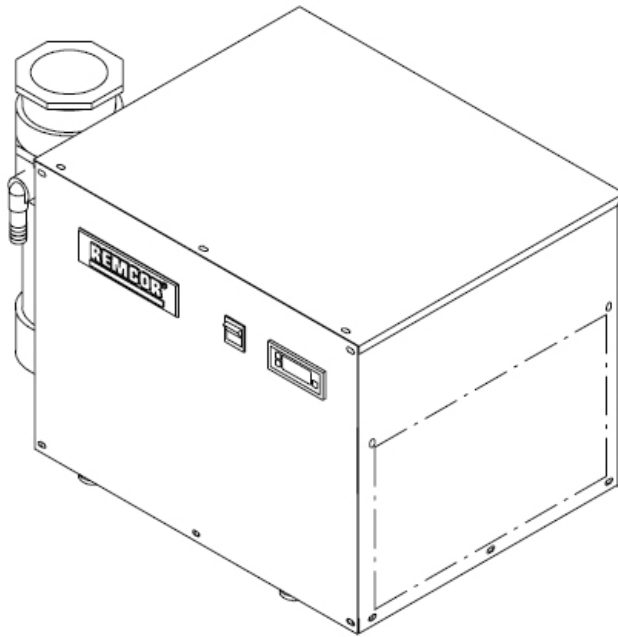




CHILLERS

MODELS: CH250 AND CH251

Operator's & Installation Manual



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CH SERIES CHILLER OPERATOR'S & INSTALLATION MANUAL

The products, technical information and instructions contained in this manual are subject to change without notice. These instructions are not intended to cover all details or variations of the equipment, nor to provide for every possible contingency in the installation, operation or maintenance of this equipment. This manual assumes that the person(s) working on the equipment have been trained and are skilled in working with electrical, plumbing, pneumatic and mechanical equipment. It is assumed that appropriate safety precautions are taken and that all local safety and construction requirements are being met, in addition to the information contained in this manual.

To inquire about current revisions of this and other documentation or for assistance with any Cornelius product contact:

www.cornelius.com

1-800-551-4423

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GENERAL INFORMATION

INTRODUCTION

The Cornelius "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

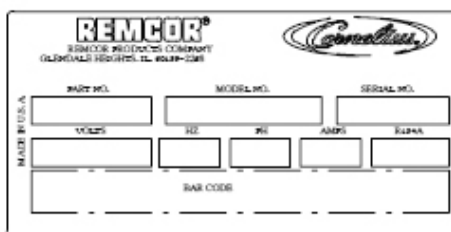
This unit was thoroughly inspected before leaving the factory and the carrier has accepted and signed for it. Any damage or irregularities should be noted at the time of delivery and immediately reported to the carrier. Request a written inspection report from the Claims Inspector to substantiate any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

DESIGN DATA


The voltage and the frequency are indicated on the serial number plate, located behind the drip tray and on the right hand side near the controls.

	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: Voltage/Phase/Hertz/Amperage	115/1/60 7.5 Amps	230/1/60 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 34 cm)	17.125" X 14.125" X 13.375" (43.5 cm X 35.9 cm X 34 cm)
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
 REFRIGERATION PRODUCTS COMPANY
 (GENERALI REGISTRO IL. 10489-2008)



PART NO. MODEL NO. SERIAL NO.

MADE IN U.S.A. VOLTS HZ PH AMPS KWH/yr

BAR CODE

Figure 1. Sample Data Plate

When servicing a Cornelius 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.

NOTE: 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

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. Refer to Figure 2 for the CH250 model and Figure 3 for the CH251 model.

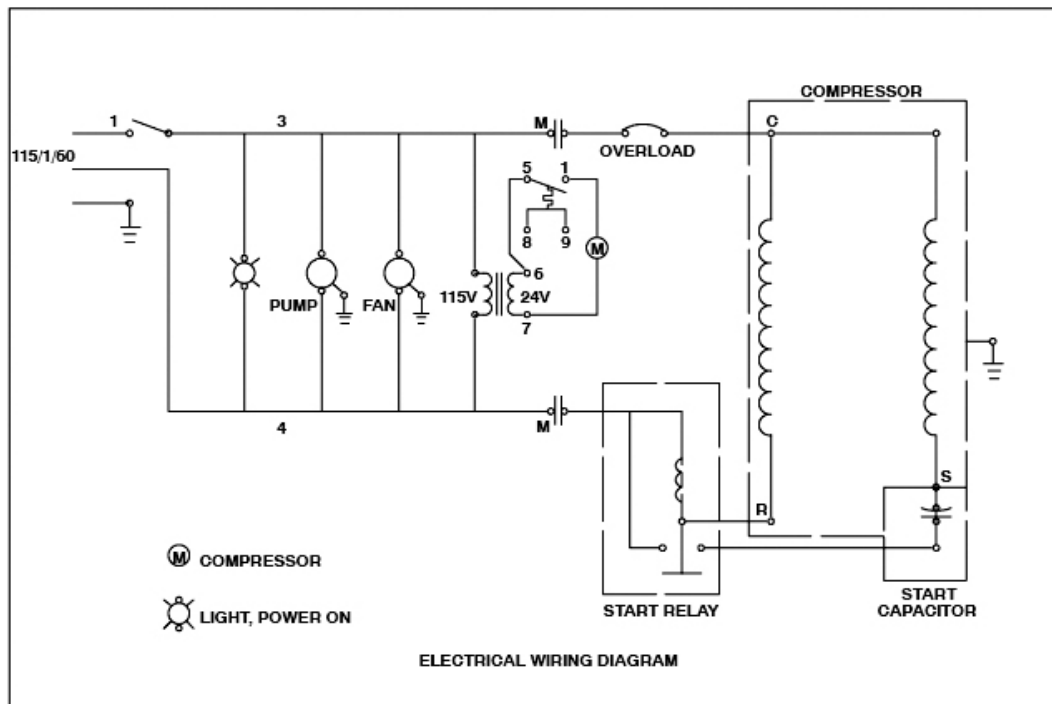


Figure 2. Wiring Diagram (115V)

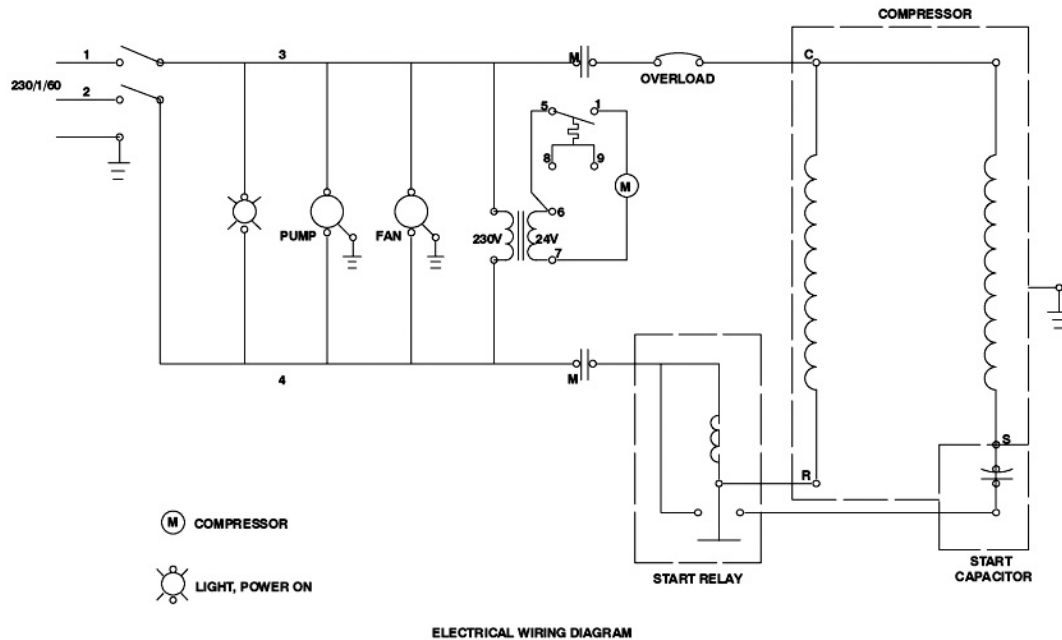


Figure 3. Wiring Diagram (230V)

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 and Pump and Tank (Standard)

Follow standard plumbing practices and local codes in making water connections. The chiller inlet and outlet connections are 1/2". 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.

STANDARD THERMOSTAT ELIWELL IC902

The following procedure should be followed to adjust the Eliwell IC902 thermostat temperature setting:

1. To set the **SET POINT**, press and release the **SET** button. **SET** displays.
2. Press the **SET** button again, the current **SET POINT** is displayed. Press the **UP** or **DOWN** button to change the **SET POINT** to the desired temperature.
3. Press the **fn** button twice to exit the program. The current liquid temperature is displayed.

The thermostat has a range that is 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 Cornelius Technical Service Department.

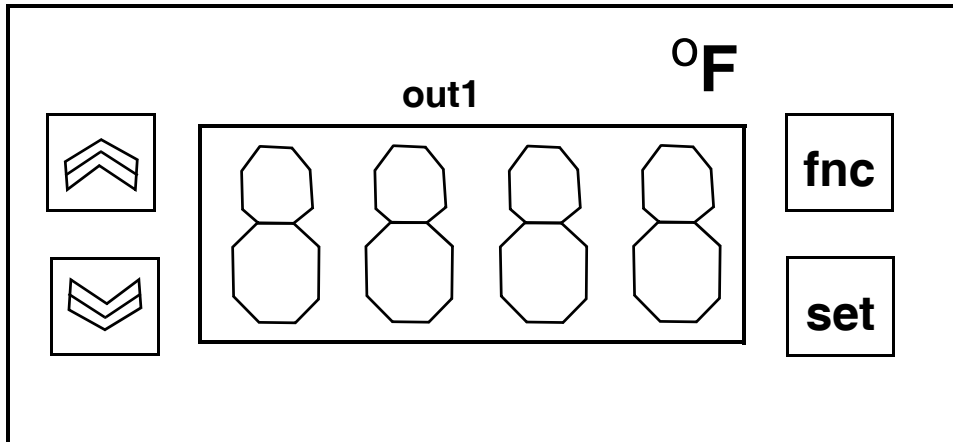


Figure 4. Control Panel

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.

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.



FLUID RECOMMENDATIONS

Cornelius chillers are designed to operate with water to provide maximum performance for temperatures of 40° F (4.4° C) to 100° F (37.8° C).

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 (Commercial/Automotive Antifreeze)	NOT Acceptable (Silicate Rust Inhibitors in Automotive/Commercial anti-freeze damages pump seals and housing which lead to failure.)
Acidic/Basic Solutions (Above 8 or below 6 PH)	Not Acceptable
Mineral/Hydraulic Oils (Viscosity > 50 Centistrokes)	Not Acceptable

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

To purchase Lab or Industrial Glycol contact:

IMI Cornelius, 1-800-551-4423 - Part No. 111521000, 5 Gal.

TROUBLESHOOTING



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.

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

Trouble	Problem Cause	Remedy
Chiller does not operate, Power Light "OFF"	<ul style="list-style-type: none"> A. No Power to unit B. Defective Control Power Switch C. Defective Control Transformer D. Wrong Voltage supplied to Unit 	<ul style="list-style-type: none"> A. Check main disconnect fuses, wiring and power lead to unit. B. Replace Switch C. Replace Transformer D. Supplied Voltage MUST be within +/- 10% of nameplate rating
Pump does not Operate but Power Light is "ON"	<ul style="list-style-type: none"> A. Line to or from chiller is restricted. B. Internal or external filter is blocked with debris. C. Pump contactor is defective D. Damaged pump motor or impeller. 	<ul style="list-style-type: none"> A. Inspect lines and remove any obstructions. B. Remove and clean strainer, then replace. C. Replace contactor D. Replace pump motor or impeller.
Unit runs continuously, but is not cooling process water enough.	<ul style="list-style-type: none"> A. Condenser is restricted. B. Unit low on refrigerant. C. Inefficient compressor. D. Unit is undersized for application. 	<ul style="list-style-type: none"> A. Clean condenser. B. Call Service. C. Call Service. D. Call Cornelius Chiller Sales Rep.
<p>NOTE: When servicing a Cornelius chiller, it is important to note all information provided on the DATA PLATE located on the upper rear of the unit. If technical assistance is needed, the Cornelius Service Technician will need this information along with any description of the problem(s) you are encountering. The serial no. and other information will also be required when ordering replacement parts and any other Warranty Claims.</p>		

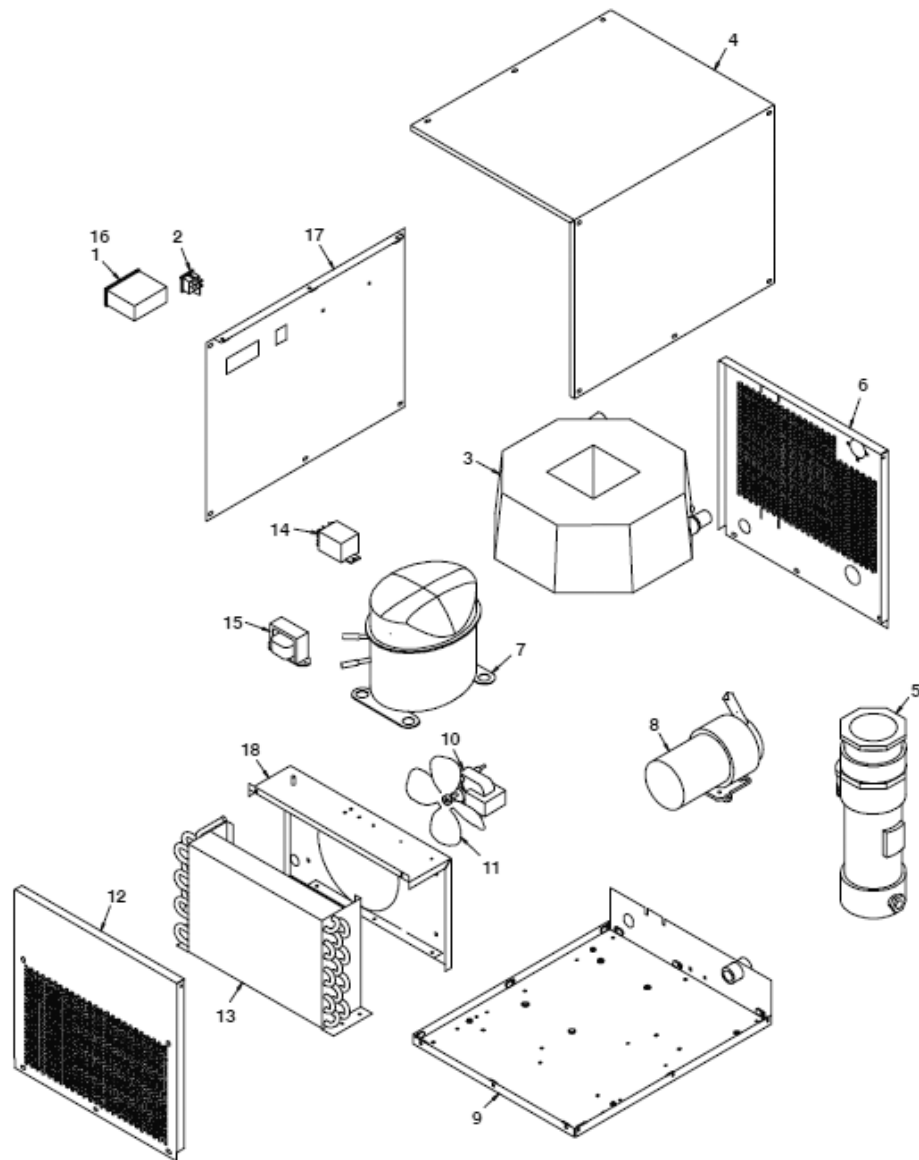


Figure 5. Cabinet Section Exploded View

Table 1. 115V Chiller

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

Table 1. 115V Chiller

Item No.	Part No.	Description
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

Table 2. 230V Chiller

Item No.	Part No.	Description
1	32386	Temperature Controller
2	31935	Power Switch
3	61014	Evaporator
4	620023502	Wrapper Panel
5	51882	Priming Reservoir Assy
6	24388	Panel, Left Side
7	18361	Compressor
8	30730	Pump
9	24390R	Base Assy
10	31487	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 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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