENSIONS [L x H x W] (mm)	1200 x 2290 x 2700	1200 x 2290 x 2700
NET WEIGHT (kg)	725	725
GROSS WEIGHT (kg)	735	735

Notes: ¹ Data corresponds to a specific condition. ² Connection using a galvanized union. ³ This data (RLA / MCC / LRA) corresponds to a single compressor. The information provided in the table is subject to change without prior notice. The equipment color is subject to change without prior notice. Chiller for use with R-410A refrigerant. Centrifugal pump not included.

MODEL	AQ4104C-480-3	AQ4104C-480-4
GENERAL DATA		
Cooling Capacity (BTU/h)	480000	480000
Tons of Refrigeration	40	40
CONDENSER FAN		
Number of Fans	4	4
Type	Axial	Axial
Number of motors	4	4
Current (A)	4.27	2.41
Power (W)	1205	1466
RPM	1081	1055
Fan Diameter (mm)	710	710
CONDENSER COIL		
Type (Tube / Fin)	Copper / Aluminum	Copper / Aluminum
Face Area (ft ²)	104.0	104.0
Rows	4	4
Fins per Inch	13	13
HYDRAULIC SYSTEM		
Required Flow Rate (GPM)	96	96
Water Inlet ^[2] (in)	2 - 1 / 2	2 - 1 / 2
Water Outlet ^[2] (in)	2 - 1 / 2	2 - 1 / 2
COMPRESSOR		
Refrigerant	R-410A	R-410A
Quantity	4	4
Type	Scroll	Scroll
RLA ^[2] (A)	33.3 / 37.1	17.9 / 20.0
LRA ^[3] (A)	340.0	125.0
ELECTRICAL DATA		
V / Ph / Hz	220 / 3 / 60	440 / 3 / 60
Operating Current (A)	166.0	90.0
Minimum Circuit Ampacity (A)	175.0	95.0
Max. Overload Protection (A)	212.0	115.0
DIMENSIONS [L x H x W] (mm)	2240 x 2050 x 2500	2240 x 2050 x 2500
NET WEIGHT (kg)	1195	1195
GROSS WEIGHT (kg)	1205	1205

Notes: ¹ Data corresponds to a specific condition. ² Connection using a galvanized union. ³ This data (RLA / MCC / LRA) corresponds to a single compressor. The information provided in the table is subject to change without prior notice. The equipment color is subject to change without prior notice. Chiller for use with R-410A refrigerant. Centrifugal pump not included.

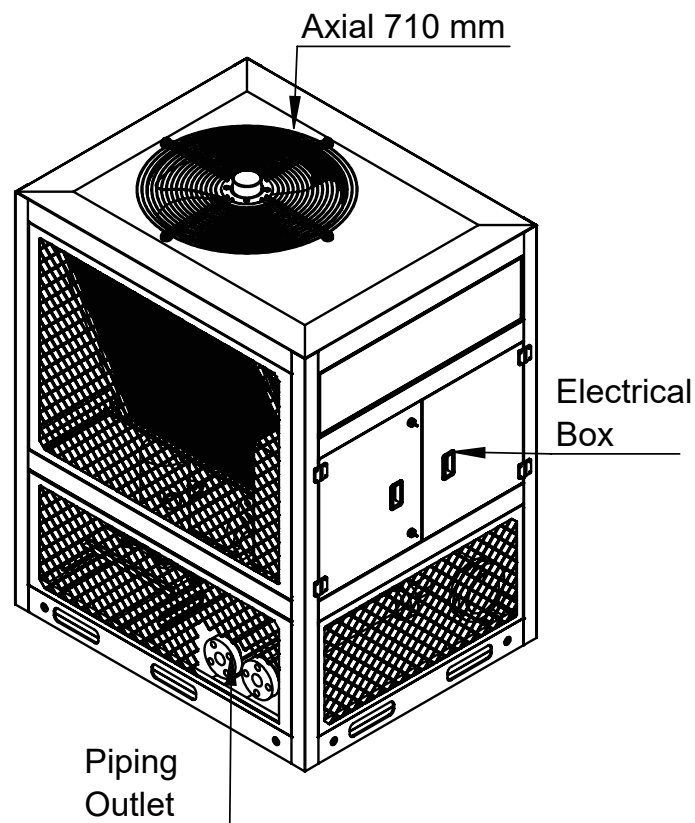
MODEL	AQ4104C-600-3	AQ4104C-600-4
GENERAL DATA		
Cooling Capacity (BTU/h)	600000	600000
Tons of Refrigeration	50	50
CONDENSER FAN		
Number of Fans	4	4
Type	Axial	Axial
Number of motors	4	4
Current (A)	6.37	3.71
Power (W)	1918	2143
RPM	1057	1055
Fan Diameter (mm)	800	800
CONDENSER COIL		
Type (Tube / Fin)	Copper / Aluminum	Copper / Aluminum
Face Area (ft ²)	113.3	113.3
Rows	3	3
Fins per Inch	13	13
HYDRAULIC SYSTEM		
Required Flow Rate (GPM)	120	120
Heat Exchanger (Qty.)	2	2
Water Inlet ^[2] (in)	3	3
Water Outlet ^[2] (in)	3	3
COMPRESSOR		
Refrigerant	R-410A	R-410A
Quantity	4	4
Type	Scroll	Scroll
RLA ^[2] (A)	51.3 / 57.1	23.1 / 25.7
LRA ^[3] (A)	300.0	150.0
ELECTRICAL DATA		
V / Ph / Hz	220 / 3 / 60	440 / 3 / 60
Operating Current (A)	256.0	120.0
Minimum Circuit Ampacity (A)	270.0	128.0
Max. Overload Protection (A)	328.0	152.0
DIMENSIONS [L x H x W] (mm)	2700 x 2240 x 2240	2700 x 2240 x 2240
NET WEIGHT (kg)	1500	1500
GROSS WEIGHT (kg)	1520	1520

Notes: ¹ Data corresponds to a specific condition. ² Connection using a galvanized union. ³ This data (RLA / MCC / LRA) corresponds to a single compressor. The information provided in the table is subject to change without prior notice. The equipment color is subject to change without prior notice. Chiller for use with R-410A refrigerant. Centrifugal pump not included.

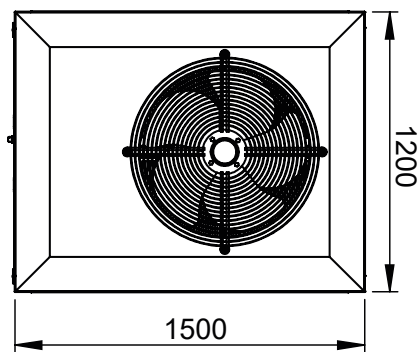
MODEL	AQ4104C-720-3	AQ4104C-720-4
GENERAL DATA		
Cooling Capacity (BTU/h)	720000	720000
Tons of Refrigeration	60	60
CONDENSER FAN		
Number of Fans	4	4
Type	Axial	Axial
Number of motors	4	4
Current (A)	6.37	3.71
Power (W)	1918	2143
RPM	1057	1055
Fan Diameter (mm)	800	800
CONDENSER COIL		
Type (Tube / Fin)	Copper / Aluminum	Copper / Aluminum
Face Area (ft ²)	113.3	113.3
Rows	4	4
Fins per Inch	13	13
HYDRAULIC SYSTEM		
Required Flow Rate (GPM)	144	144
Heat Exchanger (Qty.)	2	2
Type	Shell / Tube	Shell / Tube
Water Inlet ^[2] (in)	4	4
Water Outlet ^[2] (in)	4	4
COMPRESSOR		
Refrigerant	R-410A	R-410A
Quantity	4	4
Type	Scroll	Scroll
RLA ^[2] (A)	55.8 / 62.1	26.9 / 30.0
LRA ^[3] (A)	340.0	173.0
ELECTRICAL DATA		
V / Ph / Hz	220 / 3 / 60	440 / 3 / 60
Operating Current (A)	278.0	138.0
Minimum Circuit Ampacity (A)	292.0	145.0
Max. Overload Protection (A)	355.0	175.0
DIMENSIONS [L x H x W] (mm)	2700 x 2240 x 2240	2700 x 2240 x 2240
NET WEIGHT (kg)	1500	1500
GROSS WEIGHT (kg)	1520	1520

Notes: ¹ Data corresponds to a specific condition. ² Connection using a galvanized union. ³ This data (RLA / MCC / LRA) corresponds to a single compressor. The information provided in the table is subject to change without prior notice. The equipment color is subject to change without prior notice. Chiller for use with R-410A refrigerant. Centrifugal pump not included.

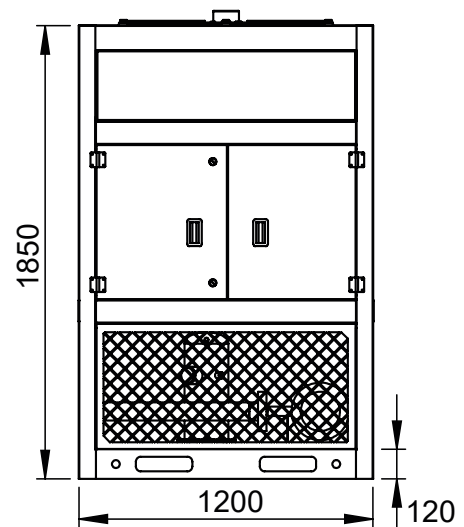
7.5 TON



Top View

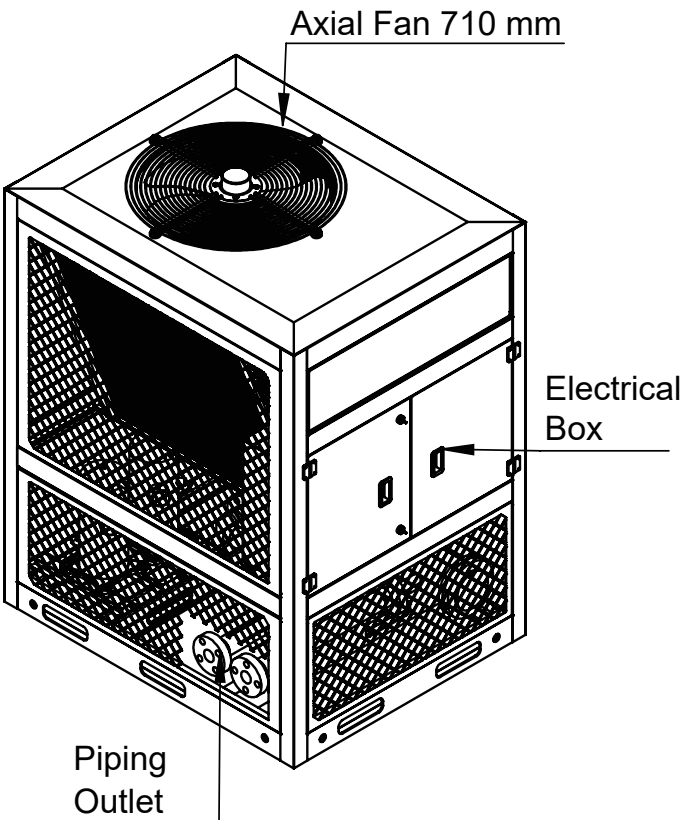


Front View

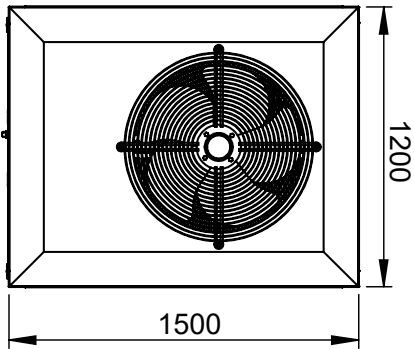


Note: All measurements are in millimeters (mm).

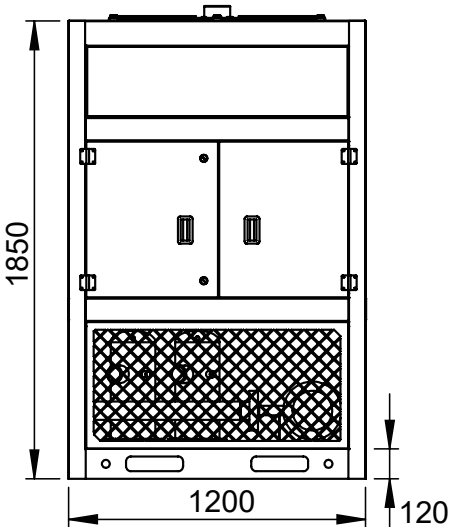
10 TON



Top View

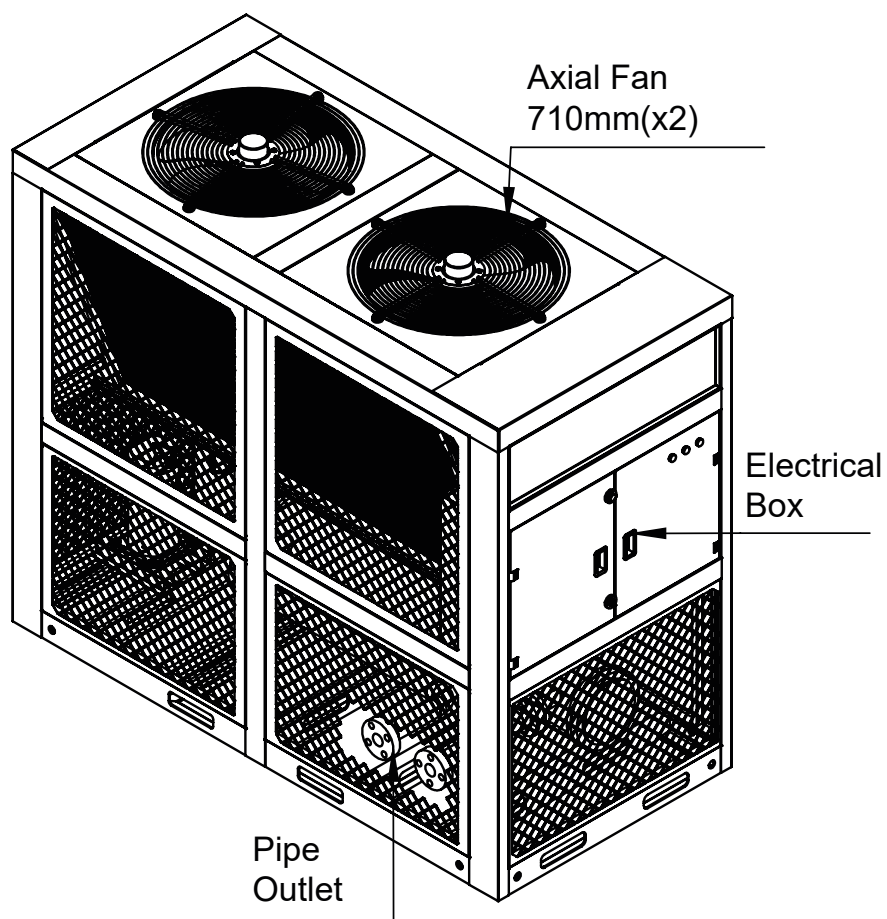


Front View

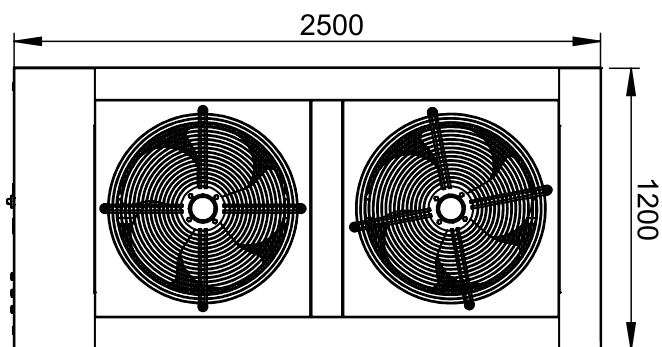


Note: All measurements are in millimeters (mm).

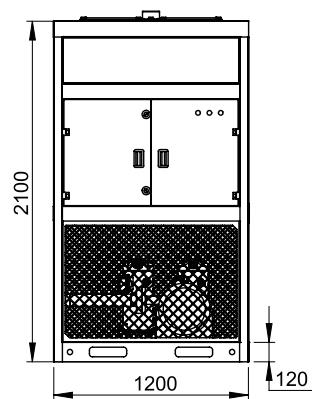
20 TON



Top View

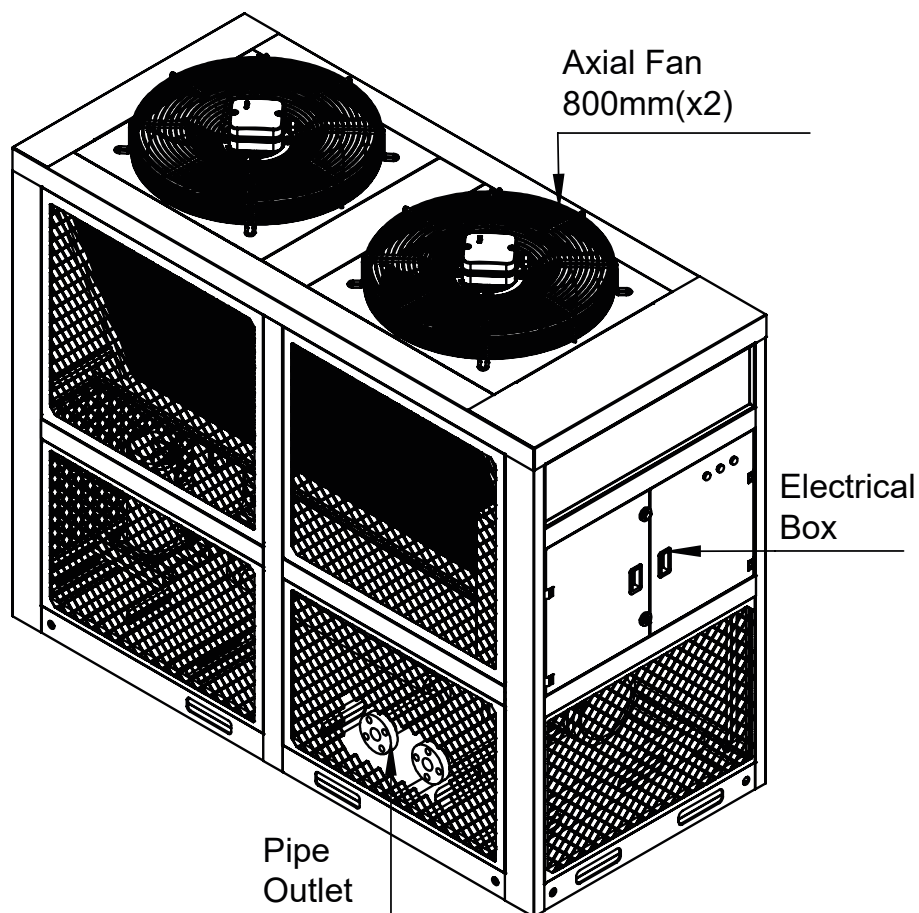


Front View

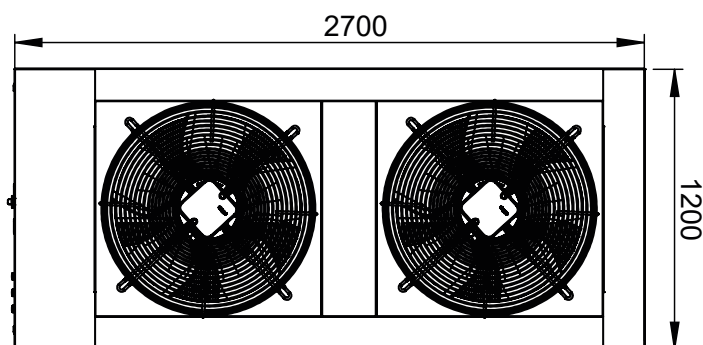


Note: All measurements are in millimeters (mm).

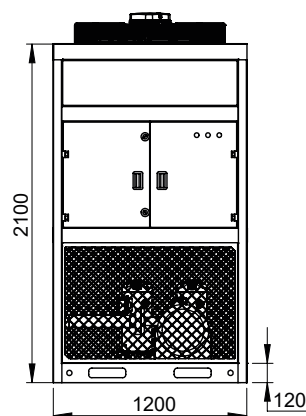
25 TON



Top View

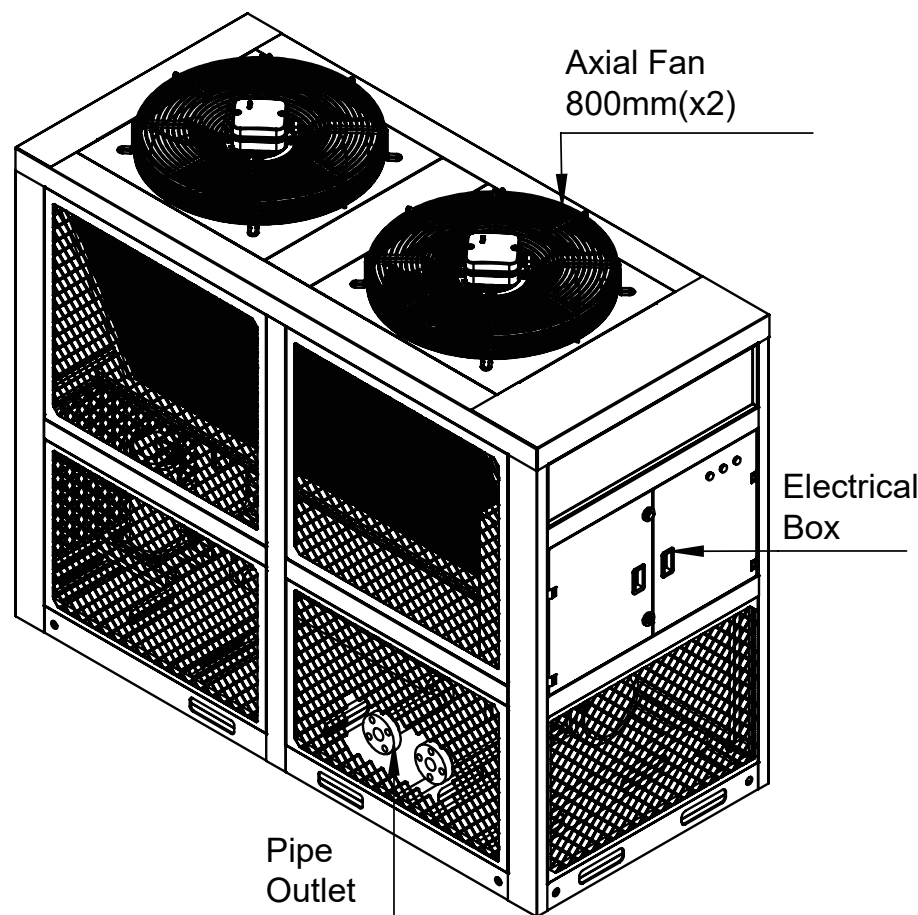


Front View

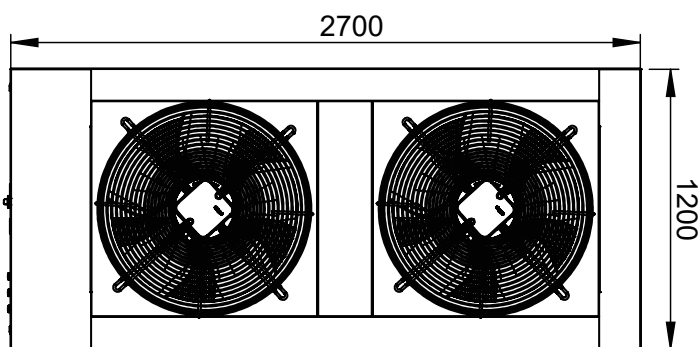


Note: All measurements are in millimeters (mm).

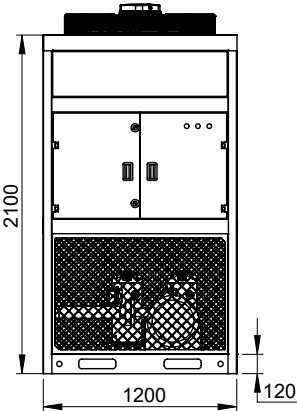
30 TON



Top View

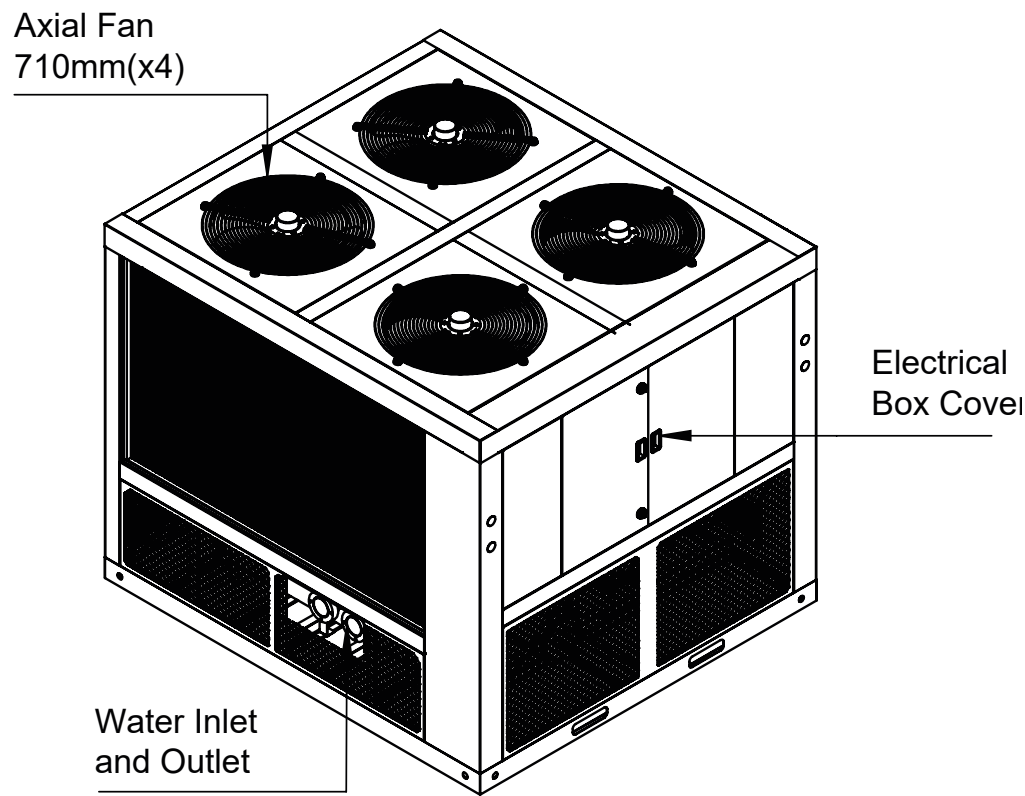


Front View

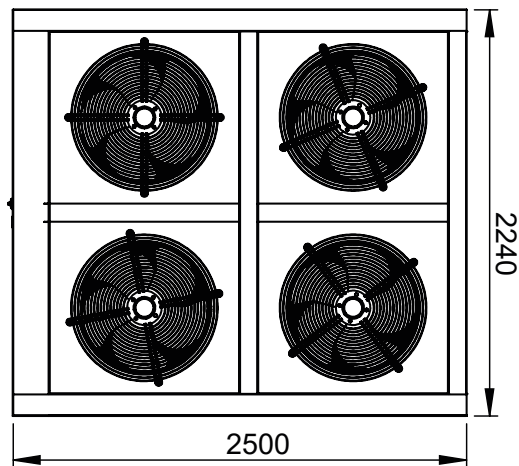


Note: All measurements are in millimeters (mm).

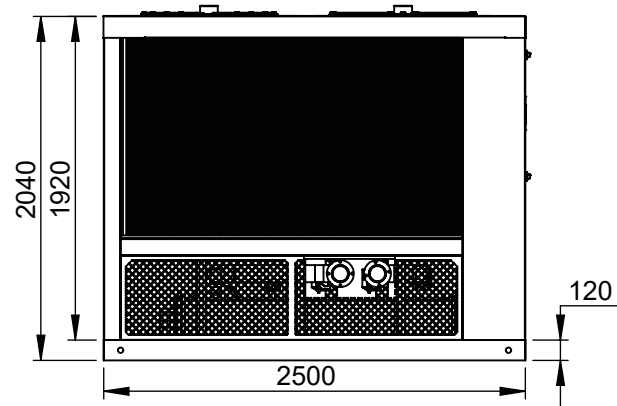
40 TON



Top view

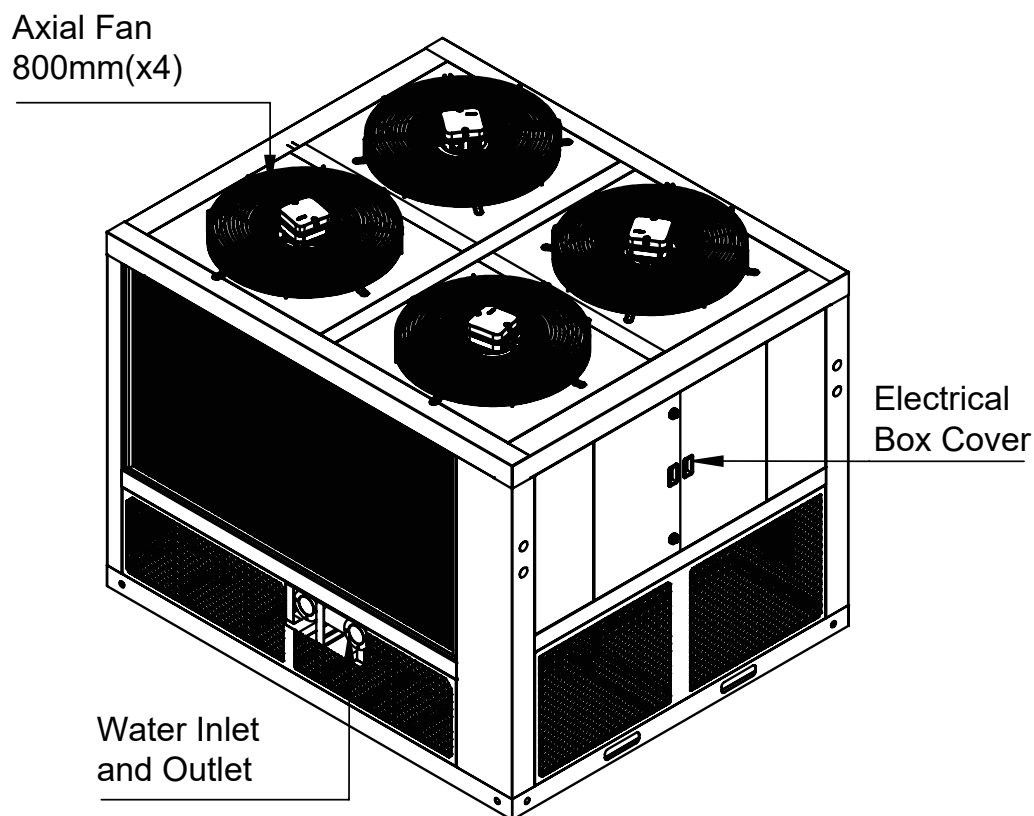


Front View

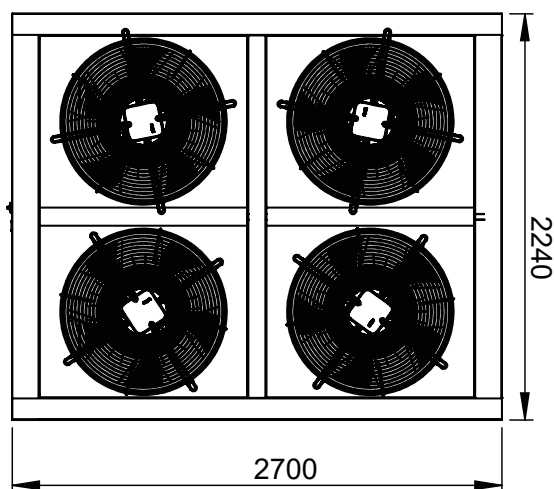


Note: All measurements are in millimeters (mm).

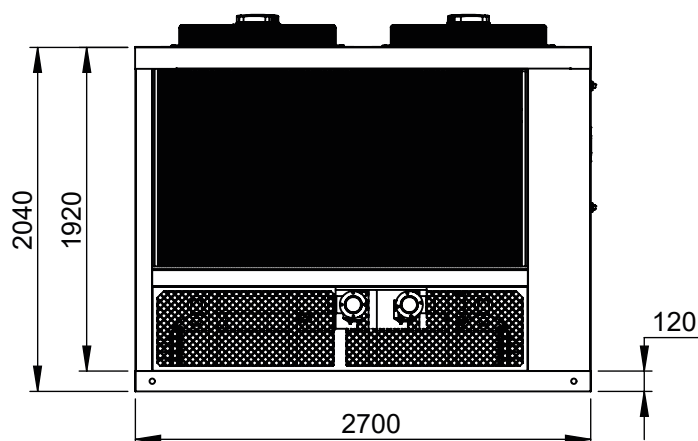
50 TON



Top View

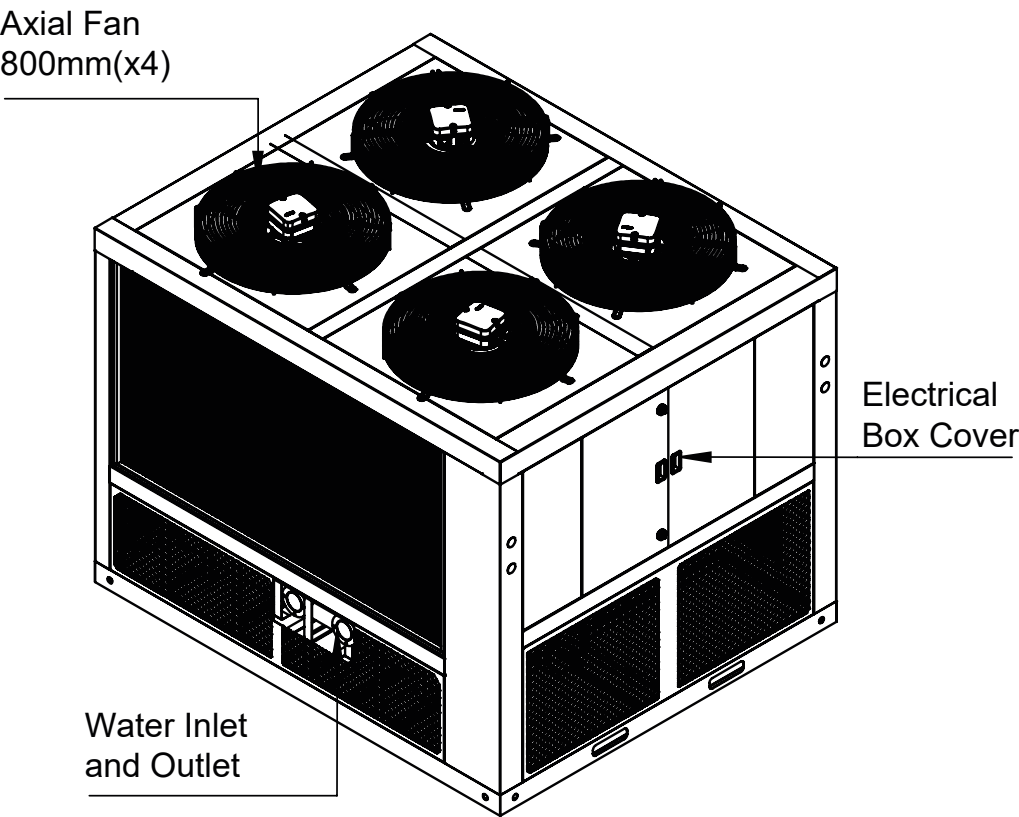


Front View

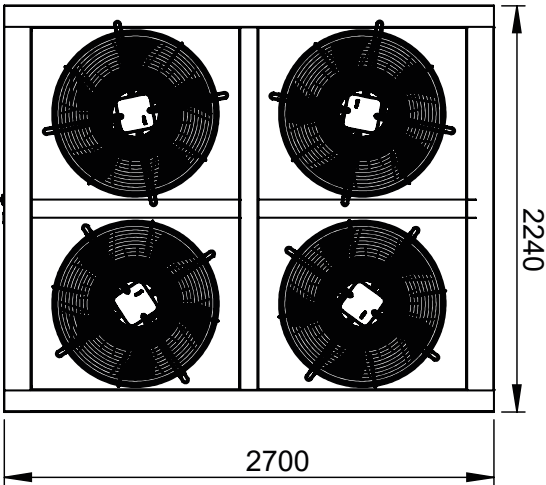


Note: All measurements are in millimeters (mm).

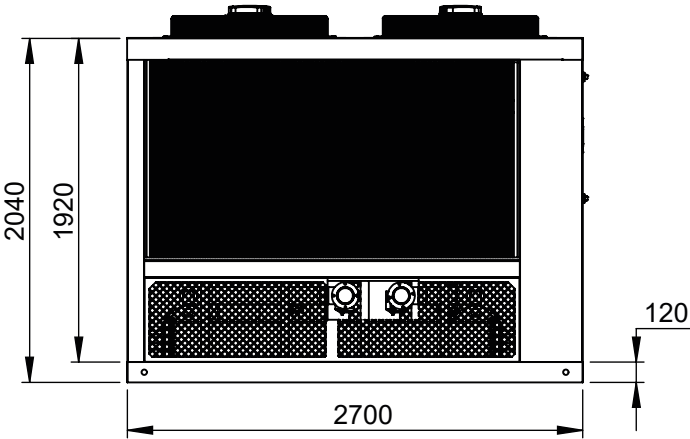
60 TON



Top View



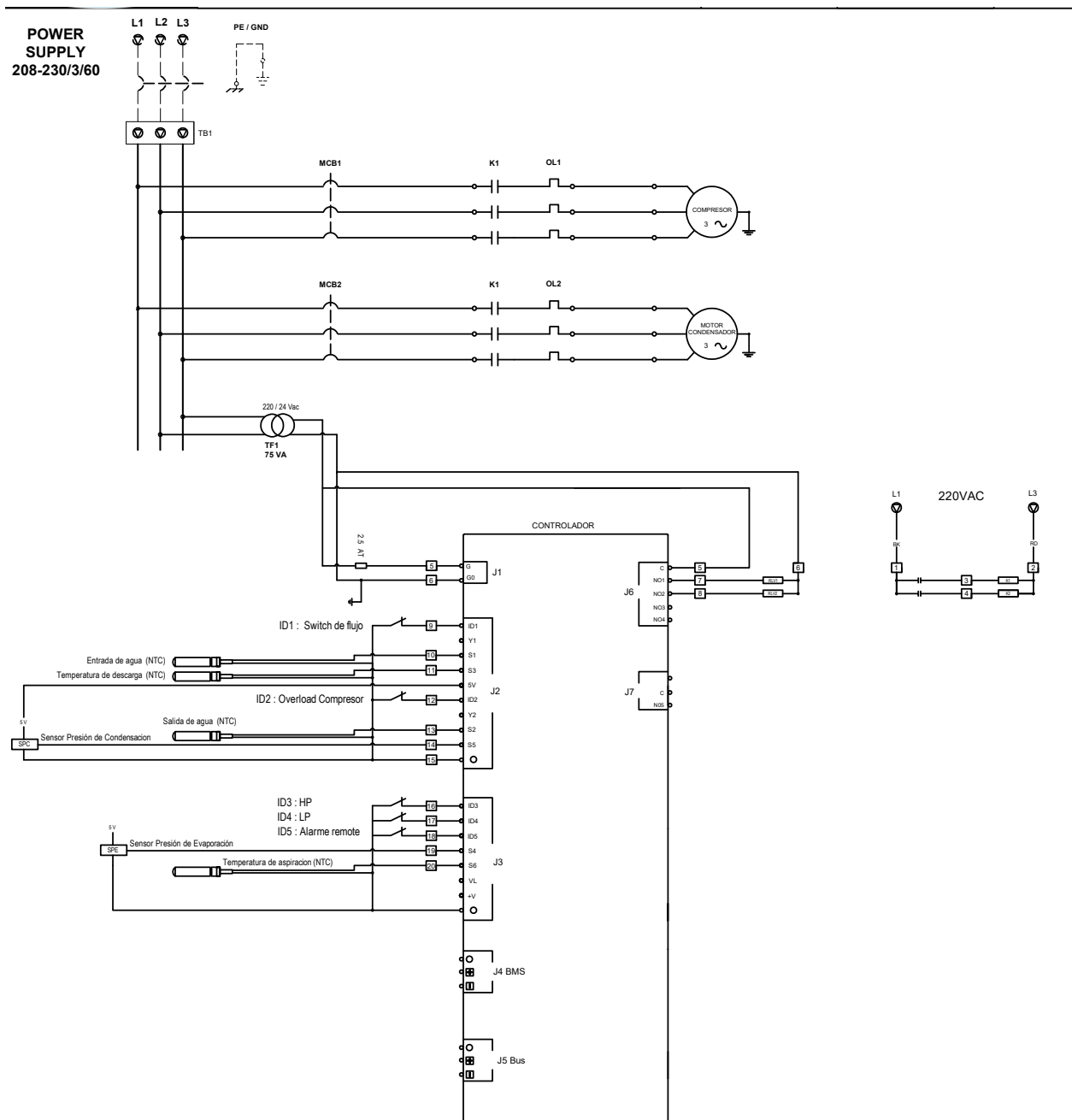
Front View



Note: All measurements are in millimeters (mm).

While performing the electrical installation, the authorized technician must verify that the electrical circuit of the equipment shown below is in compliance:

220V / 3Ph / 60Hz (1 Circuit)



WARNING

High Voltage: Disconnect the power source(s) before performing maintenance. Service must be performed by qualified personnel. Risk of electric shock! May cause injury or death!

Elements:

TB: Terminal Block
 K: Contactor
 OL: Thermal Overload Relay
 RLV: Auxiliary Relay
 TF: Transformer
 F: Fuse
 PE: Grounding
 SPC: Condenser Pressure Sensor
 SPE: Evaporator Pressure Sensor
 K1: Compressor Contactor
 K2: Compressor Contactor 2

Field Wiring:

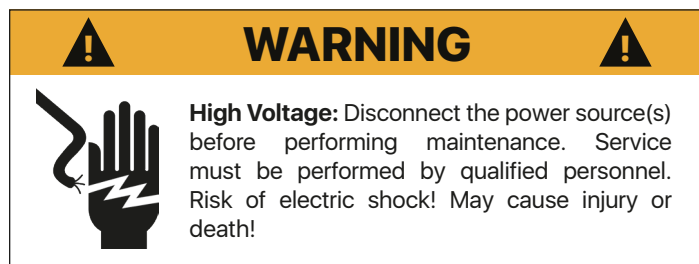
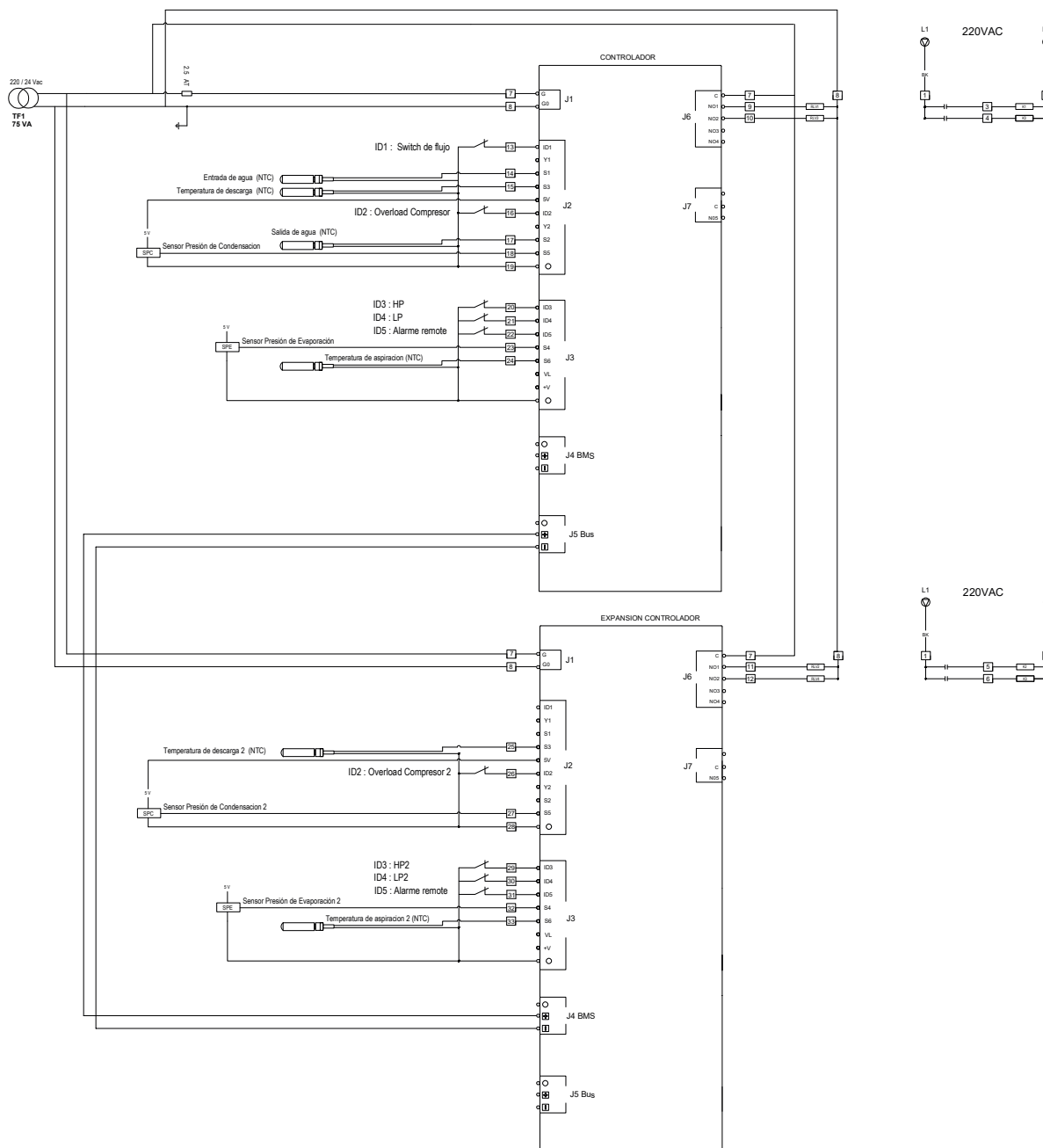
- - - - - High Voltage
 Low Voltage

Factory Wiring:

_____ High Voltage
 _____ Low Voltage

While performing the electrical installation, the authorized technician must verify that the electrical circuit of the equipment shown below is in compliance:

220V / 3Ph / 60Hz (2 Circuits)
CONTROL



Elements:

Abbreviations:

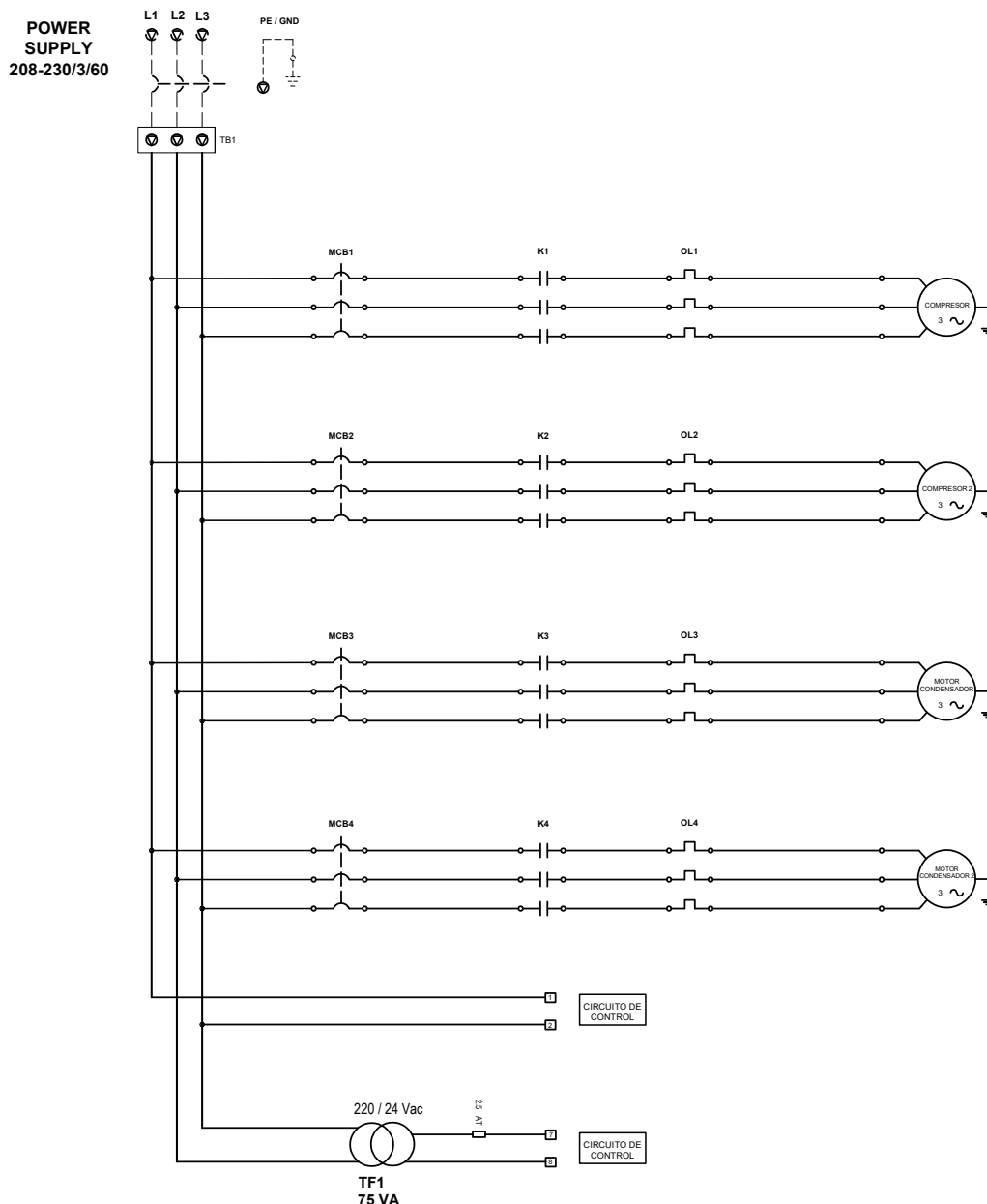
TB:	Terminal Block
K:	Contactors
OL:	Thermal Overload Relay
RLV:	Auxiliary Relay
TF:	Transformer
F:	Fuse
PE:	Grounding
SPC:	Condenser Pressure Sensor
SPE:	Evaporator Pressure Sensor
K1:	Compressor Contactor
K2:	Compressor Contactor 2

K3: Condenser Contactor 1
K4: Condenser Contactor 2
HP: High-Pressure Switch
LP: Low-Pressure Switch

Field Wiring:	High Voltage
-----	Low Voltage
Factory Wiring:	High Voltage
=====	Low Voltage

While performing the electrical installation, the authorized technician must verify that the electrical circuit of the equipment shown below is in compliance:

220V / 3Ph / 60Hz (2 Circuits) POWER



WARNING

High Voltage: Disconnect the power source(s) before performing maintenance. Service must be performed by qualified personnel. Risk of electric shock! May cause injury or death!

Elements:

TB: Terminal Block
 K: Contactor
 OL: Thermal Overload Relay
 RLV: Auxiliary Relay
 TF: Transformer
 F: Fuse
 PE: Grounding
 SPC: Condenser Pressure Sensor
 SPE: Evaporator Pressure Sensor
 K1: Compressor Contactor
 K2: Compressor Contactor 2

K3: Condenser Contactor 1
 K4: Condenser Contactor 2
 HP: High-Pressure Switch
 LP: Low-Pressure Switch

Field Wiring:

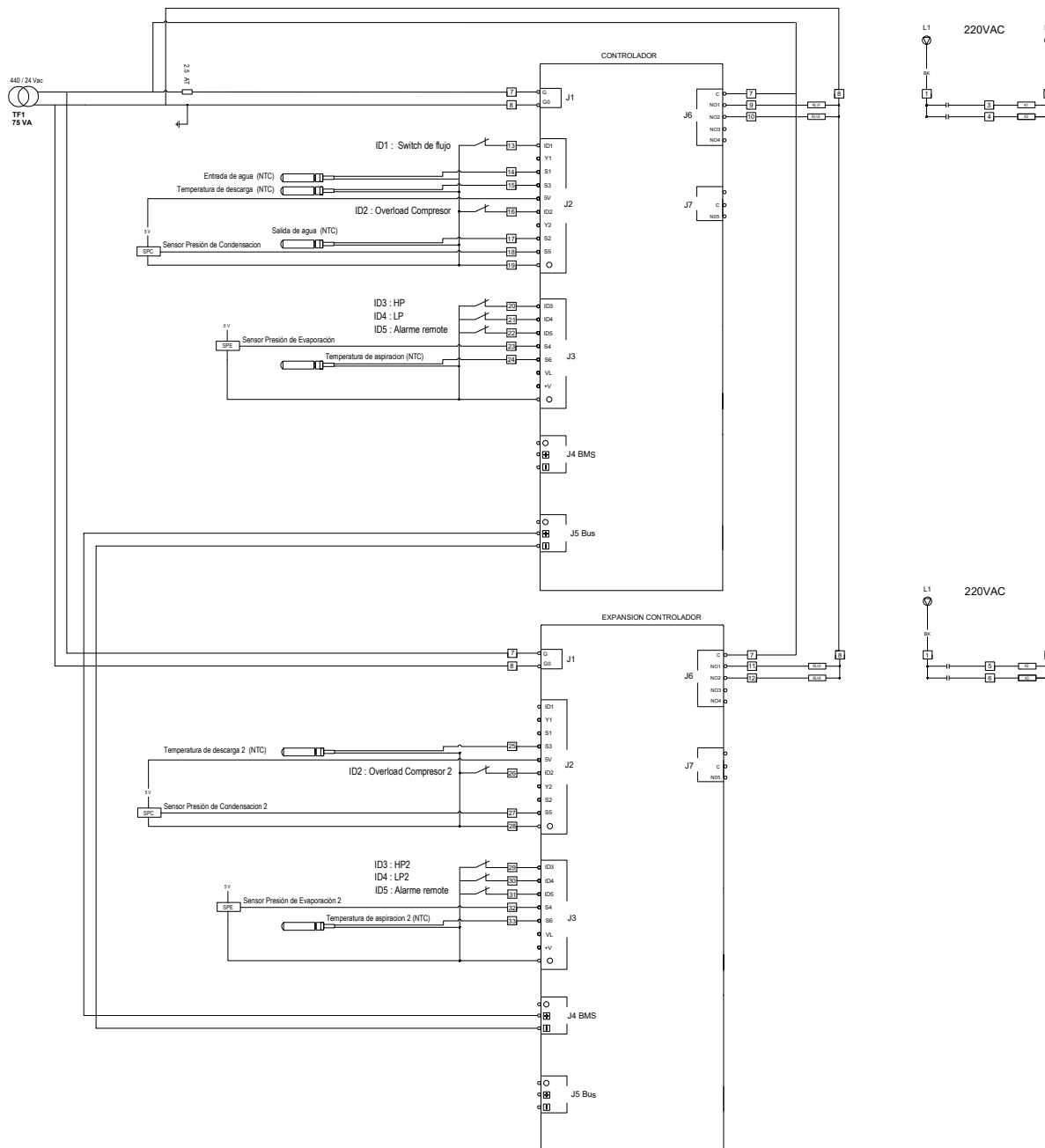
- - - - - High Voltage
 Low Voltage

Factory Wiring:

_____ High Voltage
 _____ Low Voltage

While performing the electrical installation, the authorized technician must verify that the electrical circuit of the equipment shown below is in compliance:

440V / 3Ph / 60Hz (2 Circuits) CONTROL



⚠ WARNING ⚠

High Voltage: Disconnect the power source(s) before performing maintenance. Service must be performed by qualified personnel. Risk of electric shock! May cause injury or death!

Elements:

TB: Terminal Block
 K: Contactor
 OL: Thermal Overload Relay
 RLV: Auxiliary Relay
 TF: Transformer
 F: Fuse
 PE: Grounding
 SPC: Condenser Pressure Sensor
 SPE: Evaporator Pressure Sensor
 K1: Compressor Contactor
 K2: Compressor Contactor 2

K3: Condenser Contactor 1
 K4: Condenser Contactor 2
 HP: High-Pressure Switch
 LP: Low-Pressure Switch

Field Wiring:

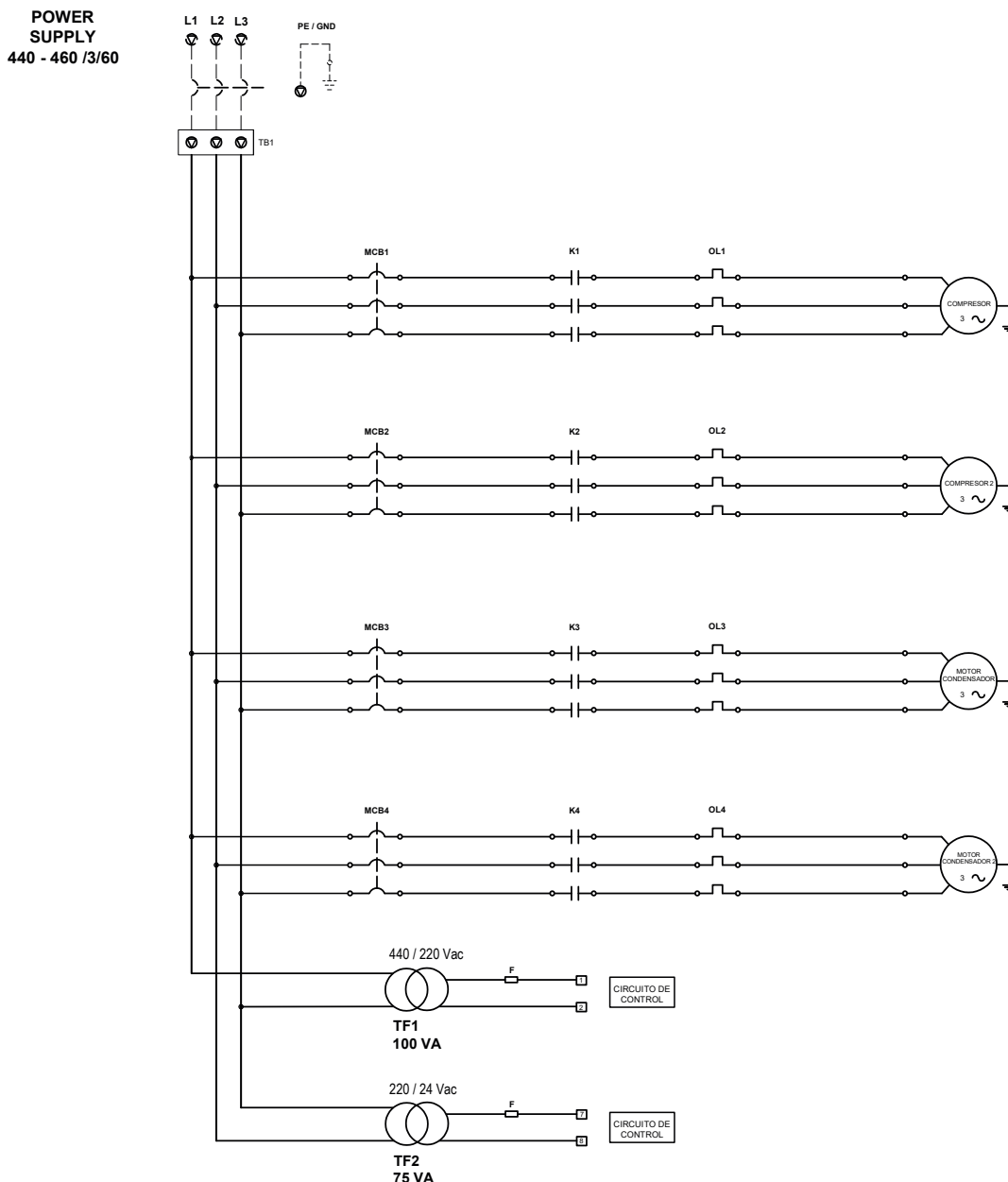
- - - - - High Voltage
 Low Voltage

Factory Wiring:

_____ High Voltage
 _____ Low Voltage

While performing the electrical installation, the authorized technician must verify that the electrical circuit of the equipment shown below is in compliance:

440V / 3Ph / 60Hz (2 Circuits) POWER

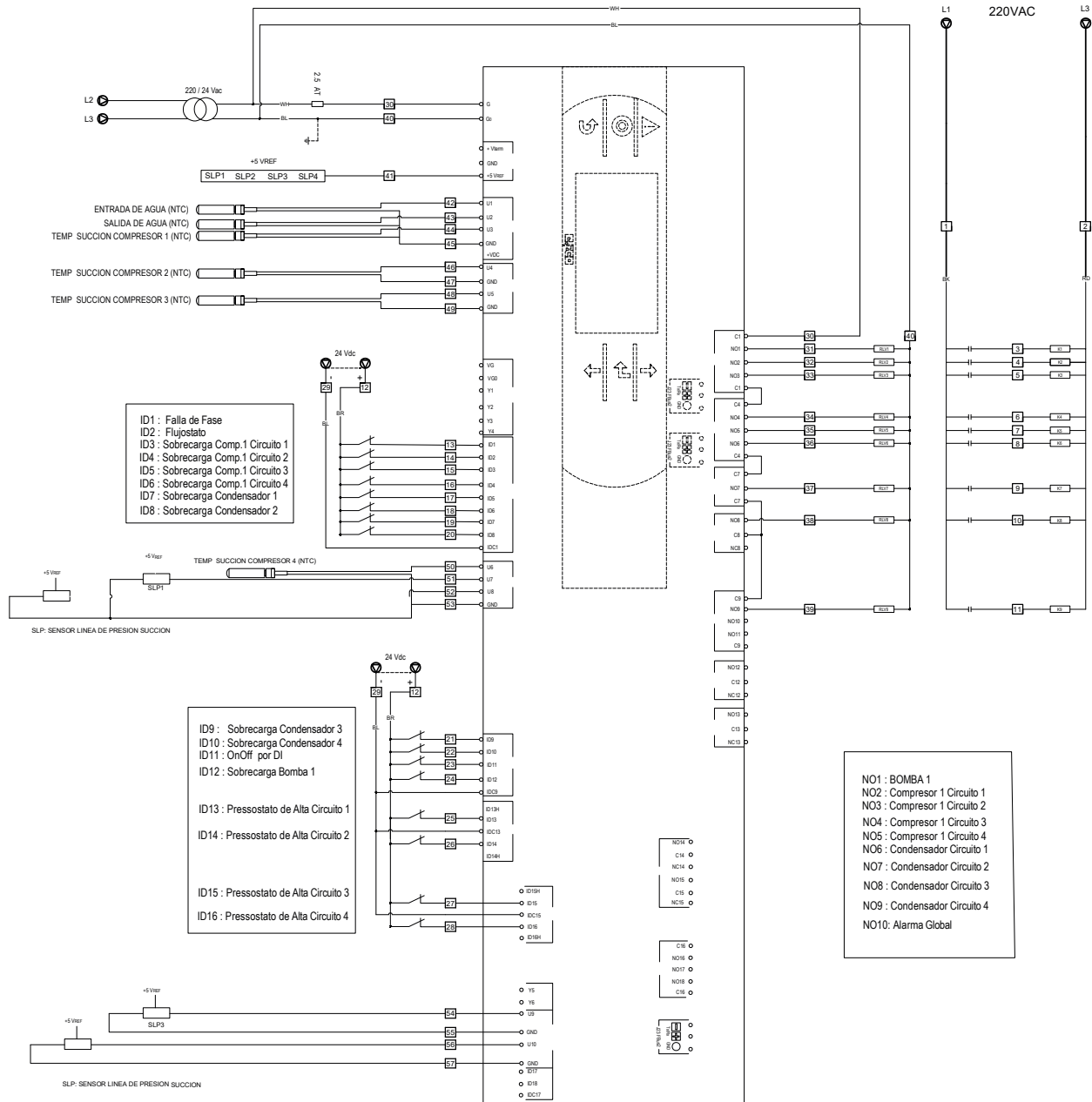


WARNING

High Voltage: Disconnect the power source(s) before performing maintenance. Service must be performed by qualified personnel. Risk of electric shock! May cause injury or death!

While performing the electrical installation, the authorized technician must verify that the electrical circuit of the equipment shown below is in compliance:

220V / 3Ph / 60Hz (4 Circuits) CONTROL



WARNING

High Voltage: Disconnect the power source(s) before performing maintenance. Service must be performed by qualified personnel. Risk of electric shock! May cause injury or death!

Elements:

TB: Terminal Block
 K: Contactor
 OL: Thermal Overload Relay
 RLV: Auxiliary Relay
 TF: Transformer
 F: Fuse
 PE: Grounding
 SPC: Condenser Pressure Sensor
 SPE: Evaporator Pressure Sensor
 K1: Compressor Contactor
 K2: Compressor Contactor 2

K3: Condenser Contactor 1
 K4: Condenser Contactor 2
 HP: High-Pressure Switch
 LP: Low-Pressure Switch

Field Wiring:

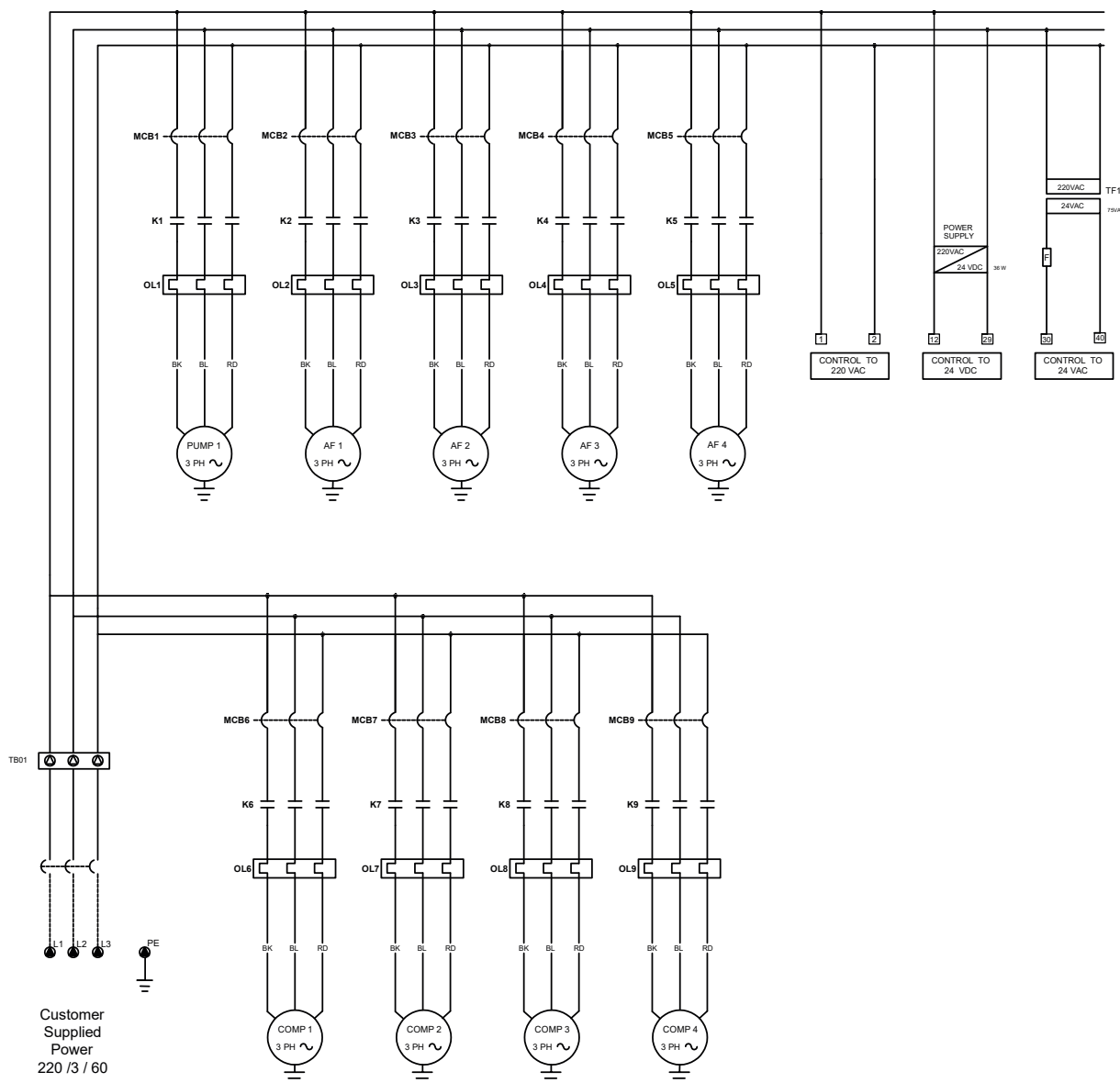
- - - - - High Voltage
 Low Voltage

Factory Wiring:

_____ High Voltage
 _____ Low Voltage

While performing the electrical installation, the authorized technician must verify that the electrical circuit of the equipment shown below is in compliance:

220V / 3Ph / 60Hz (4 Circuits) POWER



WARNING



High Voltage: Disconnect the power source(s) before performing maintenance. Service must be performed by qualified personnel. Risk of electric shock! May cause injury or death!

Elements:

TB: Terminal Block
K: Contactor
OL: Thermal Overload Relay
RLV: Auxiliary Relay
TF: Transformer
F: Fuse
PE: Grounding
SPC: Condenser Pressure Sensor
SPE: Evaporator Pressure Sensor
K1: Compressor Contactor
K2: Compressor Contactor 2

K3: Condenser Contactor 1
K4: Condenser Contactor 2
HP: High-Pressure Switch
LP: Low-Pressure Switch

Field Wiring:

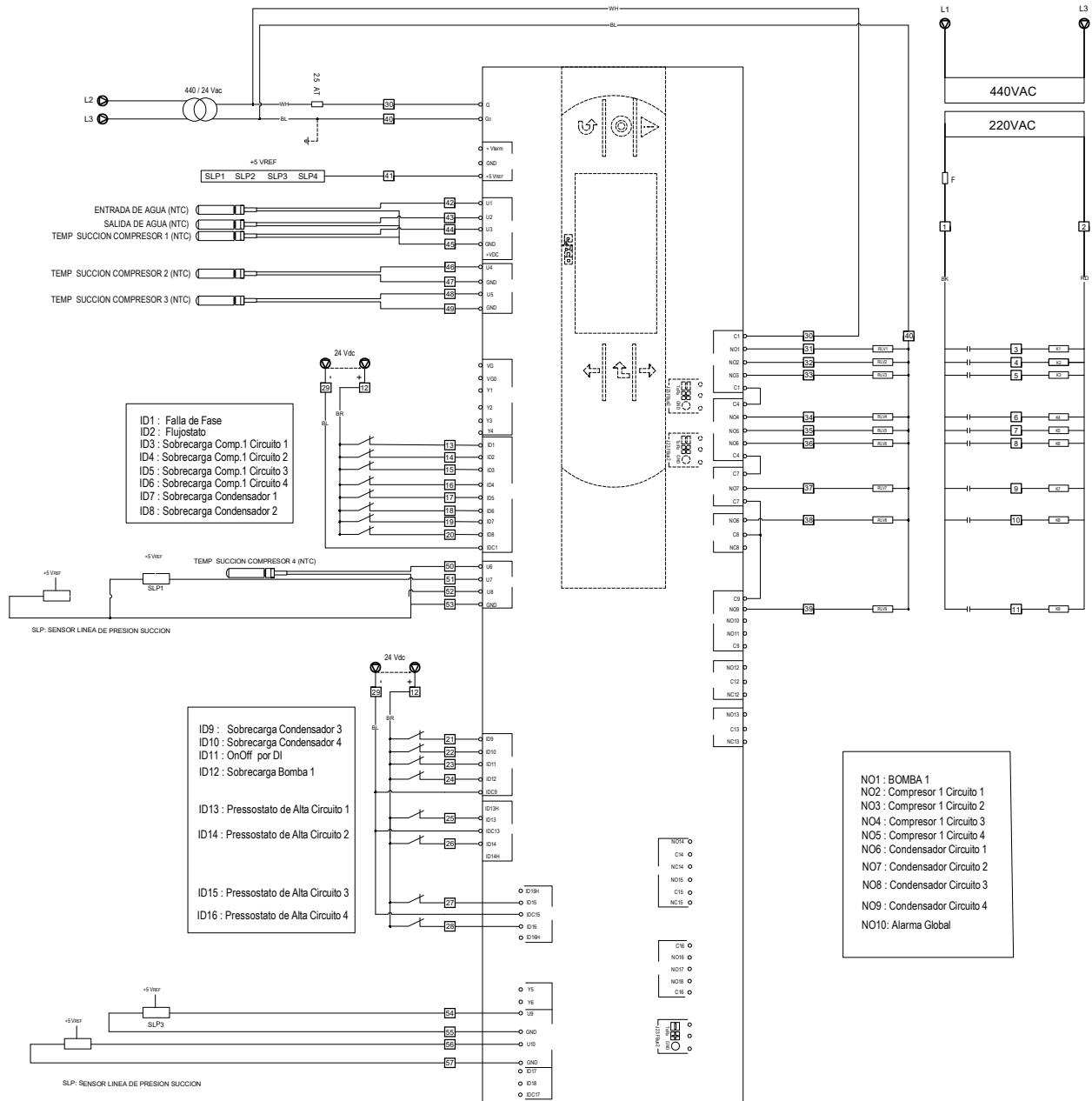
----- High Voltage
----- Low Voltage

Factory Wiring:

----- High Voltage
----- Low Voltage

While performing the electrical installation, the authorized technician must verify that the electrical circuit of the equipment shown below is in compliance:

440V / 3Ph / 60Hz (4 Circuits) CONTROL



WARNING

High Voltage: Disconnect the power source(s) before performing maintenance. Service must be performed by qualified personnel. Risk of electric shock! May cause injury or death!

Elements:

TB: Terminal Block
 K: Contactor
 OL: Thermal Overload Relay
 RLV: Auxiliary Relay
 TF: Transformer
 F: Fuse
 PE: Grounding
 SPC: Condenser Pressure Sensor
 SPE: Evaporator Pressure Sensor
 K1: Compressor Contactor
 K2: Compressor Contactor 2

K3: Condenser Contactor 1
 K4: Condenser Contactor 2
 HP: High-Pressure Switch
 LP: Low-Pressure Switch

Field Wiring:

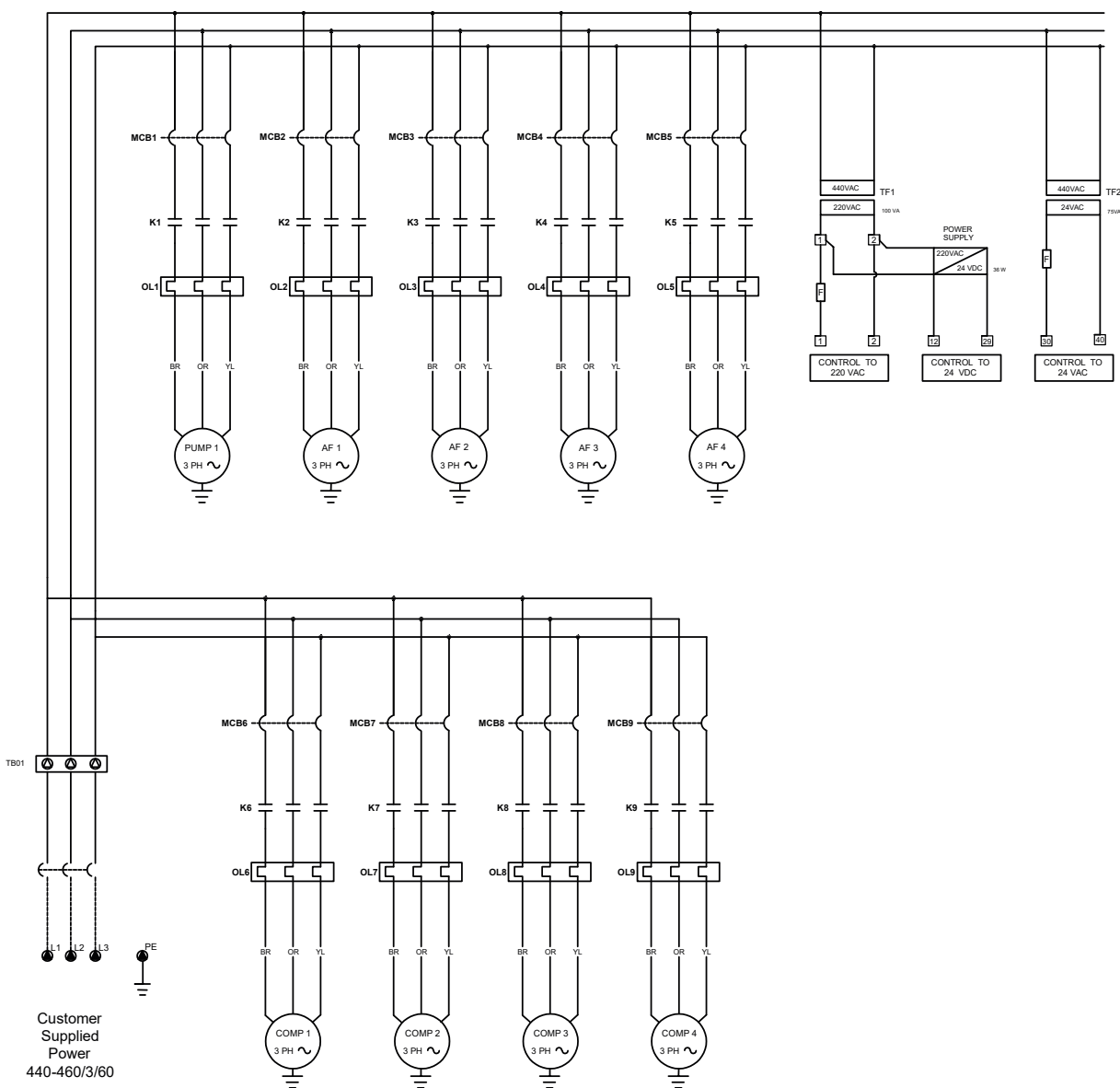
- - - - - High Voltage
 Low Voltage

Factory Wiring:

————— High Voltage
 ————— Low Voltage

While performing the electrical installation, the authorized technician must verify that the electrical circuit of the equipment shown below is in compliance:

440V / 3Ph / 60Hz (4 Circuits) POWER



WARNING



High Voltage: Disconnect the power source(s) before performing maintenance. Service must be performed by qualified personnel. Risk of electric shock! May cause injury or death!

Elements:

TB: Terminal Block
K: Contactor
OL: Thermal Overload Relay
RLV: Auxiliary Relay
TF: Transformer
F: Fuse
PE: Grounding
SPC: Condenser Pressure Sensor
SPE: Evaporator Pressure Sensor
K1: Compressor Contactor
K2: Compressor Contactor 2

K3: Condenser Contactor 1
K4: Condenser Contactor 2
HP: High-Pressure Switch
LP: Low-Pressure Switch

Field Wiring:

----- High Voltage
----- Low Voltage

Factory Wiring:

----- High Voltage
----- Low Voltage

The general conditions that must be considered before installing the equipment:

**WARNING**

Work on the equipment must be carried out exclusively by professionals. Do not connect the power supply until all work has been completed.

**CAUTION**

RISK OF CUT – Failure to follow this precaution may result in personal injury. Metal parts may have sharp edges or burrs. Be careful and use proper protective clothing, safety glasses, and gloves when handling parts and performing maintenance on the air conditioning units.

IMPORTANT CONSIDERATIONS

1. Electrical installation: All wiring must be carried out by qualified personnel, in compliance with applicable local and national regulations.
2. Grounding: Follow NEC standards or local regulations for grounding connection, ensuring safety and protection against failures.
3. Power supply: Make sure that the electrical supply complies with the manufacturer's specifications, including voltage stability and current availability.
4. Safe environment: Select a location away from gases, flammable vapors, or combustible materials that may pose risks during operation or maintenance.
5. Structural support: Ensure that the supporting structure can withstand the total weight of the unit, especially under long-term vibration and stress.
6. Seismic restrictions (if applicable): In seismic areas, secure the unit with anchors or fastening systems that comply with local codes.
7. Surge protection: Install protectors to avoid damage from lightning strikes or electrical fluctuations.
8. Equipment verification: Confirm that model, options, and voltage match the nameplate to avoid compatibility issues or voiding the warranty.
9. External visual inspection: Check the exterior—top, panels, and fittings—for damage during transport or handling.
10. Internal inspection upon receipt: Visually inspect internal components when receiving the unit, looking for bent fins, damaged cables, or loose fans.
11. Unit leveling: Install the unit properly leveled to prevent operating issues, excessive water drainage, or vibration wear.
12. Vibration isolation: Install vibration isolators between the unit and the base to minimize noise and vibration transmission.
13. Pipe insulation: Insulate refrigerant and hydraulic lines to prevent condensation, energy loss, and thermal wear.
14. Free airflow: Ensure there are no obstructions in the discharge airflow to maintain proper circulation and equipment operation.
15. Hydraulic connections: Use flange connections with bolted fasteners for greater safety, tightness, and sealing, avoiding water leaks, vibrations, or noise.
16. Fan airflow check: Verify that fan airflow is correct before sealing the unit for final assembly.
17. Initial test run: Perform a test run to verify electrical operation, water flow, air flow, and noise levels.
18. Pipe review: Before starting operation, check that there are no leaks in refrigerant or hydraulic connections.
19. Avoid nearby heat sources: Do not install the unit near ovens, heaters, or other heat sources that may affect the temperature sensor operation or reduce efficiency.
20. Pest protection: Seal cable, duct, and pipe entries to avoid the entry of rodents or insects.
21. Maintenance space: Maintain the minimum recommended clearance for maintenance access, filter replacement, and technical service.
22. Labeling and documentation: Label all cables and lines. Maintain updated diagrams and manuals near the unit.
23. Coordination with other trades: Coordinate installation with civil work, electrical, and plumbing contractors to avoid interference or rework.
24. Manufacturer's manual compliance: Follow all instructions and technical specifications provided by the manufacturer to preserve the equipment warranty.

The following is a brief description of the steps for system startup and commissioning (to be carried out only by an authorized technician):



WARNING



Never perform work on the equipment without the assistance of qualified professionals. Before making any connection, make sure that the power supply lines are completely disconnected and without energy until all work is fully completed.

STEPS FOR SYSTEM STARTUP:

1. Check the water flow that will reach the unit: Remember that it must be 2.49 GPM/TR (for a $\Delta T=10^{\circ}\text{F}$). If a closed system is used, ensure the total filling of the lines; in the case of an open circuit system, ensure that the tank level is adequate for proper operation.
2. Verify ground connection: Confirm that the ground connection is reliable and that the cable is correctly connected to the grounding device of the building. Never connect the ground cable to gas, water pipes, or other non-dedicated systems, as this could compromise the safety of the equipment.
3. Ensure sufficient electrical capacity: Verify that the adequate electrical capacity is provided for system operation, following the cable gauge according to the consumption specified in the technical data.
4. Bring power from the breaker box: Connect the unit's electrical supply from the breaker box. Ensure the breaker has sufficient capacity to protect the unit and avoid overloads or damage to internal components.
5. Connect the power lines: Connect the power supply lines to the corresponding terminals. For single-phase units, use the terminals marked L1 and L2. For three-phase units, make sure the three phases (L1, L2, L3) are correctly connected to the power grid.
6. Tighten all electrical terminals: During transport or over time, terminals may loosen. Retighten all screws to avoid arcing or electrical faults.
7. Verify connections and fasteners: Ensure that all electrical connections are correctly made and secured according to the wiring diagrams supplied with the unit. This guarantees safe installation and proper system operation.
8. Inspect for debris or visible obstructions: Check the unit for physical damage, loose panels, or external objects inside the cabinet before energizing. Remove any obstructions that could affect moving parts or airflow.
9. Check the Hydraulic Lines: Ensure that the hydraulic connections are free of obstructions and properly connected to prevent backflow or damage to the unit.
10. Verify fan alignment and mounting: Ensure the fan is centered and free of imbalance, which could cause vibration or excessive noise.
11. Switch on breakers to power the unit: Once connected, activate field breakers to energize the unit. Verify all connections are correct before proceeding.
12. Measure voltage and current at start-up: After energizing the unit, measure supply voltage and operating current to confirm they are within the acceptable range stated on the unit's nameplate. This helps detect issues such as low voltage or overcurrent.
13. Test system operation: After confirming all connections are secure and the unit is energized, test the system to ensure proper operation. Set the thermostat to the desired temperature and verify that the unit cools the space without unusual noises or vibrations.
14. Allow unit to operate in test period: After start-up, let the system run for at least 15–20 minutes while monitoring pressures, temperatures, and general operation. This will help detect early signs of failure.
15. Controller Adjustment: The operation of the water cooling system is controlled by the controller located in the electrical panel. Ensure that it is set to the desired temperature to maintain the distribution water at comfort levels.
16. Record system operation data: Log voltages, amperages, refrigerant pressures (if applicable), temperatures, and general operation to create a historical maintenance record of the system.

With proper maintenance and care, your air conditioning unit will operate efficiently and cost-effectively. Before performing any maintenance task, consider the following essential safety precautions:

**WARNING**

To avoid equipment damage and prevent personal injury or even death, make sure to completely disconnect the power supply before performing any maintenance task. This includes disconnecting power from both indoor and outdoor units.
NOTE: There may be multiple electrical disconnect switches. Verify and deactivate all of them to ensure your safety.

**WARNING**

Although special attention has been given to minimizing sharp edges during equipment manufacturing, we recommend handling parts very carefully and avoiding placing hands inside the unit without proper precautions.

MAINTENANCE RECOMMENDATIONS

1. Electrical Power Supply Inspection: Periodically check the unit's power supply to ensure proper operation. Monitor the current of the main components according to the equipment's nameplate.
2. Tighten Electrical Connections: Inspect and tighten all terminals and electrical connections to prevent arcing, voltage drops, or overheating due to loose or corroded connections.
3. Inspection and Testing of Capacitors and Contactors: Check capacitors for bulging or leakage and test contactors to ensure proper operation. Faulty components may cause start-up failures.
4. Inspection of Safety Controls and Sensors: Test the operation of safety switches, pressure sensors, and other automatic shutdown systems to ensure proper functioning under emergency or overload conditions.
5. Operating Pressure Inspection: Periodically check the system's operating pressures (high and low). Make sure they do not exceed the established ranges for normal operation.
6. Inspection of Hydraulic Lines: Ensure there are no blockages in the water supply and return lines to prevent overpressure or stagnation that could damage piping or heat exchangers.
7. Fan Motor Lubrication (if applicable): Lubricate fan motors and bearings (for models with serviceable components) according to manufacturer recommendations to prevent overheating or failures.
8. Condenser Coil Inspection: Check the condition of the condenser coil to ensure there are no obstructions, allowing free airflow and proper heat exchange.
9. Coil Cleaning: If necessary, clean the coil with a mild detergent solution and rinse with water. This process may require coil removal. Be careful not to damage the fins.
10. Inspection of Refrigerant Line Insulation Wear: Check whether refrigerant line insulation is deteriorated, which may cause energy loss or reduced cooling performance.
11. Airflow Verification: Confirm that airflow in the condenser's discharge system is adequate, using tools such as anemometers if necessary, to ensure energy efficiency.
12. Avoid Debris Accumulation: Do not allow debris to accumulate around or on top of the unit, as this may reduce cooling capacity.
13. Check for Unusual Noises or Vibrations: Listen for abnormal noises (knocking, humming, squealing) that may indicate loose components or imminent failures.
14. Controller Calibration: Periodically check and calibrate the controller to ensure accuracy in water return temperature and achieve optimal comfort.
15. System Shutdown and Restart Test: Verify that the system shuts down and restarts correctly after a power outage, sensor activation, or controller adjustment.
16. Exhaust Air Grille Cleaning: Remove dust and debris from the exhaust air grilles or replace them if damaged.
17. Annual Full Maintenance: After one year of operation, perform a complete maintenance review of the water chiller unit, including checking for leaks, fan motors, and electronic components.
18. Verify Parameters such as Superheat and Subcooling: Under normal operating conditions, superheat should be between 8 and 18 °F, and subcooling values should be between 5 and 15 °F.



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