

MUELLER®
CHILLER CONTROL
MODEL 100

INSTRUCTIONS FOR
INSTALLATION • OPERATION

PART NO. 9843131

EFFECTIVE AUGUST 1, 2000

MUELLER®

REFRIGERATION PRODUCTS

**CONTROL CONTROL
MODEL 100
INSTRUCTIONS FOR INSTALLATION AND OPERATION**

Table of Contents

Section 1.0 – Chiller Control Introduction

1.1	Introduction	1
	Figure 1—Mueller Model 100 Chiller Control	1
1.2	Description of Equipment	1
1.3	Electrical Components	1

Section 2.0 – Installation

2.1	Inspection	2
2.2	Safety	2
2.3	Chiller Control Installation	2

Section 3.0 – Programming and Troubleshooting

3.1	Power On Sequence of Operation	3
3.2	Error Messages	3
3.3	Programming Temperature Controller	3
	Figure 2—Temperature Control	4
	Table 1—Temperature Control Set Point	5
3.4	Temperature Control Unit of Measure (Fahrenheit or Celsius)	6

Section 4.0 – Diagrams

4.1	Wiring Diagram (Part No. 9843132)	7
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Section 5.0 – Parts Illustration

5.1	Chiller Control Parts List	8
	Figure 3—Chiller Control	8

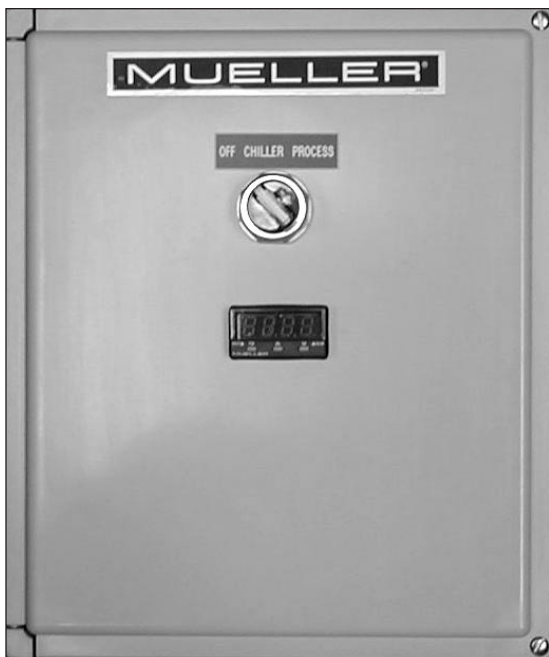
Section 6.0 – Warranty	9
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SECTION 1.0 - INTRODUCTION

1.1 Introduction

The Mueller® Model 100 chiller control is designed to control the chiller water temperature, along with up to two 3-hp circulation pumps. This manual provides the basic information necessary to install, start-up, and operate the chiller control. The information supplied in this manual must be followed to prevent damage to the equipment.

Figure 1 - Mueller Model 100 Chiller Control



1.2 Description of the Equipment

The Mueller Model 100 chiller control is designed to control chiller water temperature. The chiller control requires 230/60/1 electrical input. Outputs to control temperature are 24-volt—to operate a refrigeration unit, a chiller circulation pump, process circulation pump, and optional water level control and fill solenoid valve.

1.3 Electrical Components

1. All wiring must be performed in compliance with the National Electric Code (NEC) and local codes.
2. The control box contains fuses for system protection. The fuses are sized for 3 hp circulation pumps. The fuses must be replaced if the pumps are other than 3 hp. Fuse failure requires troubleshooting to determine the cause of failure and replacement with the same fuses.
3. The electronic temperature control can be set for temperature control of chilled water and temperature display in Fahrenheit or Celsius. Programming is described in Section 3.0.

SECTION 2.0 - INSTALLATION

2.1 Inspection

Because it is possible for equipment to be damaged during shipment, we recommend that you make a thorough inspection of all equipment as soon as it is received. Carefully inspect equipment for hidden damage.

2.2 Safety

A qualified electrician in accordance with local and NEC regulations must perform all electrical connections.

2.3 Chiller Control Installation

1. The chiller control should be wall mounted in a location close to the chiller and circulation pump(s), free from direct water contact, and accessible for operation and service.
2. Connect all field wiring in accordance with the wiring diagram in Section 4.1.
3. Circulation pump fuses are included with the chiller control. The fuses are sized for 3 hp circulation pumps and should be changed if pumps other than 3 hp are used.
4. A Type T thermocouple is provided for the temperature sensor and is 20 feet in length. It is important that the thermocouple wires are properly connected to the temperature control. The constantan (silver) wire is to be connected to terminal 10 on the temperature control. The copper wire is to be connected to terminal 11 on the temperature control. If a longer thermocouple is needed contact the factory for specifications.

SECTION 3.0 – PROGRAMMING AND TROUBLESHOOTING

3.1 Power On Sequence of Operation

1. When the selector switch is in the “OFF” (left) position:
 - a. Power is supplied to the temperature controller and a temperature is displayed. Set points may be changed any time power is supplied to the temperature controller. **The temperature displayed may not be a true reading of tank temperature if the circulation pump is not running.**
 - b. All other functions of the chiller control are disabled.
2. When the selector switch is in the “ON” (center) position:
 - a. Power is supplied to the temperature controller and a temperature is displayed. Set points may be changed any time power is supplied to the temperature controller. **The temperature displayed may not be a true reading of tank temperature if the circulation pump is not running.**
 - b. The chiller circulation pump is on. Make sure the system has adequate solution to prevent the pump from running dry.
 - c. The temperature controller can turn the condensing unit on if the solution temperature is above the set point.
3. When the selector switch is in the “chiller loop/process pump” (right) position:
 - a. All of the functions of the chiller loop remain (see No. 2, above).
 - b. The process pump is on.

3.2 Error Messages

A display reading of “SbEr” is a designation of a disconnected or broken temperature sensor wire. Should this occur, service is required to correct the problem.

3.3 Programming Temperature Controller

The temperature control comes factory programmed with the keypad adjustment locked out.



1. Temperature Control Calibration Accuracy:




Once the installation wiring is completed for the chiller control box, check the calibration accuracy of the temperature control as outlined below:

- a. Allow the product temperature to stabilize for a minimum of 15 minutes.
- b. Using an accurate electronic thermometer, determine the actual temperature of the water or milk in the chiller tank.
- c. If the known product temperature does not correspond with the temperature display, the temperature control will require an input program correction.

2. Temperature Control Lock and Unlock Features:

The temperature control is equipped with a locking feature to prevent unauthorized adjustments to the calibration, temperature set points, and unit of measure.

Unlock—To unlock the temperature control for adjustment, press and hold the  and  keys (see Figure 2) simultaneously for two seconds. When released the display will blink once indicating a successful unlock, otherwise repeat the process.


Lock—To lock the temperature control, press and hold the  and  keys simultaneously for 4 seconds. When released the display will blink once indicating a successful lock, otherwise repeat the process. To validate a locked condition, press the  key once, when released the display will momentarily display “Lock.”

Note: The temperature control should be locked during normal operating conditions to prevent unauthorized or accidental setting alterations.













Figure 2 - Temperature Control



3. Temperature Control Calibration:

1. Unlock the temperature control as instructed in No. 2 above.
2. Press and hold the  key until the display stops blinking, then release.
3. The display will show “SHIF” alternating with the current calibration setting.

NOTE: If display reverts to temperature, repeat step 2.

4. Press and release either the  or  key, the display will show 3 digits and 1 decimal (000.0).
5. Press and release either the  or  key to cycle to the decimal point or digit you wish to change. The selected digit will be highlighted. Example (000.0)
6. Adjust the temperature calibration offset for the digit selected in step 5, by pressing and holding the  key to increase, or the  key to decrease. Example: (001.0)
7. Note: For a negative calibration offset, select the first digit (X00.0) then press and hold the key until “-” negative is displayed (-00.0). If “-100.0” is displayed, press the  key until “-00.0” is displayed. Example: (-01.0)
8. Press the  key once to enter the change.
9. Press the  key a second time to return to the temperature display.
10. Lock the temperature control by pressing and holding the  and  keys simultaneously for 4 seconds. When released the display will blink once indicating a successful lock, otherwise repeat the process. To validate a locked condition, press the  key once, when released the display will momentarily display “Lock.”

Example:

If the known product temperature was 37°F and the temperature control displayed 39°F, a correction factor of -2°F would be required for calibration.

Starting at step 5 of the preceding instructions, you would perform the following procedure:

1. Press and release the \uparrow or \downarrow key to cycle to the second digit (000.0)
2. Press and hold the \uparrow key until “2” (002.0) is displayed.
3. Press and release either the \uparrow or \downarrow key to cycle to the first digit (002.0).
4. Press and hold the \downarrow key until “-” negative is displayed (-02.0).
5. Press the \leftarrow key once to enter the change.
6. Press the \leftarrow key a second time to return to the temperature display.
7. Lock the temperature control by pressing and holding the \leftarrow and \uparrow keys simultaneously for 4 seconds. When released the display will blink once indicating a successful lock, otherwise repeat the process.

4. Temperature Control Set Point Adjustment:





- a. The temperature control is factory programmed at 38°F (3.3°C) with a 1°F differential on rise and fall of temperature. This setting turns the refrigeration off at 37°F (2.8°C) and on at 39°F (3.9°C).
- b. The High and Low-Temperature Alarms are activated at 3°F above and 3°F below the programmed temperature set point.

Table 2 - Temperature Control Set Point











Programmed Set Point	Refrigeration ON	Refrigeration OFF	High-Temp Alarm	Low-Temp Alarm
36°F (2.3°C)	37°F (2.9°C)	35°F (1.7°C)	39°F (3.9°C)	33°F (0.7°C)
37°F (2.8°C)	38°F (3.4°C)	36°F (2.2°C)	40°F (4.4°C)	34°F (1.2°C)
38°F (3.3°C) ¹	39°F (3.9°C) ¹	37°F (2.7°C) ¹	41°F (4.9°C) ¹	35°F (1.7°C) ¹
39°F (3.8°C)	40°F (4.4°C)	38°F (3.2°C)	42°F (5.4°C)	36°F (2.2°C)

¹Factory setting.

- c. To change the factory settings:
 1. Unlock the temperature control as instructed in Section 3, No. 2.
 2. Press either the \uparrow or \downarrow key once to display the current temperature set point.
 3. Press and release either the \uparrow or \downarrow key to select the digit to be changed.
 4. Adjust the temperature set point for the digit selected in step c, by pressing and holding the \uparrow key to increase, or the \downarrow key to decrease.

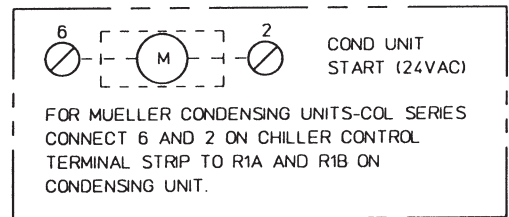
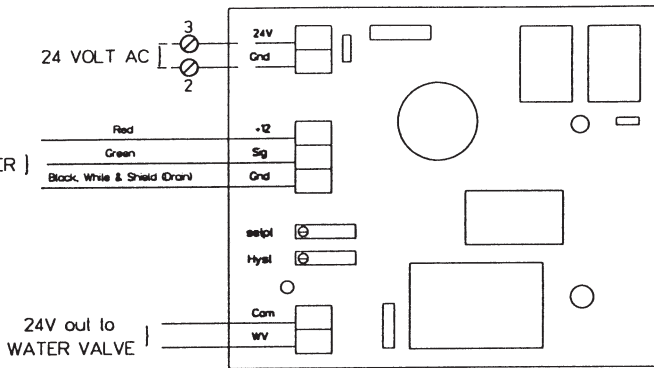
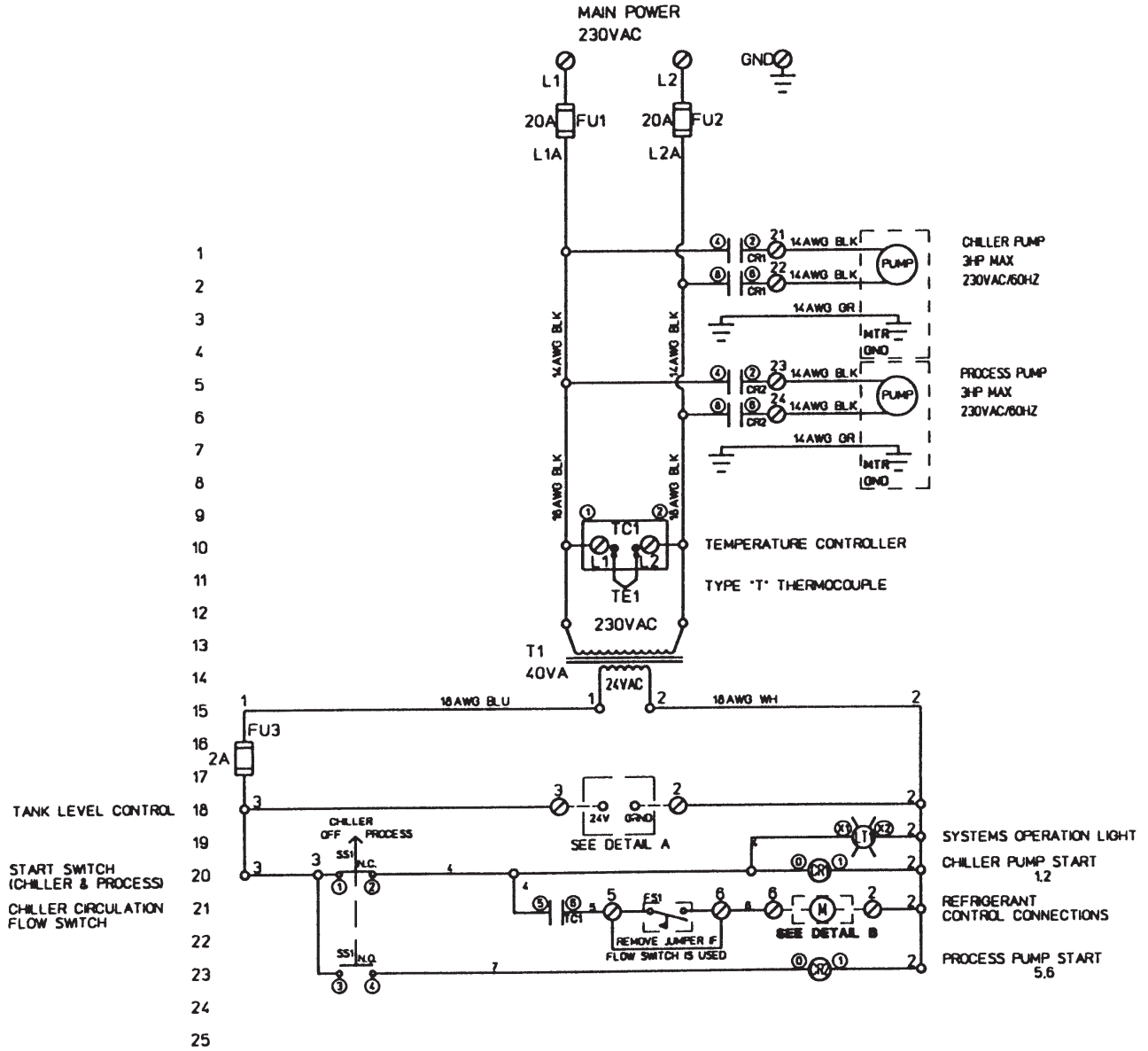
5. Press and hold the  key until the display stops blinking, then release to enter the change.
6. Press and release the  key twice to return to the temperature display.
7. Lock the temperature control by pressing and holding the  and  keys simultaneously for 4 seconds. The display will blink once when the keys are released, informing you that the control was successfully locked. See Section 3, No. 2.

3.4 Temperature Control Unit of Measure (Fahrenheit or Celsius):

1. Unlock the temperature control as instructed in Section 3, No. 2.
2. Press and hold the  key until the display stops flashing.
3. When the  key is released “SHIF” will be displayed.
4. Press and release the  key until “UNIT” is displayed.
5. Press and hold the  to select °F or the  key to select °C.
6. Press and hold the  key until the display stops blinking, when released the temperature will be displayed.
7. Press and release the  and  keys simultaneously and the temperature will be displayed.
7. Lock the temperature control by pressing and holding the  and  keys simultaneously for 4 seconds. The display will blink once when the keys are released, informing you that the control was successfully locked. See Section 3.3.

SECTION 4.0 - DIAGRAMS

4.1 Wiring Diagram (Part No. 9843132)

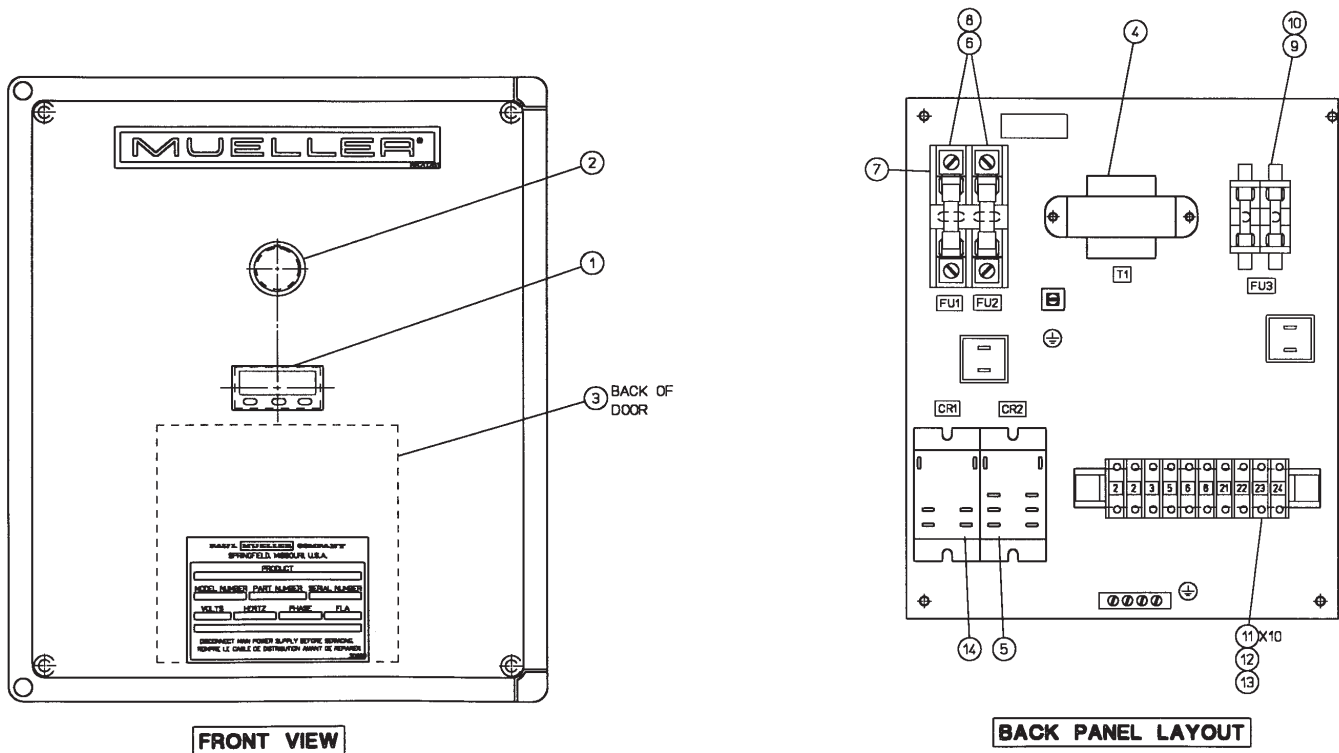


SECTION 5.0 - PARTS ILLUSTRATION

5.1 Chiller Control Parts List

Item Number	Number Required	Part Number	Description
	1	9843123	CONTROL BOX ASSEMBLY, FALLING FILM CHILLER, MODEL 100
1	1	9843166	CONTROLLER, TEMPERATURE
2	1	9842325	SWITCH, SELECTOR, 3-POSITION
3	1	9843132	DIAGRAM, WIRING, FALLING FILM CHILLER CONTROL BOX
4	1	8820718	TRANSFORMER, 208-240DV
5	1	9842306	RELAY SWITCH, DPDT
6	2	9820091	FUSE BLOCK, 30 AMP, CLASS
7	1	505793	BARRIER, ELEC END FUSE
8	2	9820133	FUSE CARTRIDGE, 20 AMP, 600V
9	0.2	8820703	FUSE BLOCK, 30 AMP, 300V
10	1	8806523	FUSE CARTRIDGE, 2 AMP, 250V
11	10	8805635	TERMINAL BLOCK, A-B
12	1	8805636	BARRIER, ELEC END
13	2	8805226	CLIP, RETAINER
14	2	8820240	RELAY SWITCH, DPST
15	1	8820165	THERMOCOUPLE SENSOR, TYPE "T"

Figure 3 - Chiller Control



SECTION 6.0 - WARRANTY

WARRANTY

Mueller® Model 100 Chiller Control

One Year Parts Warranty

The Paul Mueller Company (*hereafter referred to as Company*) will repair or (at the *Company's* option) replace any part or portion of a Mueller Chiller Control found to be defective in workmanship or material under normal use, service, and installation procedures, for a period of one (1) year from the date of installation by the original purchaser-user, or eighteen (18) months from the date of shipment from the *Company* factory, whichever occurs first. This warranty covers replacement of parts or repair of the equipment only. (See General Provisions).

Claim Procedures for One Year Parts Warranty

All defective parts covered by the one year parts warranty, must be returned to the *Company* with an attached Returned Goods Tag (#O-209) and with transportation cost prepaid. Current instructions for return procedures, provided by the Refrigeration Products Department, must be followed to receive warranty.

General Provisions

Transportation and inspection cost incurred by the *Company* will be charged to the purchaser/user if returned material is not found to be defective. This warranty does not cover items such as mileage, product loss, cost of substitute storage facilities, parts and labor charged by others, or consumable items such as rubber goods, glass, etc. The above will constitute the *Company's* total responsibility. The above Warranties will not apply in the event of abuse, misuse, negligence, improper installation procedures alterations by unauthorized service, damage by flood, fire, windstorm, lightning, or acts of God. Oral statements made by employees' or representatives' of the *Company* will not constitute warranties. The above Warranties apply only to the original purchaser-user and original installation location and are not transferable.

This warranty is effective on Mueller Chiller Controls purchased within the continental United States and Canada. Contact the Mueller International Sales Department for warranty provisions and policies outside of the continental United States and Canada.



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