

USERGUIDE

# Thermolator

## Oil Temperature Controller

### Start-Up Guide

**microTrac 3 Control**  
**microTrac 1 Control**



**WARNING - Reliance on this Manual Could Result in Severe Bodily Injury or Death!**

This manual is out-of-date and is provided only for its technical information, data and capacities. Portions of this manual detailing procedures or precautions in the operation, inspection, maintenance and repair of the product forming the subject matter of this manual may be inadequate, inaccurate, and/or incomplete and cannot be used, followed, or relied upon. Contact Conair at [info@conairgroup.com](mailto:info@conairgroup.com) or 1-800-654-6661 for more current information, warnings, and materials about more recent product manuals containing warnings, information, precautions, and procedures that may be more adequate than those contained in this out-of-date manual.



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**When attempting maintenance of any kind on the Thermolator®, press the STOP (RES) button and disconnect the power supply and let the unit cool to less than 125°F before any other action is taken.**

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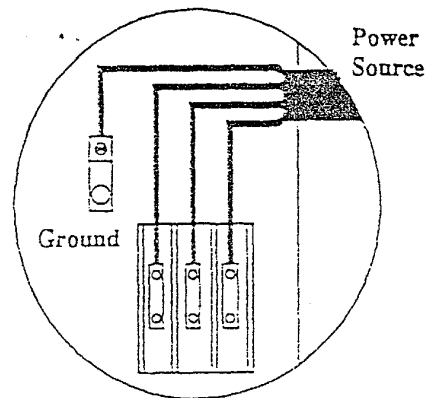
To change rotation direction;

Disconnect and lock out the power at the fused disconnect.

Open the electrical access panel, the door will fold open exposing the electrical components and mother board (MT3).

Reverse any two incoming leads at the power terminal block. Do not switch leads at the motor or motor starter.

Check your work, close the electrical access panel, reconnect the power supply, and proceed to start the unit.



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**Note:**

Cooling on a Thermolator® Oil Temperature Control Unit is optional.

TC-400 Oil Temperature controllers are designed to operate from 70°F to 400°F. TC-500 Oil Temperature Control Units are designed to operate from 70°F to 500°F. TC-500s require 2GPM of 85°F pump seal cooling water.

Conair Temprow tests with, and recommends the use of *Paratherm NF Heat Transfer Fluid* in their Thermolator® Oil Temperature Controllers. If an alternate heat transfer fluid is used, all of the manufacturer's recommendations for flushing the piping system of the Thermolator® must be followed to prevent failure of the equipment.

The Thermolators® physical dimensions are 33" deep, 15" wide, and 43" tall. The piping protruding from the back of the unit must be considered when locating the unit. In addition, 6" around the sides, and a minimum of 12" of top clearance should be allowed in order to dissipate heat.

Only the TC-500 Thermolator® Oil Temperature Controllers have an absolute minimum requirement of 2 GPM @ 85°F of cooling water for the pump seal cooling. For those TC-400 or TC-500 Thermolators® that were purchased with a heat exchanger option, a minimum of 25 PSI and a maximum 85 PSI must be supplied to the unit to achieve proper cooling. Cooling water lines must be run full size to the unit in order to reduce line pressure drops.



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TC-500s must have seal cooling water flowing whenever the process temperature is above 150°F, including when the unit is shut down. Failure to do so will damage the seal immediately.

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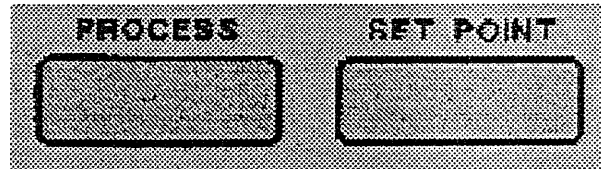
## microTrac 1 Control Panel

The microTrac 1 control panel has 3 function areas; Display Screens, Action L.E.D.s, and Control Buttons.

### Display Screens

The **Process Display** continuously displays the process oil temperature of the Thermolator®.

The **Set Point Display** shows the oil temperature SET POINT selected by the operator.



### Action L.E.D.s

There are 2 categories of L.E.D.s; Action Monitoring, and Warning.

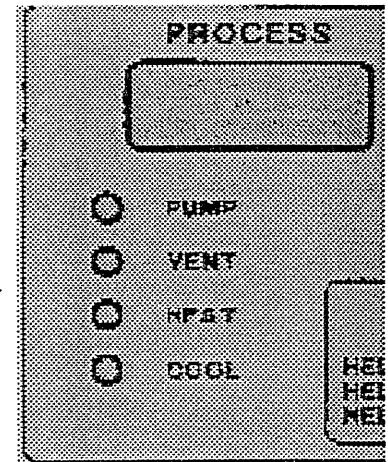
#### Action Monitoring

**Pump** - Indicates the pump is working.

**Vent** - Indicates that the Thermolator® vent sequence is activated.

**Heat** - Indicates the heater has been turned ON by the controller.

**Cool** - indicates the cooling solenoid, for units equipped with a water cooling heat exchanger, has been opened by the controller.



#### Warning L.E.D.s

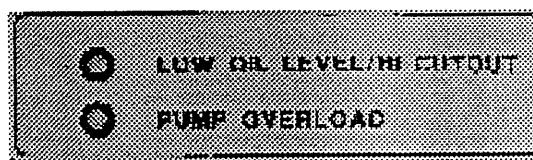
**Low Oil Level** - Indicates that the process oil level is low.

*Check oil level in tank.*

*Check oil lines and process machinery for oil leaks.*

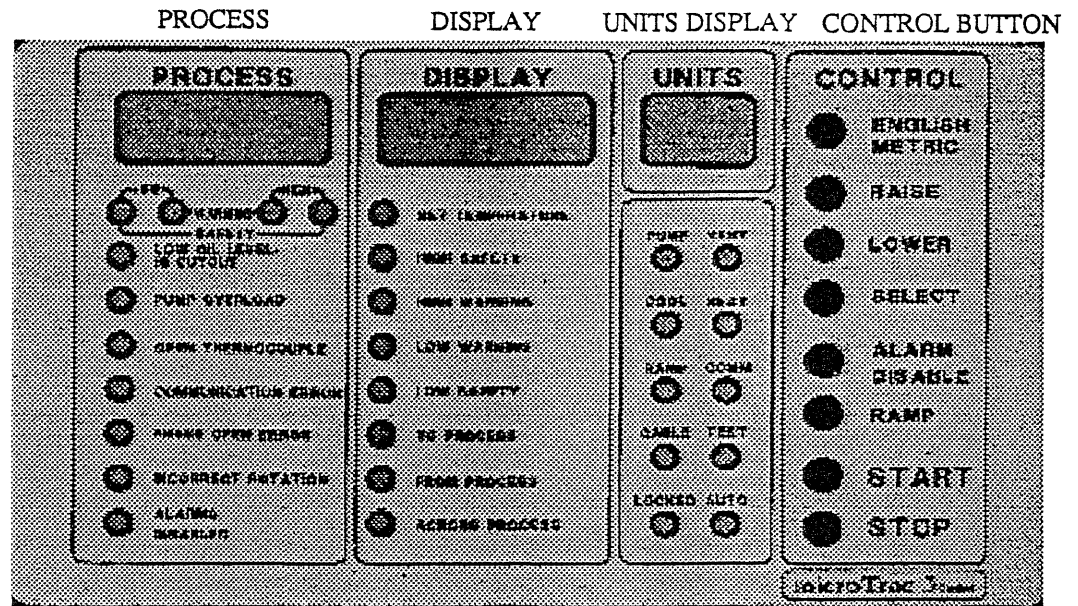
**Pump Overload** - Indicates that current drawn by any of the three power source lines (phases) exceeds factory specifications.

*Inspect pump for jamming or obstruction of impeller.*



# microTrac 3 Control Panel

The microTrac 3 Control Panel consists of five areas that provide process information and control.



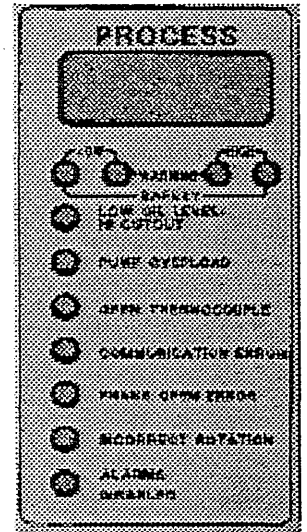
ACTION L.E.D.

## Process Area

The Process area contains, a display screen, and eleven L.E.D.s which indicate trouble conditions.

The Process display screen shows the process oil temperature.

The eleven L.E.D. indicators in this area are used to indicate any alarm condition that may occur. Most of these indicators are covered in the Trouble Shoot chapter of this manual.



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## microTrac 3 Control Panel



### Heat

The Heat L.E.D. will light indicating the heater has been turned on by the controller.



### Ramp

The Ramp L.E.D. will light when the control is raising or lowering the process temperature to the Set Point.



### Comm

The Comm L.E.D. will flash on indicating that communication with a host machine has been enabled. When the host machine makes a change to the microTrac 3 control parameters, the Comm L.E.D. will flash off. The display L.E.D. for any parameter that has been changed through communication will also flash when selected.



### Cable

The Cable L.E.D. will light indicating the control panel cable that links the control panel to the mother board is improperly connected, or is not a proper cable type.



### Test

The Test L.E.D. will light indicating the unit is in the diagnostic test mode. The process display screen will also show "SEL" and the display screen will indicate the number of the specific test about to be performed. For more on diagnostic testing, see Chapter 8, System Test. The Test L.E.D. must be off for proper operation to occur.



### Locked

The Locked L.E.D. will light when the locking key has been enabled. The Control Panel Locking Key is a user option as well as a factory installed option. For more on the locking key option, see Chapter 5, Basic Operations & Extra Features.



### Auto

The Auto L.E.D. will flash when the autostart capability is enabled. The L.E.D. will remain flashing when the unit is started or stopped by the autostart option. For more on the autostart option, see Chapter 5, Basic Operations & Extra Features.

# microTrac 3 Control Panel



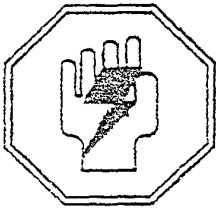
## Ramp (White)

At anytime the Thermolator® Oil Temperature controller is operating in a mode where it is gaining or losing temperature the RAMP function may be activated. This function allows the operator to establish a set rate at which the unit will heat or cool the process. This is done by setting into the MT-3 control a value of time, in seconds, that the controller must allow to time out before it can raise or lower the process temperature 1° F.

The default value for the RAMP function is 300 seconds or five minutes per 1° F. This means that if the unit is in a heating mode, every five minutes, (300 seconds), the MT-3 control will raise the temperature 1° F.

When the RAMP button is pressed the control will ramp the process to the temperature set point.

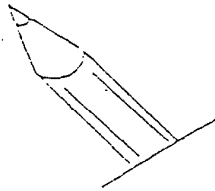
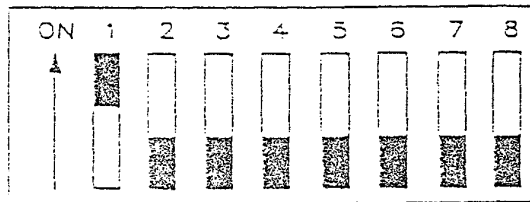
To change the RAMP time value;



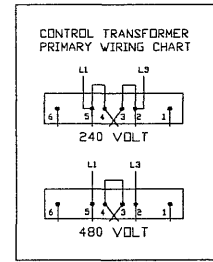
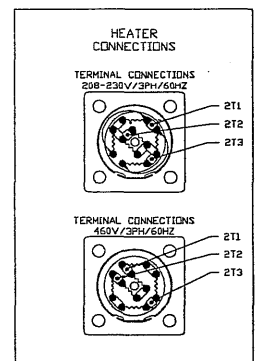
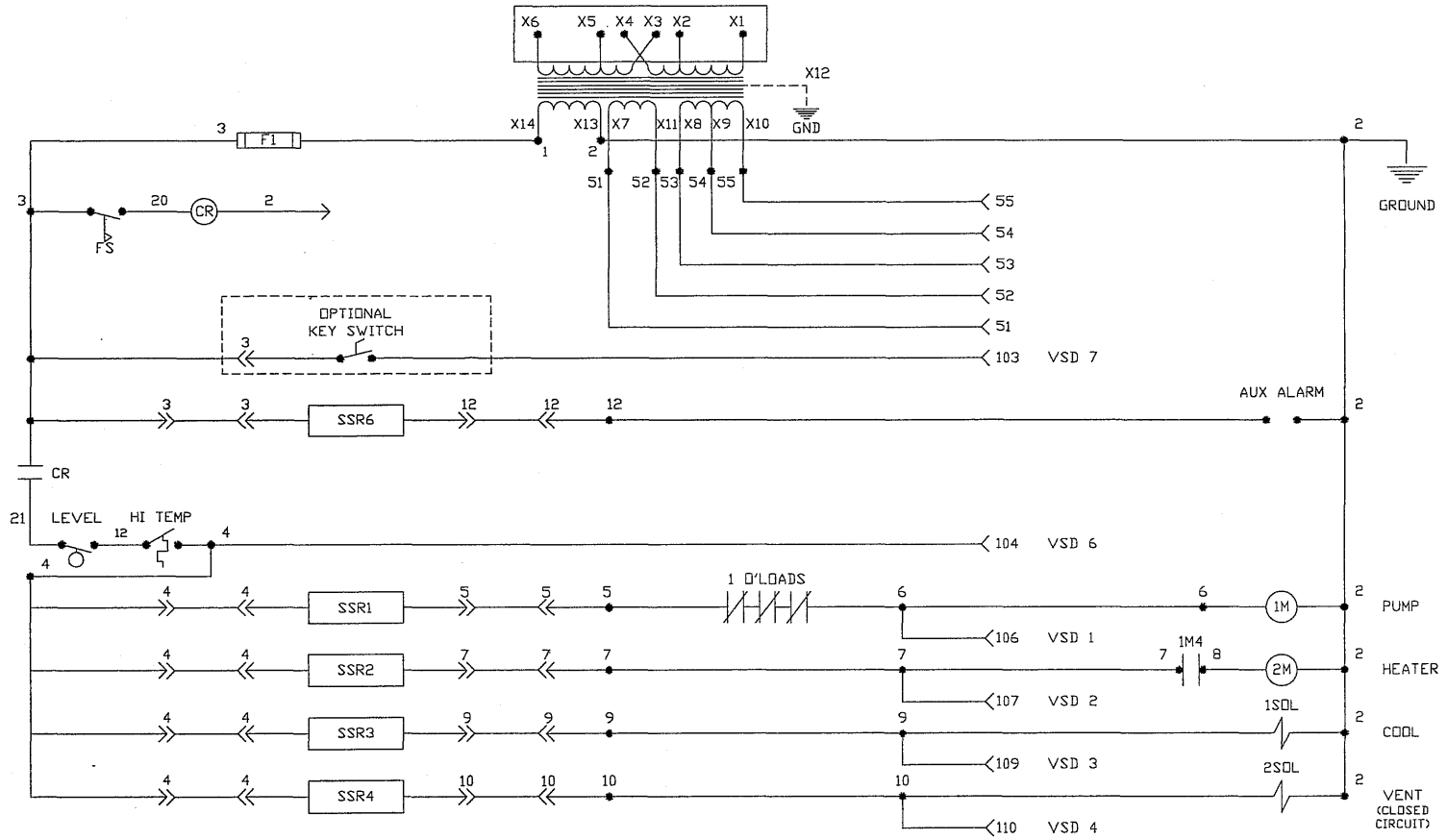
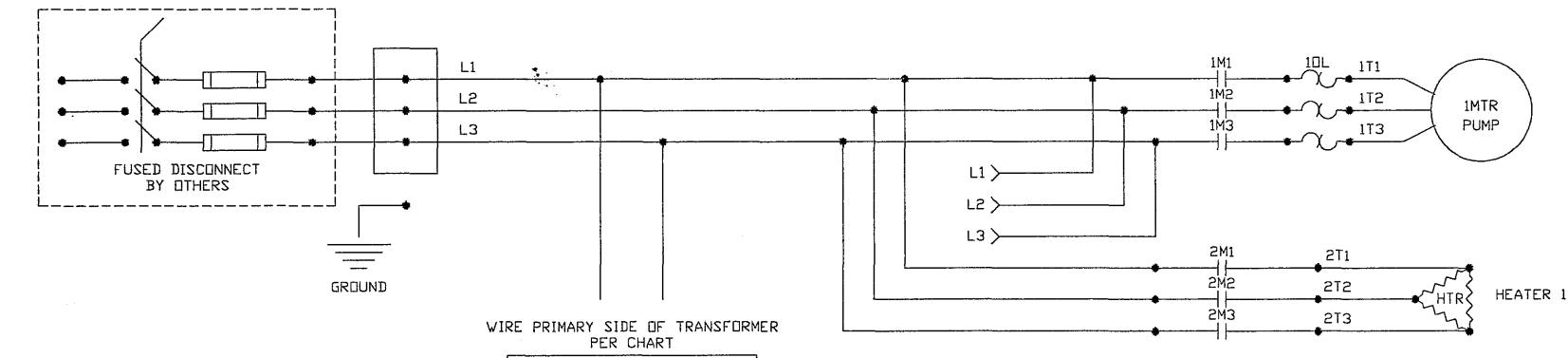
When attempting maintenance of any kind on the Thermolator®, press the Stop (Red) button and then disconnect the power supply and let the unit cool to less than 125° F before any other action is taken.

Open the electrical access panel by turning the locking screws counter clockwise. The electrical access panel will fold down exposing the electrical components and mother board.

Using a ball point pen, switch configuration switch 1, labeled "System Test Mode", on the mother board to the "ON" position. "ON" will be indicated by an arrow on the switch block.



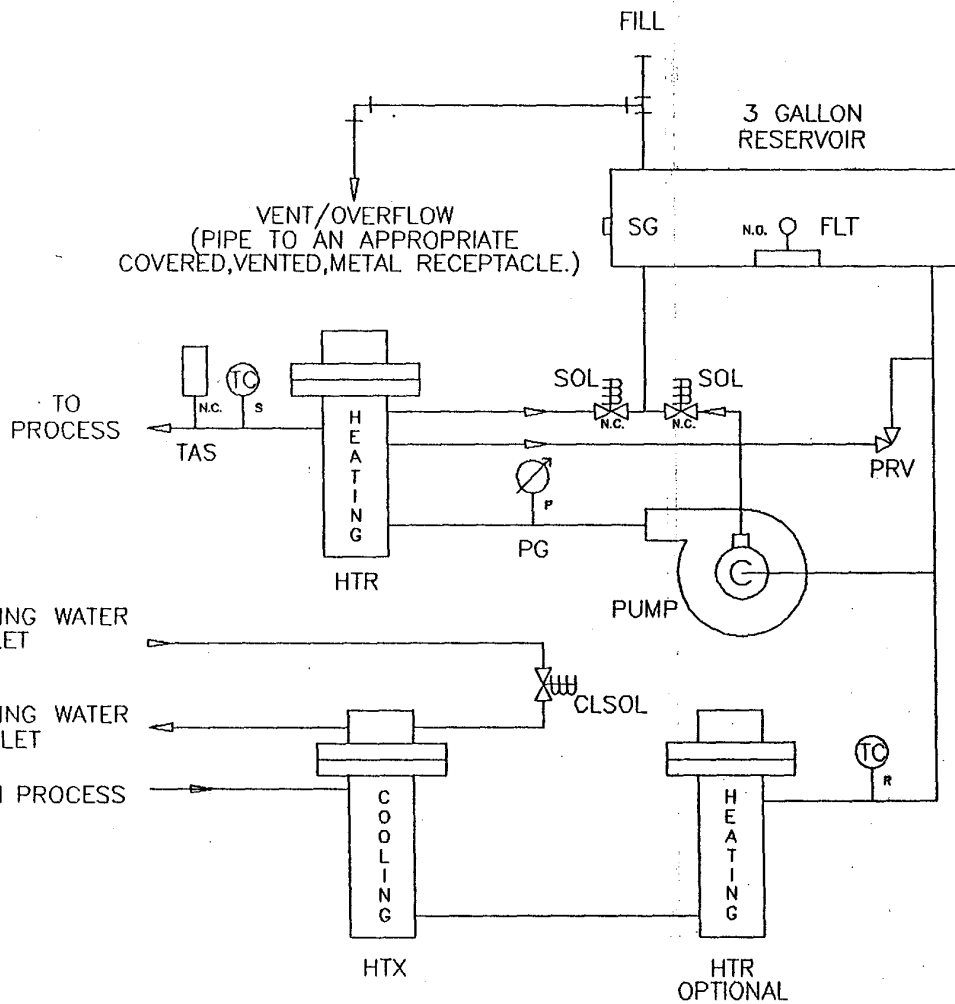
Close the electrical access panel.



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		<b>CONAIR TEMPO</b>		1175 DAVIS ROAD ELGIN, ILLINOIS USA 60120 (312) 888-8850	
C	ADD FLOW SWITCH	JP	5/95	230/460 VOLT WIRING SCHEMATIC	
B	CONVERT TO OIL SCHEMATIC	AJS	5/95	OIL TEMPERATURE CONTROL UNITS	
A	GENERAL FOR COMMERCIALIZATION	MAV	5/91	DRAWN BY: A.J.S.	APPROVED BY: DATE: 12/4/92 SCALE: NONE
574	REV				





SYMBOL	DESCRIPTION
PUMP	OIL PUMP- HTO-80 with seal cavity vent
HTR	OIL IMMERSION HEATER
SOL	SOLENOID VALVE, VENT
PRV	PRESSURE RELIEF VALVE
BV	SQUARE HEAD COCK VALVE
FLT	OIL FLOAT SWITCH
TAS	OVERTEMPERATURE SAFETY
TC s	T <sup>1</sup> CPL,(K)UNG,6",304SS P,W/6'LEAD
TC r	T <sup>1</sup> CPL,(K)UNG,6",304SS P,W/18'LEAD
SG	SIGHT GLASS,3/4,500 DEG
PG	PRESSURE GAUGE, 60 P.S.I.
* HTX	HEAT EXCHANGER, 4.3 SQ FT (OPTIONAL)
* CLSOL	SOLENOID VLV, COOLING (OPTIONAL)
	(OPTIONAL)

\* OPTIONAL ON ALL UNITS.

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Heatrac

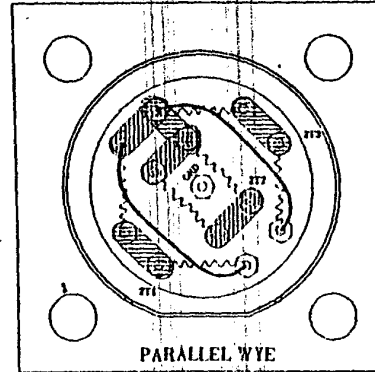
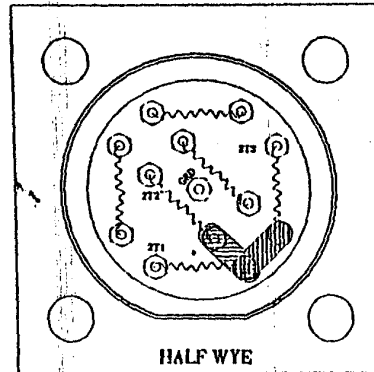
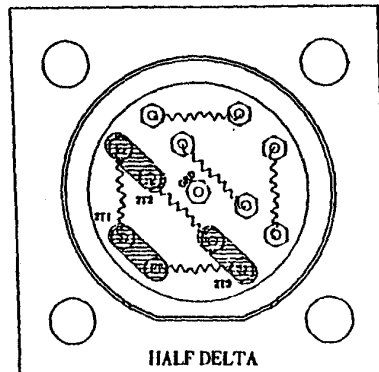
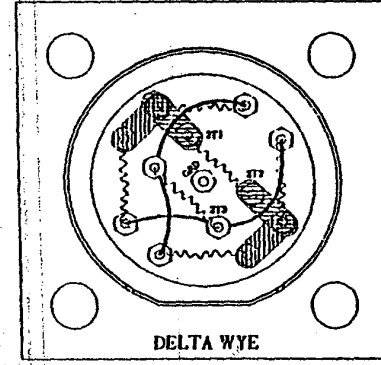
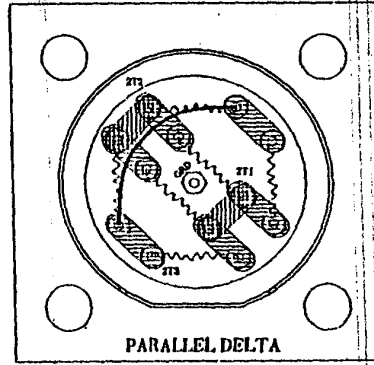
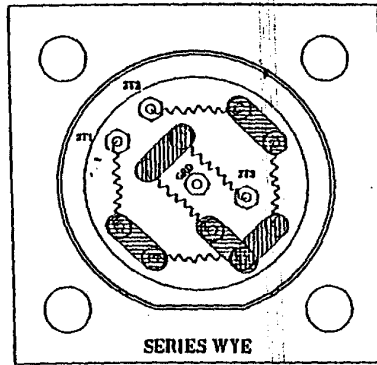
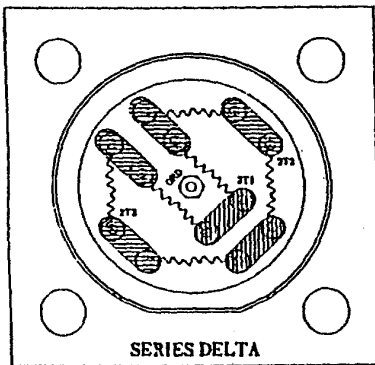
CUSTOMER NAME		<b>CONAIR™</b>	
CUSTOMER LOCATION			
PURCHASE ORDER: 000000-000		ONE CONAIR DRIVE, PITTSBURGH, PA 15202, (412)312-6000	
FLUID HEAT TRANSFER GROUP			
MODEL NUMBER	HEATRAC	DRWN BY:	WJS
VOLTAGE	480/3/60	DATE:	10/10/97
F.L. AMPS		SCALE:	none
		REVISION	A
A	ADAPTED FOR HTO-80	10/97	WJS
HEATER KW	6.12,18		
PUMP HP	1,2,3		
REV	DESCRIPTION	DATE	BY
			DWG. NO.
			09003066

AMP AND KILOWATT CAPACITY CHART FOR OIL WATER HEATERS WITH 6 ELEMENTS

 = THE HEATER'S RATED AMPS AND KILOWATTS

 = DO NOT WIRE HEATERS FOR THESE VALUES

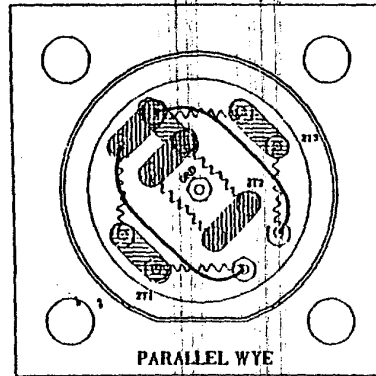
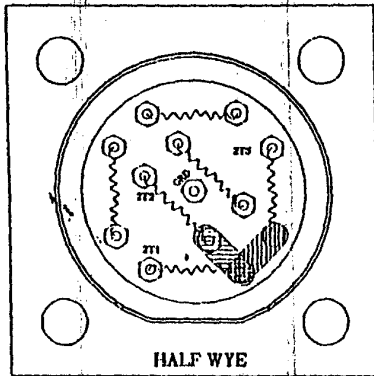
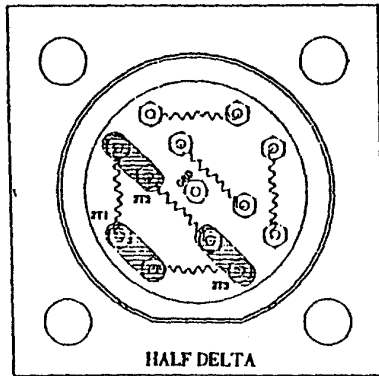
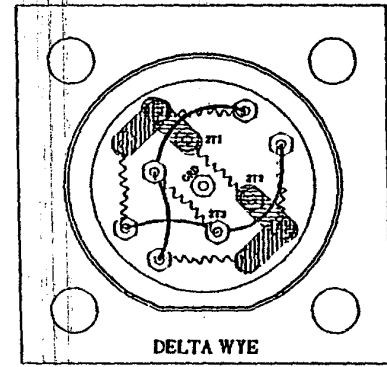
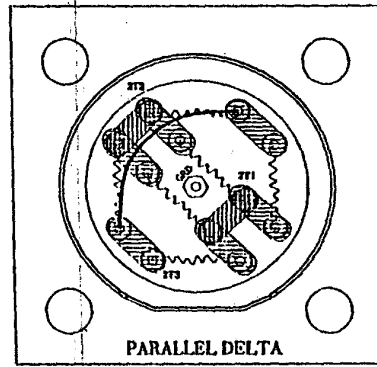
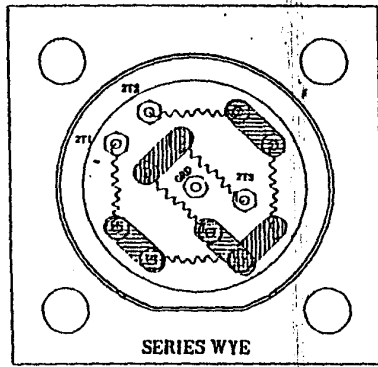
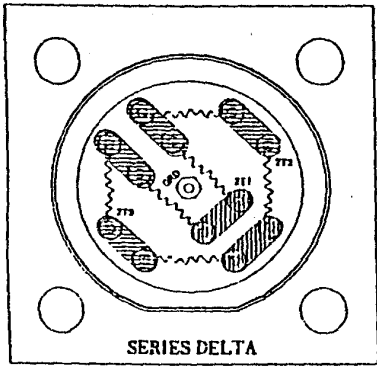
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VOLTS	SERIES DELTA REQ = 179.0219		HALF DELTA REQ = 89.5781		SERIES WYE REQ = 537.2		HALF WYE REQ = 268.6		PARALLEL DELTA REQ = 44.319		PARALLEL WYE REQ = 134.3		WYE DELTA REQ = 61.778	
	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A
208	0.36	1.00	0.84	2.32	0.14	0.39	0.28	0.77	1.69	4.69	0.56	1.55	1.21	3.37
230	0.44	1.10	1.02	2.67	0.17	0.43	0.34	0.86	2.07	5.19	0.68	1.71	1.48	3.72
380	1.20	1.82	2.79	4.24	0.47	0.71	0.93	1.41	5.04	8.57	1.86	2.83	4.05	6.16
415	1.43	1.99	3.33	4.63	0.56	0.77	1.11	1.55	6.73	9.36	2.22	3.09	4.83	6.72
460	1.78	2.21	4.09	5.14	0.68	0.86	1.36	1.71	8.27	10.38	2.73	3.43	5.93	7.46
675	2.75	2.76	6.39	6.42	1.07	1.07	2.13	2.14	12.92	12.97	4.26	4.28	9.27	9.31



 = THE HEATER'S RATED AMPS AND KILOWATTS

 = DO NOT WIRE HEATERS FOR THESE VALUES

PART NUMBER: 9002018		DESC: 6KW, 208V		TYPE: OIL		SINGLE ELEMENT RESISTANCE: 42.6								
VOLTS	SERIES DELTA REQ= 48.26793		HALF DELTA REQ= 24.15207		SERIES WYE REQ= 144.84		HALF WYE REQ= 72.42		PARALLEL DELTA REQ= 11.9493		PARALLEL WYE REQ= 36.21		WYE DELTA REQ= 16.6566	
	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A
208	1.55	4.31	3.10	8.61	0.52	1.44	1.03	2.87	6.27	17.41	2.07	5.74	4.50	12.49
230	1.90	4.77	3.79	9.52	0.63	1.59	1.27	3.18	7.67	19.25	2.53	6.35	5.50	13.81
380	5.18	7.87	10.36	15.73	1.73	2.62	3.45	5.25	20.93	31.00	6.91	10.49	15.02	22.01
415	6.18	8.60	12.35	17.18	2.06	2.87	4.12	5.73	21.98	34.73	8.24	11.76	17.9	24.92
460	7.59	9.53	15.17	19.05	2.53	3.10	5.06	6.35	30.67	46.60	10.12	12.70	22.00	27.62
575	11.06	11.91	23.71	23.01	3.95	3.97	7.91	7.94	47.92	48.12	15.01	15.66	34.35	34.52

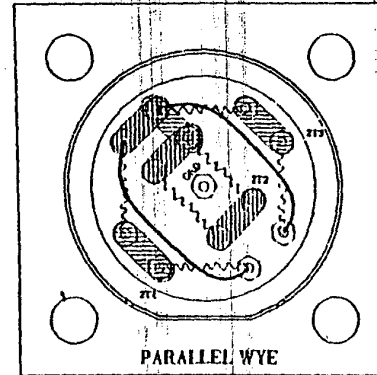
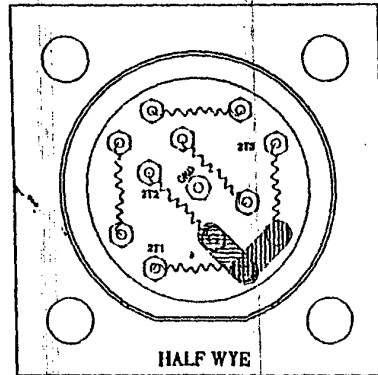
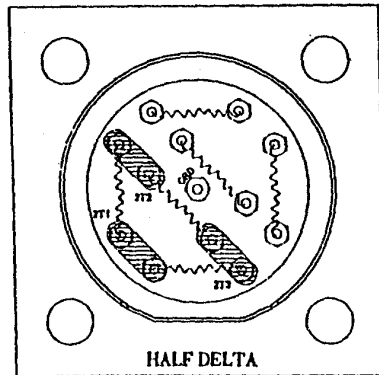
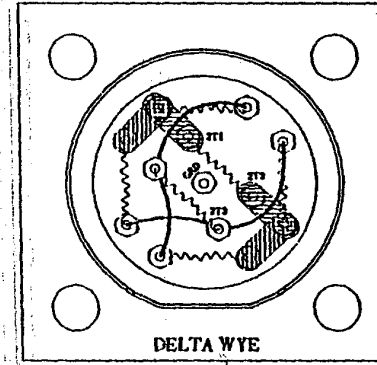
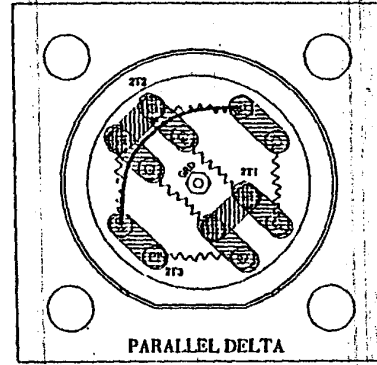
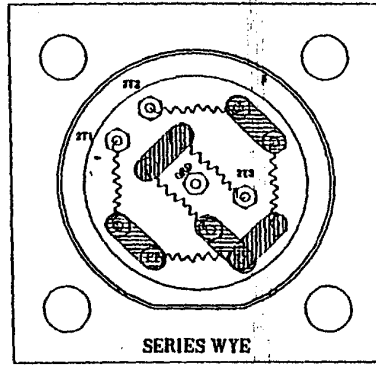
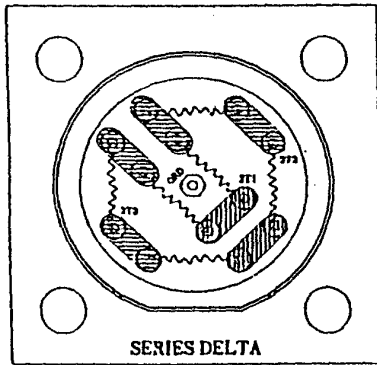


AMP AND KILOWATT CAPACITY CHART FOR OIL AND WATER HEATERS WITH 6 ELEMENTS

[ ] = THE HEATER'S RATED AMPS AND KILOWATTS

[ ] = DO NOT WIRE HEATERS FOR THESE VALUES

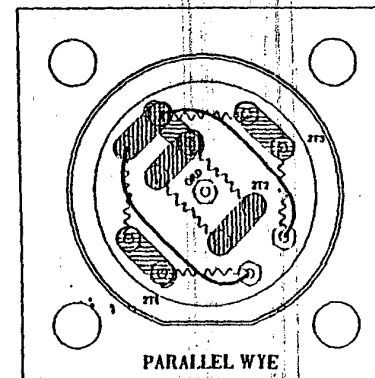
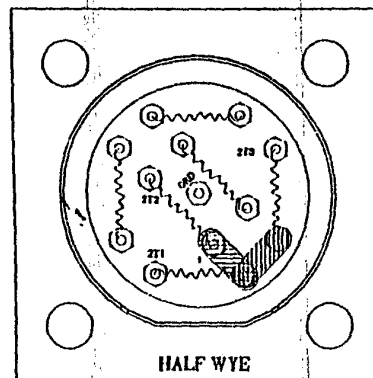
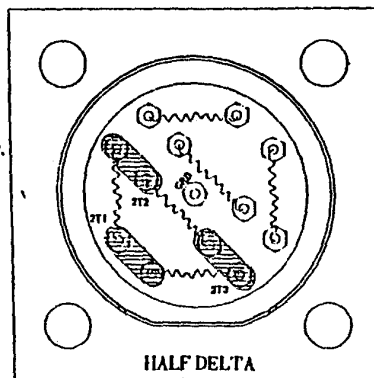
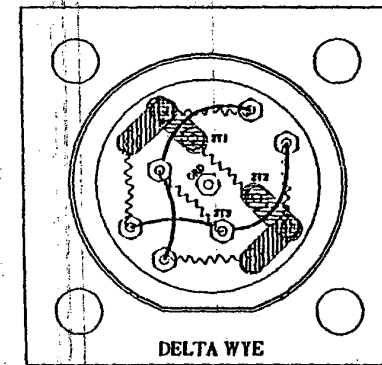
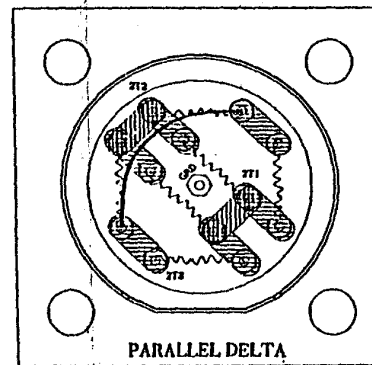
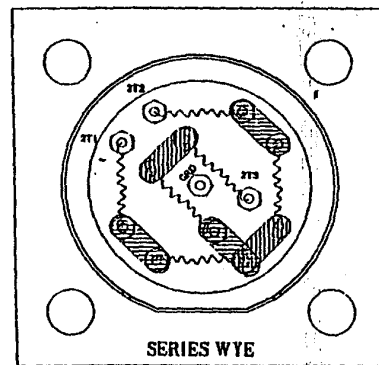
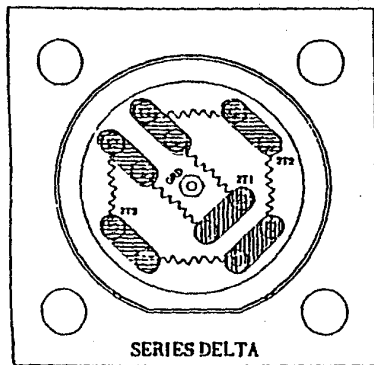
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VOLTS	SERIES DELTA REQ= 60.844785		HALF DELTA REQ= 30.44522		SERIES WYE REQ= 182.50		HALF WYE REQ= 91.29		PARALLEL DELTA REQ= 15.06285		PARALLEL WYE REQ= 45.645		WYE DELTA REQ= 20.9967	
	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A
208	1.23	3.42	2.46	6.83	0.41	1.14	0.82	2.28	4.97	13.81	1.64	4.56	3.57	9.91
230	1.51	3.78	3.01	7.55	0.50	1.26	1.00	2.52	6.08	15.27	2.01	5.04	4.36	10.95
380	4.11	6.25	8.21	12.48	1.37	2.08	2.74	4.16	16.60	25.23	5.48	8.33	13.91	18.10
415	4.90	6.82	9.80	13.63	1.63	2.27	3.27	4.55	19.00	27.65	6.54	9.09	14.21	19.77
460	6.02	7.56	12.04	18.11	2.01	2.52	4.01	5.04	24.33	30.64	8.03	10.08	17.45	21.91
575	9.41	9.45	18.81	18.89	3.14	3.15	6.27	6.30	38.02	38.17	12.55	12.60	27.27	27.39



**[ ] = THE HEATER'S RATED AMPS AND KILOWATTS**

**[ ] = DO NOT WIRE HEATERS FOR THESE VALUES**

PART NUMBER: 9002017		DESC: 12KW, 230/460V		TYPE: OIL		SINGLE ELEMENT RESISTANCE: 27.3								
VOLTS	SERIES DELTA REQ= 30.932265		HALF DELTA REQ= 15.47774		SERIES WYE REQ= 92.82		HALF WYE REQ= 46.41		PARALLEL DELTA REQ= 7.65765		PARALLEL WYE REQ= 23.205		WYE DELTA REQ= 10.6743	
	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A
208	2.42	6.72	4.84	13.44	0.81	2.24	1.61	4.48	9.79	27.16	3.23	8.96	7.02	19.49
230	2.96	7.44	5.92	14.86	0.99	2.48	1.97	4.96	11.96	30.04	3.95	9.91	8.58	21.55
380	8.09	12.28	16.16	24.55	2.69	4.09	5.39	8.19	32.66	49.62	10.78	16.38	23.43	36.60
415	9.64	13.42	19.27	26.81	3.21	4.47	6.43	8.94	38.95	54.19	12.85	17.88	27.98	38.88
460	11.85	14.87	23.68	29.72	3.95	4.96	7.90	9.91	47.86	60.07	15.79	19.82	34.33	43.09
575	18.51	18.59	37.00	37.16	6.17	6.19	12.34	12.39	74.78	76.09	24.68	24.78	53.65	53.87

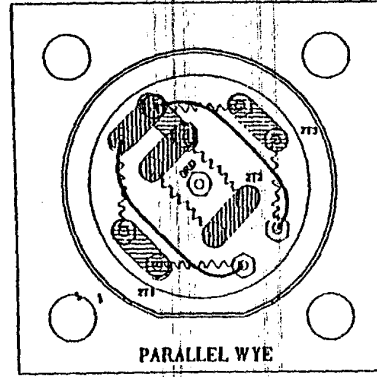
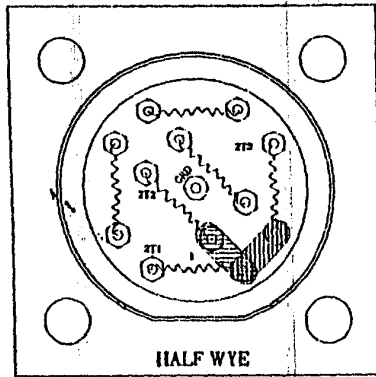
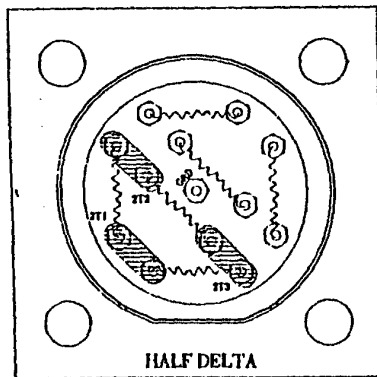
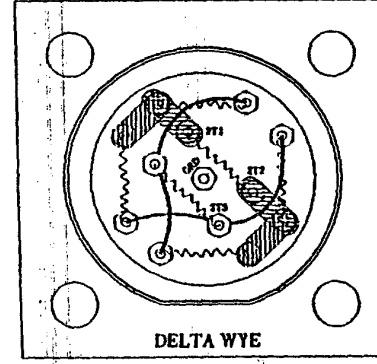
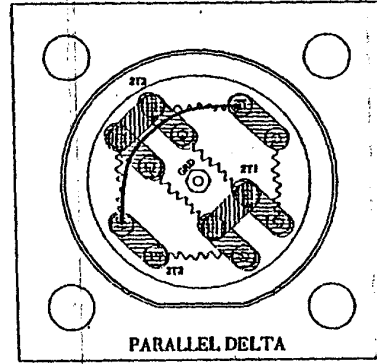
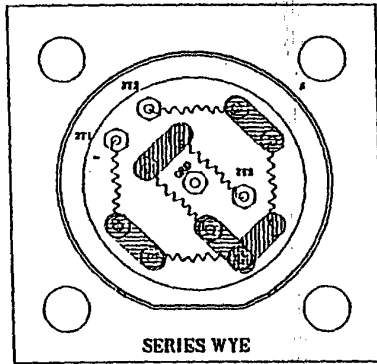
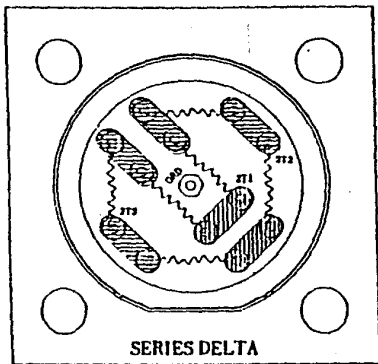


WATER HEATER CHART FOR OIL AND WATER HEATERS WITH 6 ELEMENTS

[ ] = THE HEATER'S RATED AMPS AND KILOWATTS

[ ] = DO NOT WIRE HEATERS FOR THESE VALUES

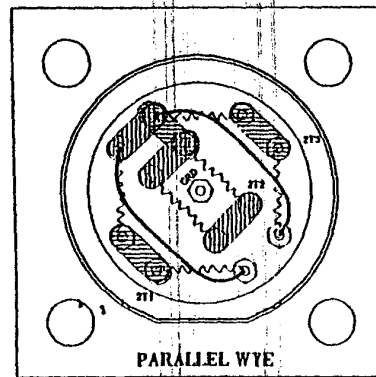
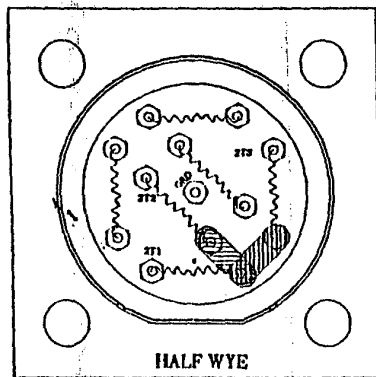
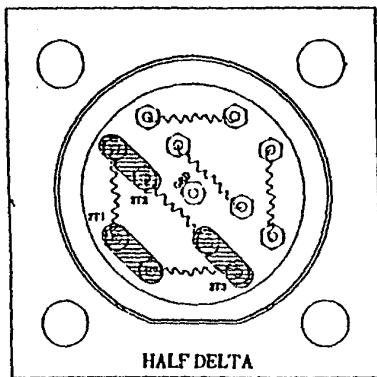
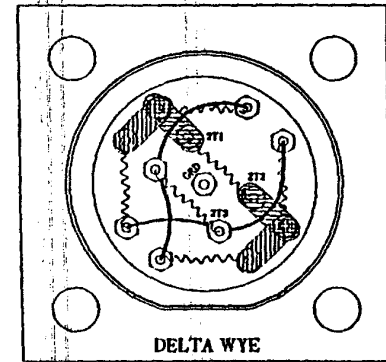
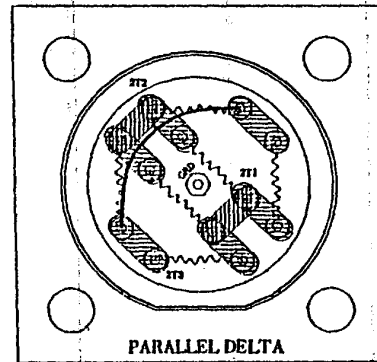
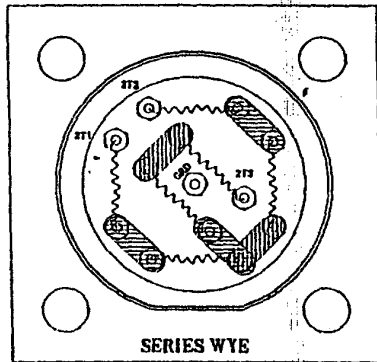
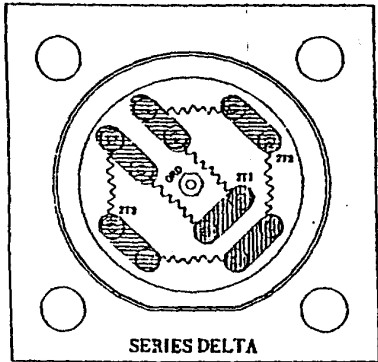
PART NUMBER: 9002019		DESC: 12KW, 208V		TYPE: OIL		SINGLE ELEMENT RESISTANCE: 21.3								
VOLTS	SERIES DELTA REQ= 24.133965		HALF DELTA REQ= 12.07604		SERIES WYE REQ= 72.42		HALF WYE REQ= 36.21		PARALLEL DELTA REQ= 5.97465		PARALLEL WYE REQ= 18.105		WYE DELTA REQ= 8.3283	
	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A
208	3.10	8.62	6.21	17.22	1.03	2.87	2.07	5.74	12.54	34.81	4.14	11.49	9.00	24.98
230	3.80	9.53	7.59	19.05	1.27	3.18	2.53	6.35	15.34	41.88	5.06	12.70	11.00	27.62
380	10.36	15.75	20.71	31.47	3.45	5.25	6.91	10.49	41.88	116.60	13.01	36.98	38.83	106.63
415	12.36	17.20	24.70	34.37	4.12	5.73	8.24	11.46	49.93	137.10	16.48	45.62	46.82	129.83
460	16.19	19.06	30.35	38.09	5.06	6.35	10.12	12.70	81.34	226.60	20.94	58.41	44.01	121.23
575	23.73	23.83	47.42	47.61	7.91	7.94	15.81	15.88	95.85	268.24	31.63	31.76	68.76	69.04



 = THE HEATER'S RATED AMPS AND KILOWATTS

 = DO NOT WIRE HEATERS FOR THESE VALUES

PART NUMBER: 9002021		DESC: 12KW, 575V		TYPE: OIL		SINGLE ELEMENT RESISTANCE: 177								
VOLTS	SERIES DELTA REQ= 200.54985		HALF DELTA REQ= 100.3502		SERIES WYE REQ= 601.8		HALF WYE REQ= 300.9		PARALLEL DELTA REQ= 49.6485		PARALLEL WYE REQ= 150.45		WYE DELTA REQ= 69.207	
	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A
208	0.37	1.04	0.75	2.07	0.12	0.35	0.25	0.69	1.51	4.19	0.50	1.38	1.08	3.01
230	0.46	1.15	0.91	2.29	0.15	0.38	0.30	0.76	1.85	4.63	0.61	1.53	1.32	3.32
380	1.25	1.89	2.49	3.79	0.42	0.63	0.83	1.26	5.04	7.65	1.66	2.53	3.61	6.49
415	1.49	2.07	2.97	4.14	0.50	0.69	0.99	1.38	6.01	8.36	1.98	2.76	4.31	6.00
460	1.83	2.29	3.65	4.58	0.61	0.76	1.22	1.53	7.38	9.27	2.44	3.06	5.30	6.65
575	2.86	2.87	5.71	5.73	0.95	0.96	1.90	1.91	11.53	11.58	3.01	3.02	8.27	8.31

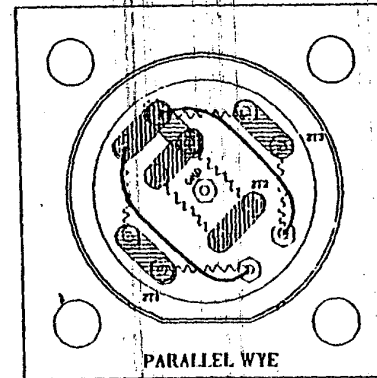
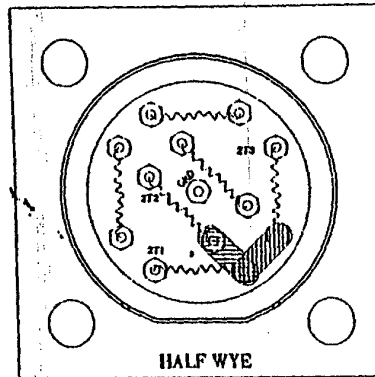
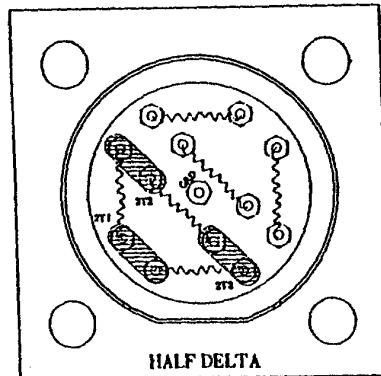
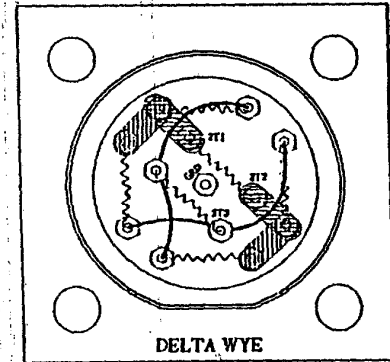
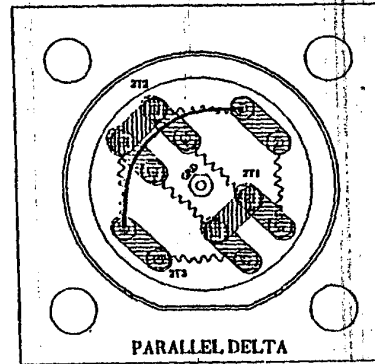
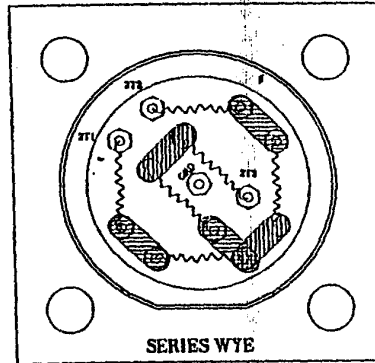
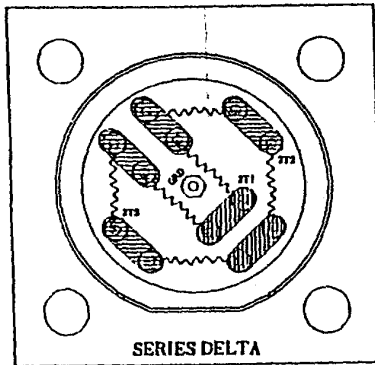


AMP AND KILOWATT CAPACITY CHART FOR OIL AND WATER HEATERS WITH 6 ELEMENTS

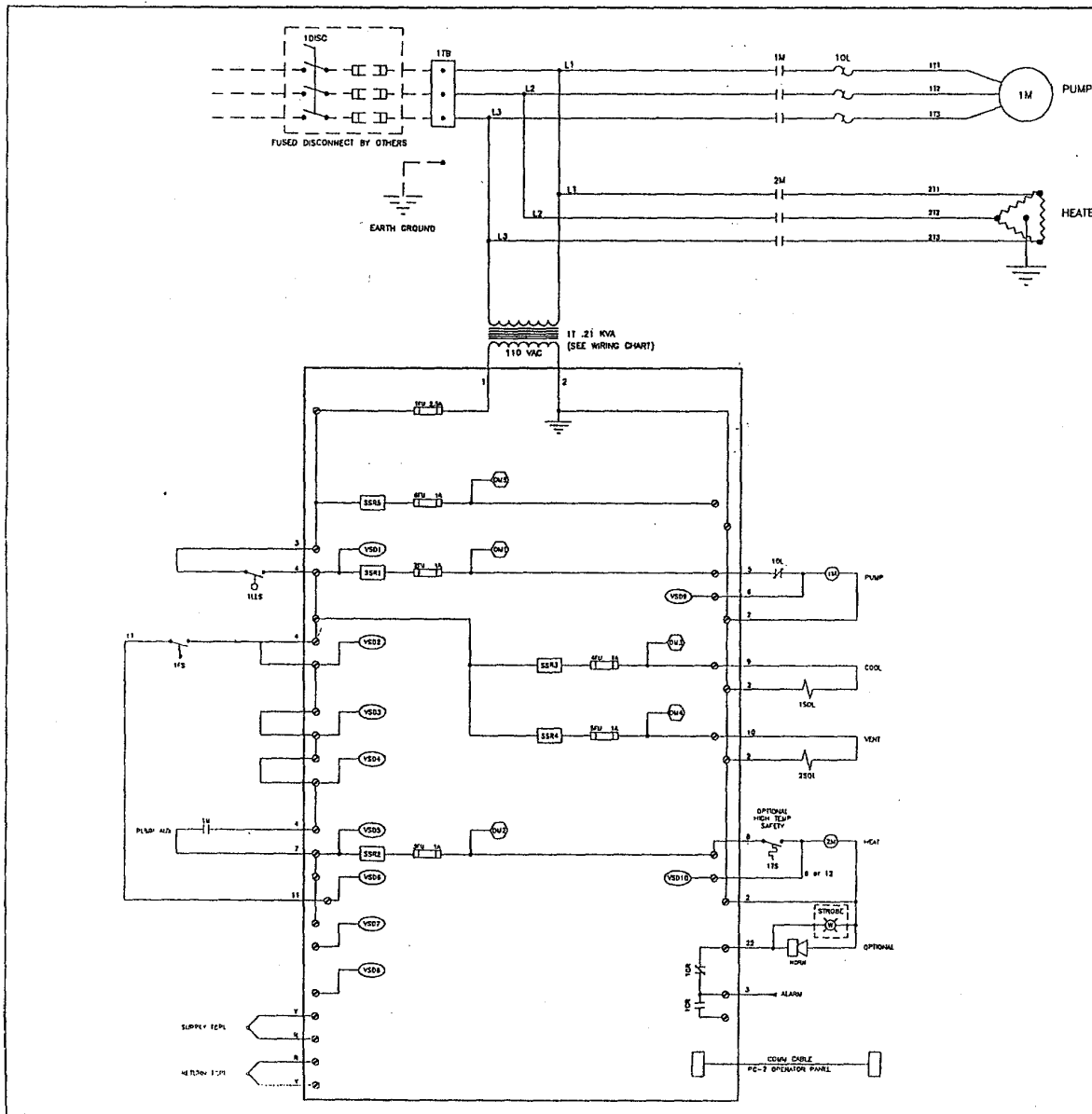
 = THE HEATER'S RATED AMPS AND KILOWATTS

 = DO NOT WIRE HEATERS FOR THESE VALUES

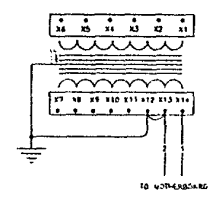
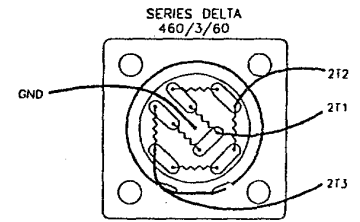
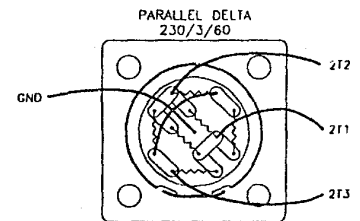
PART NUMBER: 9001549		DESC: 12KW, 380V		TYPE: OIL		SINGLE ELEMENT RESISTANCE: 75.0								
VOLTS	SERIES DELTA REQ = 85.65850		HALF DELTA REQ = 42.0614		SERIES WYE REQ = 257.04		HALF WYE REQ = 120.52		PARALLEL DELTA REQ = 21.2050		PARALLEL WYE REQ = 64.26		WYE DELTA REQ = 29.5596	
	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A	KW	A
208	0.87	2.43	1.75	4.85	0.29	0.81	0.58	1.62	3.53	9.81	1.17	3.24	2.63	7.04
230	1.07	2.69	2.14	5.37	0.36	0.89	0.71	1.79	4.32	10.86	1.43	3.58	3.10	7.78
380	2.92	4.44	5.84	8.87	0.97	1.48	1.95	2.98	11.70	17.92	3.89	6.91	8.46	12.86
415	3.48	4.84	6.96	9.68	1.16	1.61	2.32	3.23	14.07	19.67	4.64	6.46	10.09	14.04
460	4.28	5.37	8.55	10.73	1.43	1.79	2.85	3.58	17.28	21.69	5.70	7.18	12.40	15.58
575	6.69	6.71	13.36	13.42	2.23	2.24	4.46	4.47	27.00	27.12	8.91	8.95	19.37	19.45



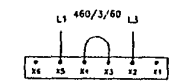
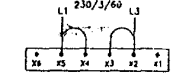




HEATER TERMINAL WIRING PATTERNS



CONTROL TRANSFORMER PRIMARY WIRING CHART

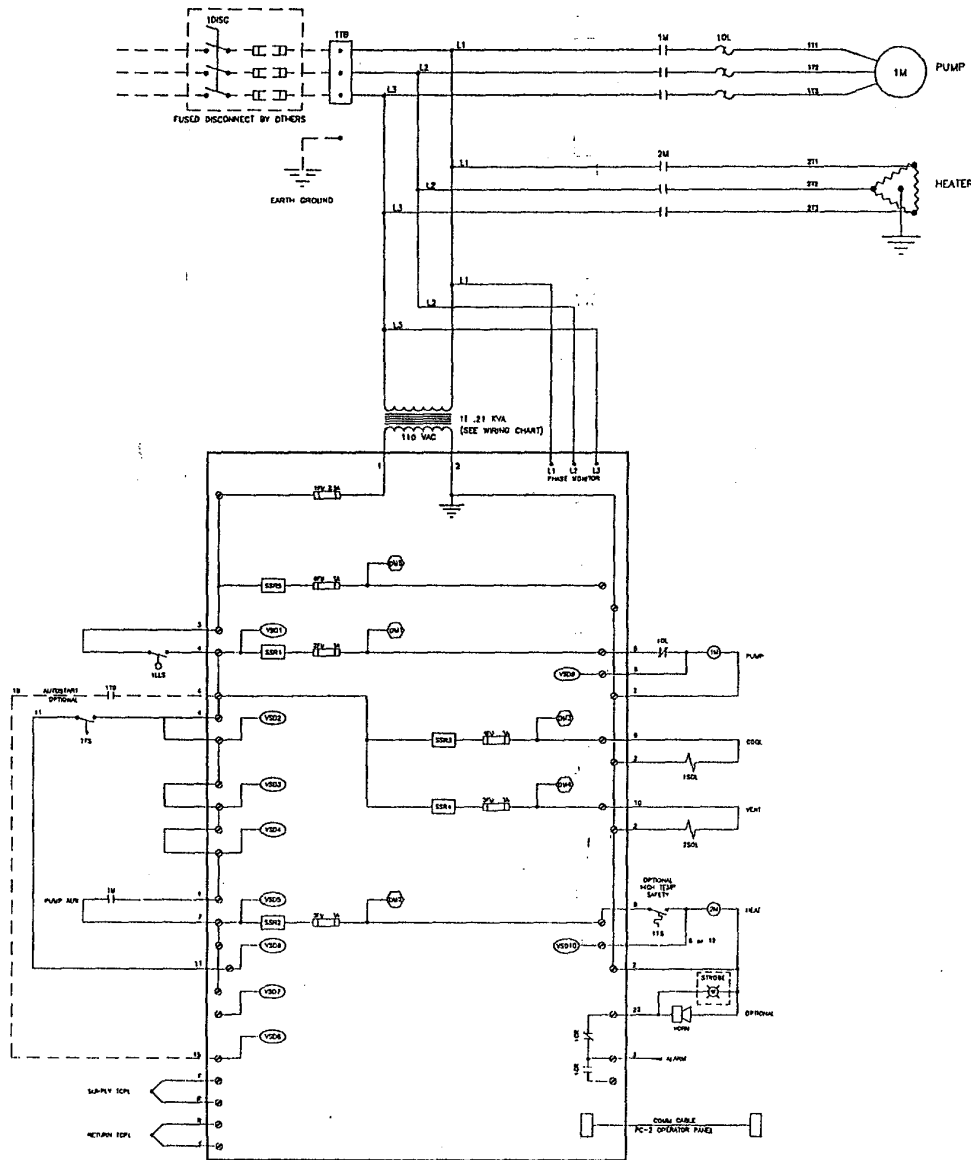


THERMOLATOR HOT OIL WIRING SCHEMATIC  
IC [400, 500] - 1 CONTROL

REV	DATE	BY

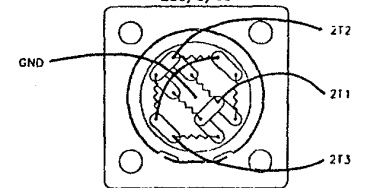
CONAIR  
TEMPRO  
1175 DAVIS ROAD  
ELGIN, ILL. 60120 USA  
812/233-7888 FAX



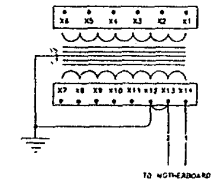
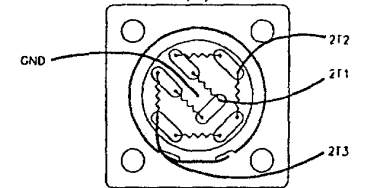


### HEATER TERMINAL WIRING PATTERNS

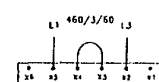
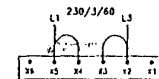
PARALLEL DELTA  
230/3/60



SERIES DELTA  
460/3/60



### CONTROL TRANSFORMER PRIMARY WIRING CHART

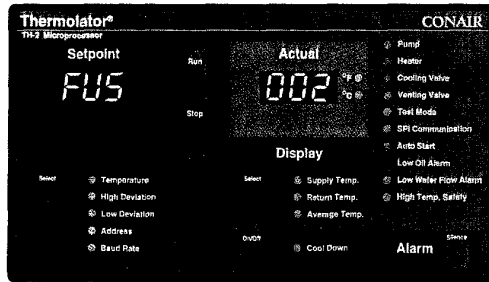


**THERMOLATOR HOT OIL WIRING SCHEMATIC**  
IC (400, 500) - 2 CONTROL

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CONAIR TEMPRO  
175 DAVIS ROAD  
ELGIN ILLINOIS USA  
60120 (815)244-8500

## TROUBLESHOOTING



If there is a problem, the Thermolator® activates the red Alarm light and changes the RUN/STOP light from green to flashing red.

**1** Press  to silence the optional audible alarm.

**2** Check the indicator lights and messages to help determine the cause of the problem.

**Pump**

**⚠ WARNING: Before servicing the Thermolator®**  
Allow the unit to cool to below 100° F. Disconnect and lockout the main power source. Disconnect water and air supply lines.

## Shut down alarms

The Thermolator has shut down automatically to prevent damage to equipment or personnel. To resume normal operation, press **Stop**, fix the problem, then press **Run**.

### Pump

**The pump overload has tripped. Contact is open.**

1. Verify that the correct voltage is supplied to the motor.
2. Fluid flow may be more than the pump can handle. Check current draw against motor rating. Decrease flow.

### Low Oil Alarm

**The oil level in the unit reservoir is too low.**

1. Check reservoir and add oil as needed.

### Low Water Flow Alarm

**There is not enough cooling water at the pump seal.**

1. Check the water-jacketed seal chamber at the pump.

### High Temp. Safety

**The actual temperature of oil supplied to the mold exceeds the temperature safety switch limit.**

1. The unit is not running. Start the Thermolator.
2. Oil has stopped flowing between supply the outlet and return inlet. Check for closed valve or plugged line.
3. The heater contactor failed. Replace contactor.

## Warning alarms

The Thermolator continues operating, but this problem could lead to a shutdown condition if not corrected.

### Low Deviation

**Actual temperature of oil supplied to the mold is lower than the setpoint deviation limit allows.**

1. Low deviation temperature is set too low. Increase.
2. The heater failed. Check for a bad heating element or a heater contact that failed in the open position.
3. The cooling valve is stuck open. Clean valve as needed.



**Actual temperature of oil supplied to the mold higher than the programmed 510° F safety limit.**

1. Oil has stopped flowing between supply outlet and return inlet. Check for closed valve or plugged line.
2. The heater contactor failed. Replace contactor.



**Actual temperature of oil supplied to the mold is below the programmed 60° F safety limit.**

1. The cooling valve is stuck open. Clean valve.
2. The heater has failed. Check for a bad heating element, or a heater contact that failed in the open position.



**The incoming power is out of phase. A leg may have failed or is disconnected.**

1. The pump is rotating in the wrong direction. Reverse any two leads on the power connection.
2. Check fuses or circuits at the main power supply.



**The return line temperature probe failed.**  
Check for loose connections, or replace.



**The supply line temperature probe failed.**  
Check for loose connections, or replace.



**The pump fuse failed.**  
Replace the fuse on the motherboard.

**NOTE:** See the Thermolator User Guide for additional alarm messages regarding fuses and controller errors.

### High Deviation

**Actual temperature of oil supplied to the mold is higher than the setpoint deviation limit allows.**

1. High deviation temperature is set too low. Increase.
2. Oil has stopped flowing between supply outlet and return inlet. Check for plugged pipe or failed cooling valve.
3. The heater contact failed. Replace the contactor.
4. The heater and lines may be too large for this application.

### SPI Communication

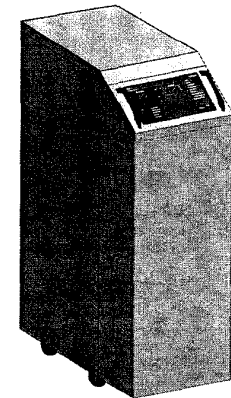
**The SPI communication link has failed.**

1. Check SPI device, cables and cable connections.

## Quick Card

# Thermolator® heaTrac

Oil Temperature Controller  
with TH-2 Microprocessor



Basic  
Operation  
Troubleshooting

Instant Access  
Parts & Service  
(800) 458-1968  
(814) 437-6861

[www.conairnet.com](http://www.conairnet.com)

# CONAIR™

The Conair Group, Inc.  
One Conair Drive  
Pittsburgh, PA 15202  
Phone: (412) 312-6000  
Fax: (412) 312-6001

QCH004/1 197

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### Setpoint display

The window displays the setpoints entered for the fluid temperature, the high and low temperature deviation alarms, the SPI baud rate and the SPI address.

### Run/Stop

Press the RUN button to start normal operation. Press STOP to stop the temperature control unit.

- = Running
- = Stopped
- ☼ = Alarm (flashing)

### Actual values display

The green window displays the temperature at the middle of the mold. This temperature is calculated as an average of the temperatures of the supply oil and return oil.

The lights indicate whether the temperature is in degrees Fahrenheit or Celsius.

### Status lights

The lights indicate the operating status of the listed components. Except in Test Mode and Auto Start, the lights indicate:

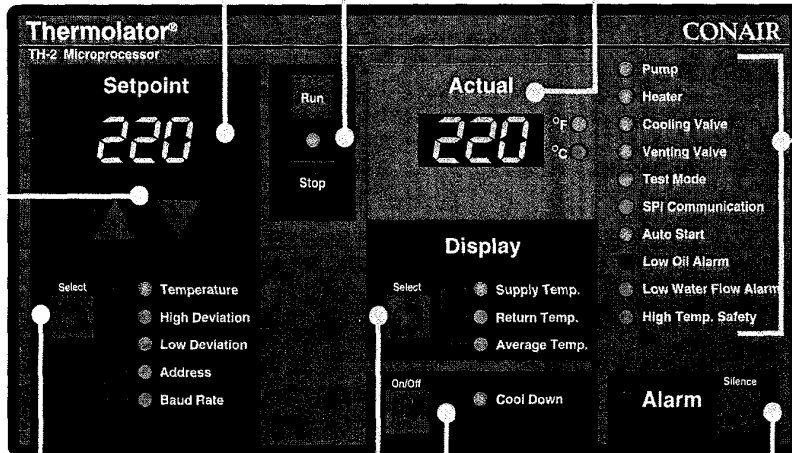
- = Off or inactive
- = On or active
- = Alarm condition

**Test Mode** is used for initial programming. When test mode is enabled, normal operation is disabled.

- = Test Mode off
- = Test Mode on; unit disabled

**Auto Start** allows you to start and stop the Thermolator® from a remote switching or timing device, such as the processing machine control. This feature can only be enabled by configuring a dip switch on the control motherboard.

- = Disabled; Auto Start not available
- ☼ (flashing) = Enabled; unit can start at any time
- = On and under control of the remote device



### Setpoint Select button

Press repeatedly until a green light appears next to the parameter you want to program or view.

**NOTE:** Default settings for the deviation setpoints are:

High = setpoint + 10° F  
Low = setpoint - 10° F

A warning alarm occurs (indicator light turns red) whenever the actual temperature is outside this setpoint range. Recommend setting: ± 2-10°.

### Setpoint adjustment buttons

Press ▲ or ▼ to enter temperature and SPI parameters. Press ▲ to increase a value. Press ▼ to decrease a value.

**TIP:** Press and hold the button for faster scrolling speed.

### Alarm

Press to acknowledge the alarm light and silence the optional audible alarm. The alarm light will flash until the cause of the alarm condition is fixed.

### Cool Down On/Off

The Cool Down feature resets the setpoint temperature to 100° F to cool the system before stopping. Press to turn the feature on. Press again to turn it off.

### Display Select button

Press repeatedly until a green light appears next to the parameter you want to program or view in the Actual values window. See the User Guide for programming information.

## Starting the Thermolator®.

- 1 Turn on main power to the Thermolator®.**
  - ◆ Setpoint and actual windows display **888** for three seconds, then display the most recently entered setpoint temperature and the current actual temperature.
  - ◆ Indicator lights blink green, then red.
- 2 Turn on the water supply to the unit.** If the water supply is on, go to Step 3.
- 3 Enter the temperature setpoint.** Press the Setpoint **▲** until the green light appears next to Temperature. Press **▲** to increase the setpoint or **▼** to decrease.
- 4 Press Run.**
  - ◆ The RUN/STOP light turns green.
  - ◆ If fluid temperature is 210° F or lower, the unit initiates a 60-second venting sequence. Cooling and venting valves are active for 60 seconds. The pump runs for the final 30 seconds.
  - ◆ Normal operation begins. The heater turns on if the actual temperature is below setpoint. The cooling valve remains active if the actual temperature is above setpoint.

If the Alarm light turns on, press **☼** to silence an audible alarm and go to the Troubleshooting section.

## Cooling the Thermolator®.

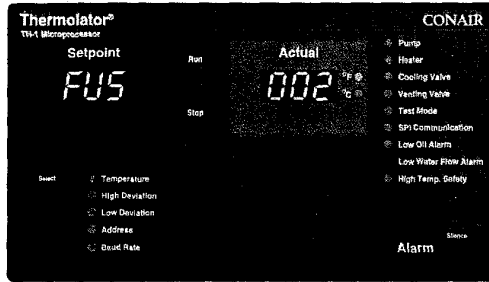
If your setpoint is over 250° F, you should cool the unit and fluid before stopping. The Thermolator® must be running to use the Cool Down feature.

- 1 Press the **☼** button to begin cooling.**
  - ◆ The green Cool Down light turns on.
  - ◆ The temperature setpoint changes to 100° F.
  - ◆ The heater indicator light turns off.
  - ◆ The cooling valve indicator light turns green and stays on until the actual temperature reaches 100° F.
- 2 Press the **☼** button again to stop cooling.**
  - ◆ The setpoint temperature stays at 100° F until a new setpoint is entered.

## Stopping the Thermolator®.

- 1 Press Stop.**
  - ◆ The RUN/STOP light turns red.

## TROUBLESHOOTING



If there is a problem, the Thermolator® activates the red Alarm light and changes the RUN/STOP light from green to flashing red.

**1** Press  to silence the optional audible alarm.

**2** Check the indicator lights and messages to help determine the cause of the problem.

 Pump

**⚠ WARNING: Before servicing the Thermolator®**  
Allow the unit to cool to below 100° F. Disconnect and lockout the main power source. Disconnect water and air supply lines.

## Quick Card

# Thermolator® heaTrac

Oil Temperature Controller  
with TH-1 Microprocessor

## Shut down alarms

The Thermolator has shut down automatically to prevent damage to equipment or personnel. To resume normal operation, press **Stop**, fix the problem, then press **Run**.

### Pump

The pump overload has tripped. Contact is open.

1. Verify that the correct voltage is supplied to the motor.
2. Fluid flow may be more than the pump can handle.  
Check current draw against motor rating. Decrease flow.

### Low Oil Alarm

The oil level in the unit reservoir is too low.

1. Check reservoir and add oil as needed.

### Low Water Flow Alarm

There is not enough cooling water at the pump seal.

1. Check the water-jacketed seal chamber at the pump.

### High Temp. Safety

The actual temperature of oil supplied to the mold exceeds the temperature safety switch limit.

1. The unit is not running. Start the Thermolator.
2. Oil has stopped flowing between supply outlet and return inlet. Check for closed valve or plugged line.
3. The heater contactor failed. Replace contactor.

## Warning alarms

The Thermolator continues operating, but this problem could lead to a shutdown condition if not corrected.

### Low Deviation

Actual temperature of oil supplied to the mold is lower than the setpoint deviation limit allows.

1. Low deviation temperature is set too low. Increase.
2. The heater failed. Check for a bad heating element or a heater contact that failed in the open position.
3. The cooling valve is stuck open. Clean valve as needed.

Actual temperature of oil supplied to the mold is higher than the programmed 510° F safety limit.

1. Oil has stopped flowing between supply outlet and return inlet. Check for closed valve or plugged line.
2. The heater contactor failed. Replace contactor.

Actual temperature of oil supplied to the mold is below the programmed 60° F safety limit.

1. The cooling valve is stuck open. Clean valve.
2. The heater has failed. Check for a bad heating element, or a heater contact that failed in the open position.

The incoming power is out of phase. A leg may have failed or is disconnected.

1. The pump is rotating in the wrong direction. Reverse any two leads on the power connection.
2. Check fuses or circuits at the main power supply.

The return line temperature probe failed. Check for loose connections, or replace.

The supply line temperature probe failed. Check for loose connections, or replace.

The pump fuse failed. Replace the fuse on the motherboard.

**NOTE:** See the Thermolator User Guide for additional alarm messages regarding fuses and controller errors.

### High Deviation

Actual temperature of oil supplied to the mold is higher than the setpoint deviation limit allows.

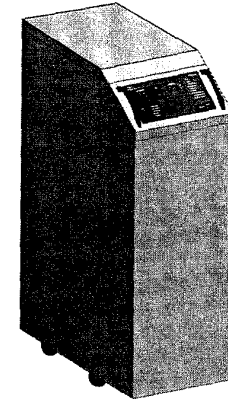
1. High deviation temperature is set too low. Increase.
2. Oil has stopped flowing between supply outlet and return inlet. Check for plugged pipe or failed cooling valve.
3. The heater contact failed. Replace the contactor.
4. The heater and lines may be too large for this application.

### SPI Communication

The SPI communication link has failed.

1. Check SPI device, cables and cable connections.

Basic  
Operation  
Troubleshooting



Instant Access  
Parts & Service  
(800) 458-1950  
(814) 437-6881

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QCH003/1197

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**Setpoint display**

The window displays the setpoints entered for the fluid temperature, the high and low temperature deviation alarms, the SPI baud rate and the SPI address.

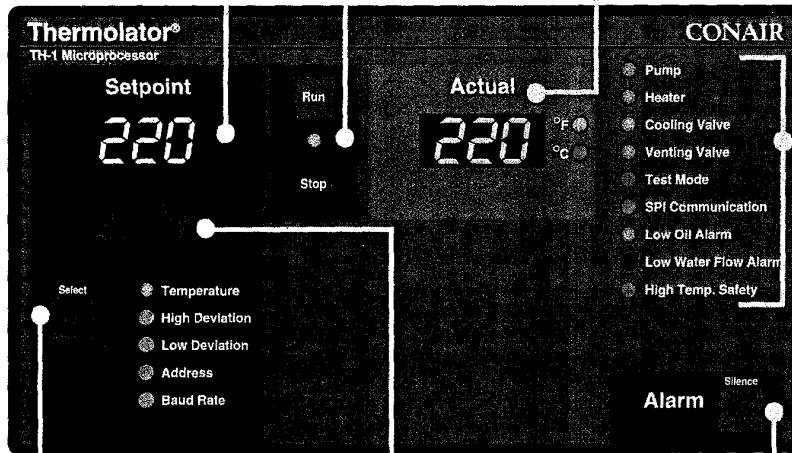
**Run/Stop**

Press the RUN button to start normal operation. Press STOP to stop the temperature control unit.

- = Running
- = Stopped
- ☼ = Alarm (flashing)

**Actual values display**

The green window displays the temperature at the middle of the mold. This temperature is calculated as an average of the temperatures of the supply oil and return oil. The lights indicate whether the temperature is in degrees Fahrenheit or Celsius.



**Status lights**

The lights indicate the operating status of the listed components. Except in Test Mode and Auto Start, the lights indicate:

- = Off or inactive
- = On or active
- = Alarm condition

**Test Mode** is used for initial programming. When test mode is enabled, normal operation is disabled.

- = Test Mode off
- = Test Mode on; unit disabled

**Setpoint Select button**

Press repeatedly until a green light appears next to the parameter you want to program or view.

**NOTE:** Default settings for the deviation setpoints are:  
 High = setpoint + 10° F  
 Low = setpoint - 10° F  
 A warning alarm occurs (indicator light turns red) whenever the actual temperature is outside this setpoint range. Recommend setting: ± 2-10°.

**Setpoint adjustment buttons**

Press ▲ or ▼ to enter temperature and SPI parameters. Press ▲ to increase a value. Press ▼ to decrease a value.

**TIP:** Press and hold the button for faster scrolling speed.

**Alarm**

Press to acknowledge the alarm light and silence the optional audible alarm. The alarm light will flash until the cause of the alarm condition is fixed.

**Starting the Thermolator®.**

- 1 Turn on main power to the Thermolator®.**
  - ◆ Setpoint and actual windows display **888** for three seconds, then display the most recently entered setpoint temperature and the current actual temperature.
  - ◆ Indicator lights blink green, then red.
- 2 Turn on water supply to the unit.**  
If the water supply is on, go to Step 3.
- 3 Enter the temperature setpoint.**  
Press the Setpoint **▲** until the green light appears next to Temperature. Press **▲** to increase the setpoint or **▼** to decrease.
- 4 Press Run.**
  - ◆ The RUN/STOP light turns green.
  - ◆ If the fluid temperature is 210° F or lower, the unit initiates a 60-second venting sequence. Cooling and venting valves are active for 60 seconds. The pump is active for the final 30 seconds.
  - ◆ Normal operation begins. The heater turns on if the actual temperature is below setpoint. The cooling valve remains active if the actual temperature is above setpoint.

If the Alarm light turns on, press **☼** to silence an audible alarm and go to the Troubleshooting section.

**Stopping the Thermolator®.**

- 1 Press Stop.**
  - ◆ The RUN/STOP light turns red.

**NOTE:** If your setpoint temperature was 250° F or higher, you should cool the system to 100° F before stopping the unit for a long time. To cool, enter a temperature setpoint of 100° F. Allow the unit to continue running until the actual temperature reaches 100° F.

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Conair has made the largest investment in customer support in the plastics industry. Our service experts are available to help with any problem you might have installing and operating your equipment. Your Conair sales representative also can help analyze the nature of your problem, assuring that it did not result from misapplication or improper use.

## WE'RE HERE TO HELP

To contact Customer Service personnel, call:



## HOW TO CONTACT CUSTOMER SERVICE

**From outside the United States, call: 814-437-6861**

You can commission Conair service personnel to provide on-site service by contacting the Customer Service Department. Standard rates include an on-site hourly rate, with a one-day minimum plus expenses.

### **If you do have a problem, please complete the following checklist before calling Conair:**

- Make sure you have all model, serial and parts list numbers for your particular equipment. Service personnel will need this information to assist you.
- Make sure power is supplied to the equipment.
- Make sure that all connectors and wires within and between loading control and related components have been installed correctly.
- Check the troubleshooting guide of this manual for a solution.
- Thoroughly examine the instruction manual(s) for associated equipment, especially controls. Each manual may have its own troubleshooting guide to help you.
- Check that the equipment has been operated as described in this manual.
- Check accompanying schematic drawings for information on special considerations.

## BEFORE YOU CALL ...

*Additional manuals and prints for your Conair equipment may be ordered through the Customer Service or Parts Departments for a nominal fee.*

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## EQUIPMENT GUARANTEE

Conair guarantees the machinery and equipment on this order, for a period as defined in the quotation from date of shipment, against defects in material and workmanship under the normal use and service for which it was recommended (except for parts that are typically replaced after normal usage, such as filters, liner plates, etc.). Conair's guarantee is limited to replacing, at our option, the part or parts determined by us to be defective after examination. The customer assumes the cost of transportation of the part or parts to and from the factory.

## PERFORMANCE WARRANTY

Conair warrants that this equipment will perform at or above the ratings stated in specific quotations covering the equipment or as detailed in engineering specifications, provided the equipment is applied, installed, operated and maintained in the recommended manner as outlined in our quotation or specifications.

Should performance not meet warranted levels, Conair at its discretion will exercise one of the following options:

- Inspect the equipment and perform alterations or adjustments to satisfy performance claims. (Charges for such inspections and corrections will be waived unless failure to meet warranty is due to misapplication, improper installation, poor maintenance practices or improper operation.)
- Replace the original equipment with other Conair equipment that will meet original performance claims at no extra cost to the customer.
- Refund the invoiced cost to the customer. Credit is subject to prior notice by the customer at which time a Return Goods Authorization Number (RGA) will be issued by Conair's Service Department. Returned equipment must be well crated and in proper operating condition, including all parts. Returns must be prepaid.

Purchaser must notify Conair in writing of any claim and provide a customer receipt and other evidence that a claim is being made.

## WARRANTY LIMITATIONS

**Except for the Equipment Guarantee and Performance Warranty stated above, Conair disclaims all other warranties with respect to the equipment, express or implied, arising by operation of law, course of dealing, usage of trade or otherwise, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.**