



REMCOR®

IMI CORNELIUS REMCOR INC ■ 500 REGENCY DRIVE ■ GLENDALE HEIGHTS, IL 60139-2268

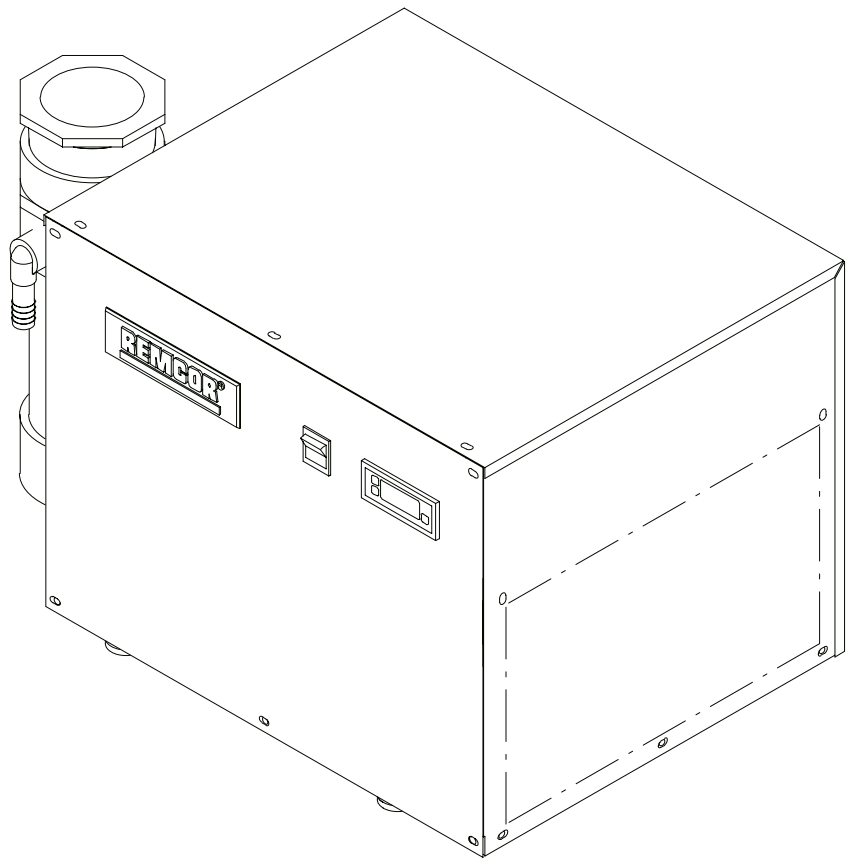
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CHILLER ("CH" SERIES)

Models: CH 250
CH 251

Operator's Manual



Part No. 620914801
February 16, 1999
Revised: August 12, 2002
Revision C

THIS DOCUMENT CONTAINS IMPORTANT INFORMATION

This Manual must be read and understood before installing or operating this equipment

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GENERAL INFORMATION

INTRODUCTION

The REMCOR "CH" Series Recirculating Water Chiller is designed to provide an accurate, reliable, and user-friendly system for cooling a continuous flow of water and keep it at a constant temperature in various closed loop or tank cooling applications.

The "CH" Series Chiller consists of an air-cooled refrigeration system housed in a sturdy sheet metal frame and cabinet. A standard pump and insulated water reservoir package provides a complete liquid cooling and circulating system.

The "CH" Series Chiller is designed to operate in a clean laboratory or industrial environment where ambient temperatures range from 40 to 100° F (5 to 38° C). With proper installation, operation, and maintenance, the "CH" Series Chiller will provide years of trouble free service.

UNPACKING AND INSPECTION

This unit was thoroughly inspected before leaving the factory and the carrier has accepted and signed for it. Any damage or irregularities should be noted at the time of delivery and immediately reported to the carrier. Request a written inspection report from the Claims Inspector to substantiate any necessary claims. In the event that an immediate replacement is necessary, please contact REMCOR Chiller Sales at 1-800-551-4423.

DESIGN DATA

Table 1. Design Data		
	CH250	CH251
Cooling Capacity:		
BTU/hr (W) at 80° F (27° C) and 70° F (21° C) Liquid Temperature.	3,000 (879)	3,000 (879)
Compressor Horsepower	.25 (.2 kW)	.25 (.2 kW)
Electrical Data:	115/1/60	230/1/60
Voltage/Phase/Hertz/Amperage	7.5 Amps	3.8 Amps
Refrigerant Type:	R134a	R134a
Physical Dimensions, Width X Depth X Height	17.125" X 14.125" X 13.375" (43.5 cm X 35.9 cm X 34cm)	17.125" X 14.125" X 13.375" (43.5 cm X 35.9 cm X 34cm)
Fittings:		
Process Connections	1/2" FPT (S/S)	1/2" FPT (S/S)
Optimum Process Liquid Flow GPM (Liters/Min)	0.6 (2.72)	0.6 (2.72)
Condenser Air Flow (CFM)	225	225

DATA PLATE INFORMATION

REMCOR®
REMCOR PRODUCTS COMPANY
GLENDALE HEIGHTS, IL 60139-2308

Camelius

PART NO. MODEL NO. SERIAL NO.

VOLTS HZ PH AMPS R134A

MADE IN U.S.A.

BAR CODE

FIGURE 1. SAMPLE DATA PLATE

When servicing a REMCOR Chiller, it is important to note the information contained on the data plate located in the upper rear of the Unit.

If technical assistance is needed, the phone technician will need the Serial Number of your Chiller. That information is found on the Data Plate along with the model number, voltage requirement, and refrigerant information.

The serial Number is also needed when replacement parts are being ordered or for warranty claims. See CHILLER WARRANTY PAGE.

Be sure to include the serial number on any documentation or billing information.

CHILLER INSTALLATION

Location of Chiller

THE CHILLER MUST BE LOCATED NEAR A PROPERLY GROUNDED ELECTRICAL OUTLET. THE CIRCUIT SHOULD BE FUSED AND NO OTHER ELECTRICAL APPLIANCE SHOULD BE CONNECTED TO THE CIRCUIT. ALL ELECTRICAL WIRING MUST CONFORM TO NATIONAL AND LOCAL ELECTRICAL CODES.

The Chiller *must* be located in a well ventilated, indoor area where ambient temperatures will remain above 40° F (5° C) and will never increase above 100° F (38° C). To obtain optimum cooling capacity, the ambient temperature should be at or below 80° F (27° C).

It is very important that the air intake and discharge sides of the chiller are not obstructed by other free standing objects. A minimum of two feet of space on all four sides of the chiller will be sufficient to prevent air flow obstructions.

It is also important to direct any hot air discharge from other equipment away from the air intake side of the chiller. Condenser air entering the "CH" unit should be below 100° F (38° C). Condenser air temperatures above 100° F (38° C) can cause the high pressure safety control to shut down the unit.

Electrical Connections

(see Figure 3)

All wiring must conform to the National Electric Code and any applicable local codes. The Chiller *must* be permanently wired by means of electrical conduit to a properly fused disconnect of proper amperage or wired to a properly rated power cord and plugged into an outlet with the appropriate disconnect and amperage rating. The electrical junction box, located on the back panel of the Chiller, includes a four terminal strip for power supply connection.

The data plate, located next to the junction box, includes the actual voltage, phase, and amperage of the Chiller.

START UP



WARNING: Never operate the Chiller with it's panels removed.

Always use the power switch to turn off the Chiller when it is not being used.

Always ensure that all air inlets and outlets are free from obstruction.

Be sure that the reservoir is filled with fluid prior to powering up the unit (see Fluid Recommendations page).

Process Water Flow, Units with Pump and Tank (Standard)

Follow standard plumbing practices and local codes in making water connections. The Chiller inlet and outlet connections are 3/4". Flexible hose and fittings are recommended for plumbing the system. A No. 20 mesh strainer should be installed on the Chiller inlet to prevent foreign particles from entering the system and should be cleaned monthly. Lines should be routed with as few bends as possible. Prevent lines from running near

radiators, hot water pipes, etc. Any lengths of tubing that are exposed to high ambient temperatures should be insulated to prevent condensation and/or significant liquid heat loss.

After ensuring that the system is free from the obstruction, that all valves are open, and the reservoir when available is full, push the CONTROL POWER switch to the "ON" position. The pump should now be operating.

Process Water Flow, Units Without Reservoir (Optional)

Follow standard plumbing practices and local codes in making water connections. The Chiller inlet and outlet connections are 3/4". Flexible hose and fittings are recommended for plumbing the system. A No. 20 mesh strainer should be installed on the Chiller inlet to prevent foreign particles from entering the system and should be cleaned monthly. Lines should be routed with as few bends as possible. Prevent lines from running near radiators, hot water pipes, etc. Any lengths of tubing that are exposed to high ambient temperatures should be insulated to prevent condensation and/or significant water heat loss.

Proper priming of the water lines is essential to prevent pump cavitation. *Be certain* all air has been purged from the lines before operating the pump for an extended period of time. *Be sure* to remove any loops in the lines that may trap air. The pump *must* have a supply of water **with the level of the water above the inlet of the Chiller**. The supply tank *must* feed the Chiller from the side of the tank below the water level (see Figure 2).

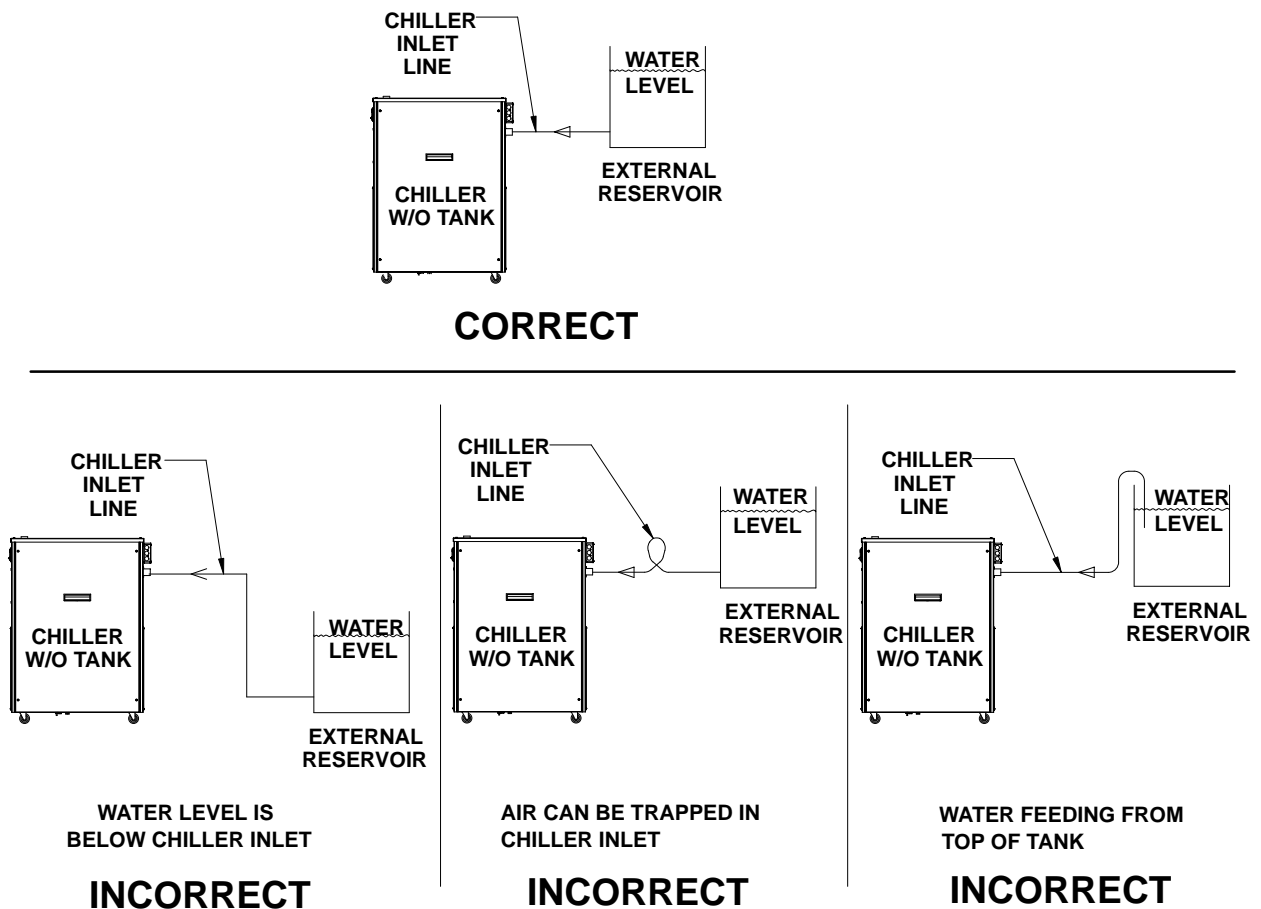


FIGURE 2. EXTERNAL RESERVOIR WATER LEVEL

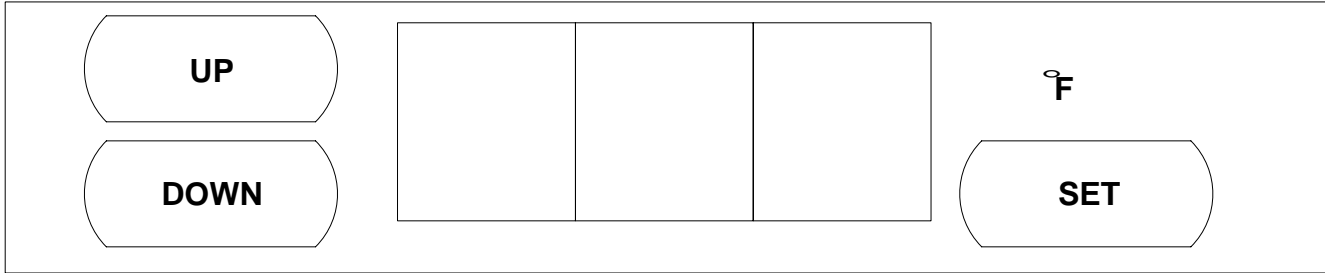
THERMOSTAT ADJUSTMENT

Standard Thermostat

The following procedure should be followed to adjust the standard thermostat:

1. Push the "SET" button located to the right of the digital display. The current set-point will be displayed.
2. Push the "UP" or "DOWN" button until the desired set-point is displayed.
3. After approximately 3 seconds, the display will show the system water temperature. The set-point can be viewed at any time by pressing the "SET" button.

The thermostat has a range that has been pre-set at the factory. The range is 40° F (5° C) to 100° F (38° C). If operation outside of this range is required, please contact the Remcor Technical Service Department.



CHILLER MAINTENANCE



WARNING: Disconnect electrical power to the Chiller to prevent personal injury before attempting any internal maintenance. Only qualified personnel should service the internal components or electrical wiring.

Condenser

On air-cooled Chillers, the CONDENSER FINS should be cleaned by blowing compressed air through the condenser from the fan side. Dirt and debris accumulate on the condenser fins over time, and this build up can severely reduce the performance of the Chiller. Cleaning of the CONDENSER COIL FINS should be done approximately every three months, depending upon cleanliness of your application.

Fan Motor

On air-cooled Chillers, the condenser FAN MOTOR should be lubricated every 6 months with a few drops of SAE 10 oil.

Pump Motor

The PUMP MOTOR should be lubricated with thirty drops of SAE 20 oil once a year.

Circulation System

The CIRCULATION SYSTEM should be drained and flushed periodically to avoid build up and a possible flow restriction caused by contaminants.

Filters/Strainers

The STRAINER at the Chiller inlet should be removed and cleaned monthly.

The "Y" STRAINER, located inside the unit at the inlet of the pump, should be cleaned periodically depending on applications. If a reduction in flow or cavitation of the pump occurs, remove the strainer, flush it out with water, then replace.

FLUID RECOMMENDATION

Remcor Chillers are designed to operate with water to provide maximum performance for temperatures of 40°F–100°F.

Distilled Water	Acceptable
De-Ionized Water (1–5 MEG/OHMS)	Acceptable
De-Ionized Water (5+MEG/OHMS)	Acceptable with Stainless Steel & PVC only *No Copper or Brass
Propylene Glycol (Lab & Industrial Grade)	Acceptable – 30% Glycol/70% Water *For Applications with Temperatures below 40°F
Lab & Industrial Grade Ethylene Glycol	Acceptable – 30% Glycol/70% Water *For Applications with Temperatures below 40°F
Mineral/Hydraulic Oils (Viscosity<50 Centistrokes)	Acceptable
Ethylene Glycol (Commercial/Automotive Antifreeze)	NOT Acceptable *Silicate Rust Inhibitors in Automotive/Commercial Antifreeze will damage pump seals and housing which lead to failure.
Acidic/Basic Solutions (Above 8/Below 6 PH)	Not Acceptable
Mineral/Hydraulic Oils (Viscosity>50 Centistrokes)	Not Acceptable

For questions regarding special or other fluids contact IMI Cornelius Remcor at 800–551–4423.

To Purchase Lab or Industrial Glycol contact:

Hubbard Hall	(800) 648–3412 – Dow Therm SR1 available in 5 gallon
IMI Cornelius	(800) 551–4423 – Part# 111521000 5 gallons

TROUBLESHOOTING



WARNING: Disconnect electrical power to the Chiller to prevent personal injury before attempting any internal maintenance. Only qualified personnel should service internal components or electrical wiring.

If repairs to the Chiller must be made, disconnect electrical power to the unit, then shut off the water source.

TROUBLE	PROBABLE CAUSE	REMEDY
CHILLER DOES NOT OPERATE, CONTROL POWER LIGHT "OFF"	A. No Power To Unit.	A. Check Main disconnect fuses, wiring, and power lead to unit.
	B. Defective Control Power Switch.	B. Replace Switch
	C. Defective Control Transformer.	C. Replace Transformer
	D. Wrong Voltage Supplied to Unit.	D. Supplied Voltage Must be within $\pm 10\%$ of nameplate rating.
PUMP DOES NOT OPERATE, BUT POWER LIGHT IS "ON".	A. Line to or from Chiller is restricted.	A. Inspect lines and remove any obstructions.
	B. Internal or external filter is blocked with debris.	B. Remove and clean strainer, then replace.
	C. Pump Contactor is defective.	C. Replace Contactor.
	D. Damaged pump motor or impeller.	D. Replace pump motor or impeller.
UNIT RUNS CONTINUOUSLY, BUT IS NOT COOLING PROCESS WATER ENOUGH.	A. Condenser is restricted.	A. Clean condenser.
	B. Unit low on refrigerant.	B. Call Service.
	C. Inefficient compressor.	C. Call Service.
	D. Unit is undersized for application.	D. Call REMCOR Chiller Sales Rep.

NOTE: When servicing a REMCOR Chiller, it is important to note all information provided on the **DATA PLATE** located in the upper rear of the unit. If technical assistance is needed, the REMCOR Service Technician will need this information along with any description of the problem(s) you are encountering. The serial number and other information will also be required when ordering replacement parts and any other Warranty Claims.

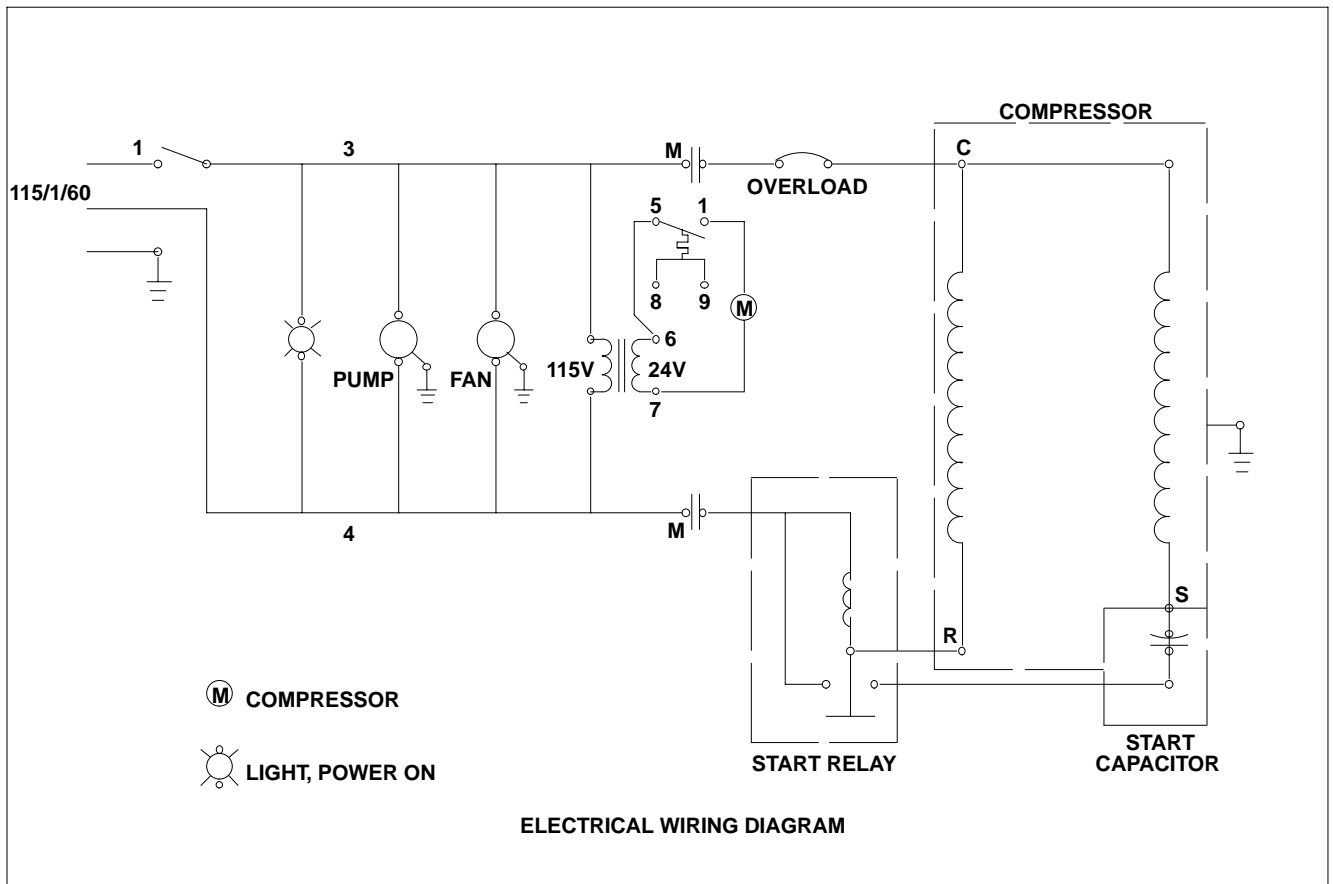
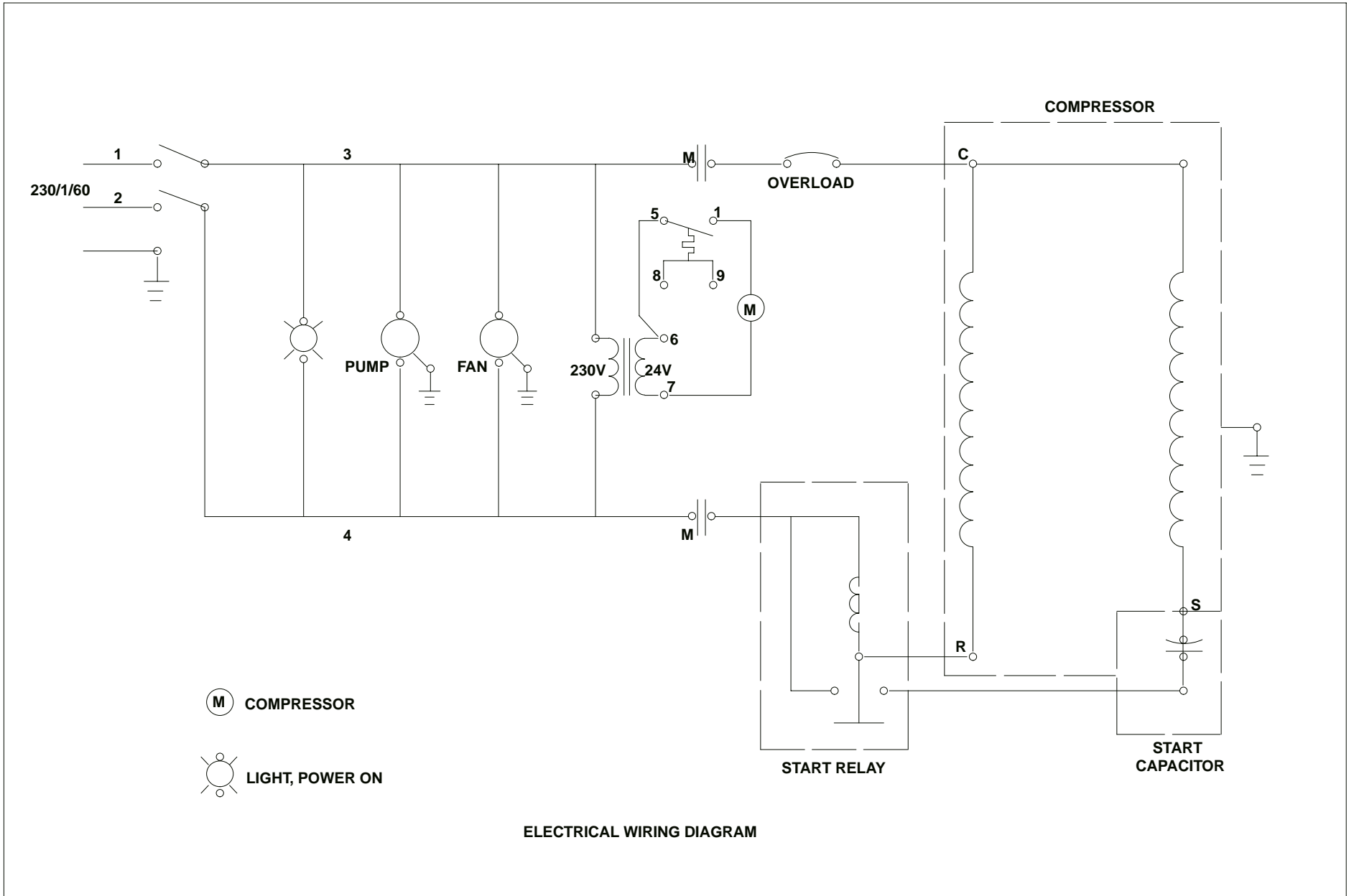


FIGURE 3. WIRING DIAGRAM (115V)

FIGURE 4. WIRING DIAGRAM (230V)



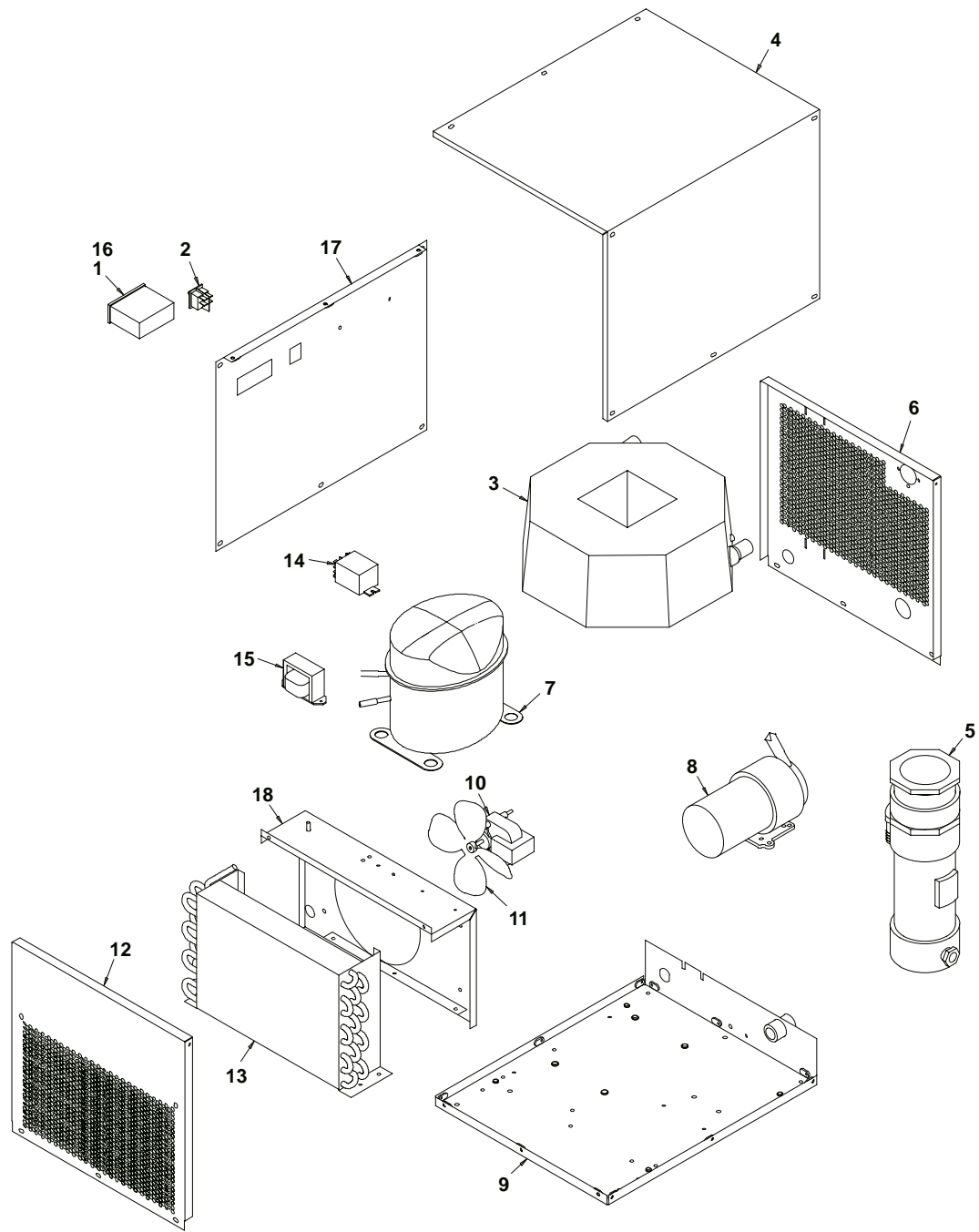


FIGURE 5. CABINET SECTION EXPLODED VIEW

Item No.	Part No.	Name
1	32386	Temperature Controller
2	31934	Power Switch
3	61014	Evaporator
4	620023502	Wrapper Panel
5	51882	Priming Reservoir Ass'y
6	24388	Panel, Left Side
7	60992	Compressor
8	31955	Pump
9	24390R	Base Ass'y

Item No.	Part No.	Name
10	31962	Fan Motor
11	31488	Fan Blade
12	620023503	Panel, Right Side
13	60576	Condenser
14	33082	Relay
15	32378	Transformer
16	32588	Temperature Probe
17	620023504	Panel, Front
18	24389	Shroud, Condenser

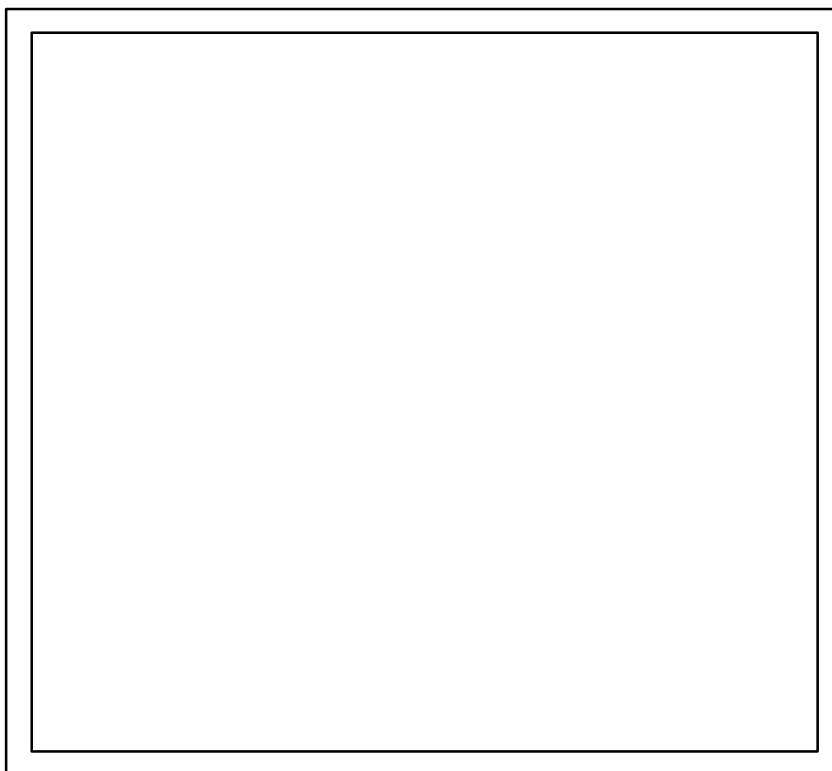
WARRANTY

IMI Cornelius Inc. warrants that all equipment and parts are free from defects in material and workmanship under normal use and service. For a copy of the warranty applicable to your Cornelius, Remcor or Wilshire product, in your country, please write, fax or telephone the IMI Cornelius office nearest you. Please provide the equipment model number, serial number and the date of purchase.

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