



# Lab Melter

Parts Manual - 26348

Revision E

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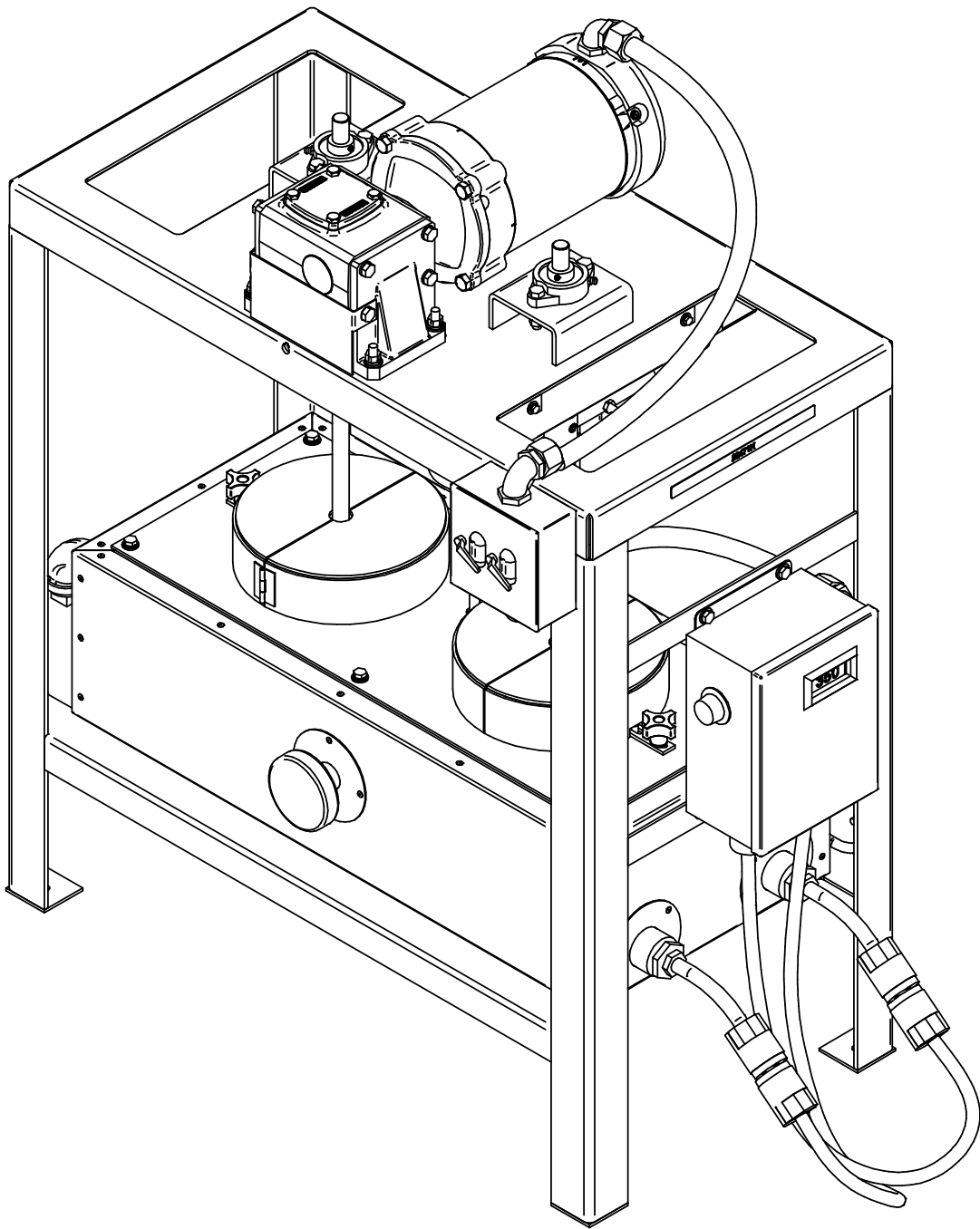
Machine S/N: \_\_\_\_\_

Mixer Motor S/N: \_\_\_\_\_

Gear Reducer S/N: \_\_\_\_\_

Stirrer Motor S/N: \_\_\_\_\_





**Lab Melter PN 4040**  
**Lab Melter (International Only) PN 40500N**



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## Chapter 1 Introduction

### 1.0 About This Manual

This manual is supplied with each new Crafcoc Lab Melter. The manual assists your machine operators in the proper use of the melter applicator and provides information about the machine's mechanical functions.

Your Crafcoc Lab Melter is specially made to give excellent service and save maintenance expense. However, as with all specially engineered equipment, you get best results at minimum cost if you:

Operate your machine as instructed in this manual.

Maintain your machine regularly as stated in this manual.

### 1.1 How to use this manual:

This manual is formatted to start each new chapter on the right page. There may be a blank page on the left page if the previous chapter ends on the right page.

If you are viewing this in a digital format (PDF) the following features are available:

1. The Table of Contents, List of Tables, and List of Figures are all hyperlinks, when left mouse clicked on section, table, or figure you will be sent to that page.
2. The blue highlighted text throughout the manual is a hyperlink, when left mouse clicked you will be sent to that page, table, or figure.
3. The panel to the left in the PDF is a bookmarks panel, if you left mouse click on any section/heading in the bookmarks panel you will be sent to that page.
4. There is an attachments icon (paper clip) to the left of the bookmarks, this is where you will find full size prints of the control box, electrical, and hydraulic schematics.



## Chapter 2 Safety

### 2.0 Safety Precautions

For more in-depth safety information, please see Safety Manual (PN 26221) which comes with the machine. Or contact your nearest authorized CrafcO Distributor at [crafco.com/Distributors](http://crafco.com/Distributors).

### 2.1 General Safety

- CrafcO, Inc. assumes no liability for an accident or injury incurred through improper use of the machine.
- Read this manual thoroughly before operating the machine.
- Obey all CAUTION and WARNING signs posted on the machine.
- Make sure an operator fully knows how to operate the machine before using the machine.

### 2.2 Personal Safety

- The high operating temperatures of this machine and the sealant it contains requires that protective clothing, gloves, hard-soled shoes, and safety glasses or a face shield be worn at all times by operators of the machine.
- Prevent water from going into any part the machine. Water will displace heat transfer oil or sealant which could be hazardous to personnel surrounding the machine.
- Avoid bodily contact with hot sealant material or heat transfer oil. Serious burns may result.
- Keep hands, feet, and clothing away from all moving parts.

### 2.3 Equipment and Operational Safety


- Make sure operator is familiar with melter operation.
- Stop mixer when adding sealant sample to sealant can.
- Always keep a fire extinguisher near the unit. Maintain extinguisher properly and be familiar with its use.
- Do not exceed 450°F (235°C) for heat transfer oil temperature.
- Do not overfill heat transfer oil level. Expansion of oil during heat up could cause overflow. Use only recommended heat transfer oil and change at 500 hours of operation. Change at earlier interval if heat transfer oil becomes contaminated with sealant or shows signs of breakdown.
- Calibrate heat transfer oil reservoir thermometer prior to initial operation and at least every two weeks thereafter. Precaution is the best insurance against accidents.

## Chapter 2 Safety

### 2.4 California Proposition 65

The state of California currently maintains a list of chemicals that can cause cancer, birth defects or other reproductive harm. Your CrafcO, Inc. equipment comes with the following warnings:





#### 2.4.1 All CrafcO, Inc. Equipment

 **WARNING:** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov) 26471N

### 2.5 Safety Symbols and Notices




Important safety symbols and notices are marked on the machine and in this manual. Failure to comply could result in equipment damage, operational malfunction, serious injury, or death. Please read and comply with all symbols and notices. The table below includes the most commonly used symbols and notices.

**Table 2-1 Safety Symbols and Notices**

Symbol	Item	Remarks
<b>WARNING</b>	Warning	Refers to possible bodily injury or death.
<b>CAUTION</b>	Caution	Refers to possible equipment damage or operational malfunction.
	Severe Burn Hazard	Hot material can cause severe burns.
	Protective Shoes	Wear hard-soled work shoes.
	Protective Gloves	Wear heat resistant gloves.
	Protective Face or Eye Wear	Wear face shield or safety glasses.

**Chapter 2 Safety**

**Table 2-2 Safety Symbols and Notices (Continued)**

Symbol	Item	Remark
	Pinch Hazard	Keep hands and feet clear.
	Read Manual	Read and understand operator and safety manuals before operating machine.
	Electric Shock Hazard	Potential for electric shock. Only qualified personnel should work on equipment electrical system.





## Chapter 3 Warranty Information

### 3.0 Limited Warranty

Crafco, Inc. (Manufacturer), or one of its affiliated distributors, will replace for the original purchaser free of charge any parts found upon examination by the Manufacturer, to be defective in material or workmanship. This warranty is for a period **two years** from invoice date, but excludes engine or components, tires, and battery as these items are subject to warranties issued by their manufacturers.

Crafco, Inc. shall not be liable for parts that have been damaged by accident, alteration, abuse, improper lubrication/maintenance, normal wear, or other cause beyond our control.

The warranty provided herein extends only to the repair and/or replacement of those components on the equipment covered above and does not cover labor costs. The warranty does not extend to incidental or consequential damages incurred as a result of any defect covered by this warranty.

All transportation and labor costs incurred by the purchaser in submitting or repairing covered components must be borne by the purchaser. Crafco, Inc. specifically disavows any other representation, warranty, or liability related to the condition or use of the product.

#### CAUTION

Use of replacement parts other than genuine Crafco parts may impair the safety or reliability of your equipment and nullifies any warranty.

## Chapter 3 Warranty Information

### 3.1 Warranty Claim Instructions

Crafco, Inc. warrants parts and machinery purchased through Crafco or one of its affiliated distributors for two years from invoice date. Wear items are not covered under the Crafco, Inc. limited warranty. A wear item is defined as but not limited to: material pumps, sealing tips, tires, etc.

If parts fail to function within the two years of invoice date, a return authorization number (RA) must be obtained. If the part was purchased through Crafco, Inc., please contact Crafco returns department at [Returns@Crafco.com](mailto>Returns@Crafco.com) for an RA number or if purchased through a Crafco distributor please contact your distributor.

Note: if the part has a serial number associated with it, for example; a machine or electric hose or wand, this must be furnished when requesting the RA number. The customer will be emailed or faxed an RA form with all instructions to return the item to Crafco, Inc. See example. If the part is found to be within the two year warranty period and has not been abused or modified, a credit will be issued to the customer's account or credit card. The customer may request the part be replaced instead of a credit, if desired.

Note: All engine warranties are covered through the engine manufacturer. If you need information for a distributor in your area please contact us and we will direct you to the closest engine distributor.

All parts returned are tested and evaluated. If the part has been modified in any way without prior consent from a Crafco, Inc. representative, warranty is void.

Please follow the instructions stated below when calling in a Warranty Claim. Failure to follow these procedures may be cause to void the warranty.

Call your local Crafco Distributor. If you do not know who your local distributor is, call a Crafco Customer Service Representative, (Toll Free 1-800-528-8242) for name, location and telephone number.

On contacting the distributor, be prepared to identify the serial number, model number, engine number, engine manufacturer, and the date of purchase if available.

Should the cause of the malfunction be a defective part, the Distributor will advise you of the procedure to follow for a replacement.

The warranty is valid only for parts, which have been supplied or recommended by Crafco, Inc.

If you have any additional questions regarding warranty repairs and parts, please do not hesitate to call toll free 1-800-528-8242.

For Warranty:

Crafco, Inc.

25527 South Arizona Avenue, Chandler, AZ  
85248

Phone: (480) 655-8333 or (800) 528-8242

Fax: (480) 655-1712

For all other inquires:

Crafco, Inc.

6165 W Detroit Street  
Chandler, AZ 85226

Phone: (602) 276-0406 or (800) 528-8242

Fax: (480) 961-0513

[CustomerService@crafco.com](mailto:CustomerService@crafco.com)

## Chapter 4 Machine Specifications

### 4.0 Machine Specifications

**Table 4-1 Machine Specifications**

Specification	PN 40400 Lab Melter	PN 40500 International Lab Melter
Heat transfer oil vat capacity	Approximately 6 1/2 gallons @ 70°F	
Melter Can	4-1/2" diameter x 7.0" tall, 48 oz. can, Model 404 x 700	
Heating	Two 2350 Watt, 120VAC Fire Rod heaters, (Watlow). Heaters are rated for 4700 Watt, @240VAC.	Two 1900 Watt, 240VAC Fire Rod heaters (Watlow).
Temperature Control	Thermostatic control	
Electric Agitator Motor	1/6 HP split phase motor, 120VAC, 3.6AMP, 1140 RPM single speed, (NEMA 56CZ), 5/8" shaft diameter, 3/16" key.	
Agitator Mechanism	Chain Driven, clockwise, 30 ±5 RPM	
Gear Reducer	Right angle, 20:1 Ratio, 5/8" shaft	
Hot Oil Mixer	Electric, 120VAC, 1/15 HP, 40-2000 RPM, 2.5" dia. Propeller	
Melter dimensions	40.23" L x 23.91" W x 40.37" H, Weight – 300 lbs.	
Operating voltage	Heater/Agitator – 120VAC, 20AMP (NEMA – L5-20R Receptacle) Oil Mixer – 120VAC, 15AMP (NEMA – 5-15R Receptacle)	Agitator/Heater/Oil Mixer Control – 120VAC, 60hz, 15AMP (NEMA – 5-15R Receptacle) (see Section 4.1 & Table 4-2 for power converter information). Heater Supply Power – 220VAC±10% *(Plug not included)

\* Install an appropriate electrical plug that conforms to the type/shape being used in the user's geographical location. (Black-lead, White-neutral, Green-ground)

## Chapter 4 Machine Specifications

### 4.1 Power Converter for International Lab Melter

A power converter is required for use in countries with electrical power that is:  
50Hz based frequency (as opposed to 60Hz) -or- 220-240 VAC

CrafcO recommends an Automatic Voltage AND Frequency converter power supply for use of the international lab melter in these locations. The following is a recommended power supply that meets the needs of the lab melter machine. The heaters on the lab melter can operate on 220-240 VAC 50Hz without issue. The control system ONLY operates on 120VAC-60Hz and needs to run through the power converter in these locations.

Recommended power converter;

Manufacturer: HUAOU AC POWER SOURCE Co. Ltd

Phone: +86 (0) 755 6112 4020, +86 (0) 755 6112 4021 Mobile: +86 135 7087 6572

Address: HUAXING Road, DALANG Community, BAOAN district, SHENZHEN city, GUANGDONG Province, China

**Table 4-2 Recommended Power Converter Specification**

Model/Type			HZ8101
Output Capacity			1KVA
Current type			IGBT/PWM band adjustment
AC	voltage		Single phase 220V±10%
Input	Frequency		50Hz/60Hz±5%
	Phase type		Single phase
AC	Voltage	Low level	0V-150V
		High level	151V-300V
Output	Frequency	Base	45-70Hz (400Hz optional)
		partular point	50Hz/220V, 60Hz/110V, 60Hz/120V
	Maximum	0-150V	8.4A
	Current	151-300V	4.2A
Frequency Stability			≤0.01%
Voltage stability after loading			±1%
waveform distortion facto			±1.5% (resistant loading)
reaction time			≤2ms
Index			Frequency, voltage, current, power
Safety protection function			Over voltage, current, loading, high temp protection
			Multiple protection and alarm system
Cooling system			Fan cooling
Ambient request	Temp		0°C~45°C
	Relevant humidity		0~90% (Non condensation)
Dim. (Length x Width x Height) (mm)			180x300x420
Weight (Kg)			25

Approximate Cost: US \$493.00 (as of 8/2/2020)

## Chapter 5 Operating Instructions

### 5.0 Operating Instructions

Do Not Operate Lab Melter without reading Operator Manual and being thoroughly familiar with the melting unit.

**Note:** DO NOT attempt to operate the machine without using these and all other instructions.

### 5.1 Preparing the Machine for Start Up

**Table 5-1 Preparing the Machine for Start Up**

Step	Action
1	Be sure tank drain valve is in the closed position.
2	Be sure the heating element switch is in the off position.
3	Add required amount of heat transfer oil to melter reservoir. Make sure heat transfer oil is above the thermometer and thermostat probe inside heat transfer oil vat.

### 5.2 Installing Sample Cans

**Table 5-2 Installing Sample Cans**

Step	Action
1	Insert empty sample can (with stirrer paddle inside) into the melter opening. Make sure can clamp is loose.
2	With the help of the paddle, push the can down until it rests on the can support bars on the bottom of the melter.
3	While holding the can, position the clamp on the can, pinching it between the can lock bracket, and can lock tab, and tighten the thumb screw.
4	Center the can with the lid hole and tighten the can lock bracket thumb screw.

## Chapter 5 Operating Instructions

### 5.3 Installing Stirrer Paddles

With the can secured, the mixing paddle can be connected to the mixer drive shaft. To prevent any material segregation in the melted sample, the lower edge of the paddle must be no more than 1/8"-1/4" (3-5 cm) above the bottom of the can.




**Table 5-3 Installing Stirrer Paddles**

Step	Action
1	Insert the coupler to paddle shaft.
2	Then, lower paddle into can until it rests on the bottom of the can.
3	Align paddle shaft with drive shaft and move coupler onto drive shaft approximately halfway.
4	Tighten lower set screw on flat section of paddle shaft.
5	Raise the paddle 1/8"-1/4" from bottom of the can and tighten the set screw on upper part of coupler to flat part of drive shaft.
6	If paddle is touching can, loosen the thumb screw for the can lock bracket and adjust the can clamp as necessary, and retighten thumb screw.
7	Before adding any material to can, turn on the mixer switch to be sure paddle is not rubbing against the can. If paddle is rubbing the can, it will wear a hole in the can and sample may become contaminated. If rubbing, the paddle may need to be raised, or the can centered under paddle by loosening the can hose clamp, and re-adjusting.
8	The can is now ready to be loaded with sealant sample.

## Chapter 5 Operating Instructions

### 5.4 Warm Up

**Table 5-4 Warm Up Instructions**

Step	Action
1	Turn on the switch for heating elements and turn thermostat knob to desired temperature. (Usually 450°F).
2	Monitor temperature readout. It will take approximately 1-1 ½ hours for heat transfer oil to reach 450°F.
3	When readout reads 450°F, check and recalibrate temperature dial to match readout. To correct thermometer reading, on some models, there is a small screw on the back of the thermometer. You do not need to remove the thermometer to adjust the calibration screw.
4	If your melter is equipped with a hot oil stirrer, plug it in, turn it on, and set at an RPM high enough to circulate the oil, but which will not make a vortex and suck air into the hot oil.
<b>Warning</b>	
    	<p>When adding sample(s) to melter can, turn off the mixer switch.</p> <p>The safe operation of this machine is the operator's responsibility. Use extreme care when operating this machine; safety is the result of being careful and paying attention to details.</p> <p>Before adding any material to can, turn on the mixer switch to be sure paddle is not rubbing against the can. If paddle is rubbing the can, it will wear a hole in the can and the sample may become contaminated. If rubbing, the paddle may need to be raised or the can centered under paddle by loosening the can hose clamp.</p> <p>When handling sample cans containing hot material, wear leather gloves and safety glasses with side shields. Hot material or heat transfer oil can cause serious skin burns.</p> <p>To prevent accidental test specimen contamination, wipe off outside of sample can after removal from melter.</p> <p>Check Temperature of sample when it is being heated. DO NOT heat material above manufacturer recommended safe heating temperature.</p>





## Chapter 6 Maintenance Instructions

### 6.0 Maintenance Instructions

This chapter contains all normal maintenance instructions to properly maintain your machine.

#### 6.1 Cleaning the Melter

We recommend using Orange-Sol industrial cleaner for cleaning the exterior of the machine. The cleaner can be found at the following website; <https://www.orange-sol.com/industrial-formula/>.

#### 6.2 Heat Transfer Oil

Change the heat transfer oil after 500 hours of machine operation, or sooner if contaminated. Heat transfer oil oxidizes and becomes thick, losing its heat transferring characteristics. Follow the steps in [Table 6-1 Heat Transfer Oil Changing Instructions](#), to change heat transfer oil.

**Table 6-1 Heat Transfer Oil Changing Instructions**

Step	Action
1	Warm oil to 250°F
2	Disconnect power from the melter
3	Using extreme care, open the drain valve and empty hot oil into a metal can.
4	Dispose of old oil in accordance with state, federal, and local regulations covering hazardous waste disposal.
5	Replace with a high quality, slow oxidizing heat transfer oil such as Mar-Temp 2525
6	Check for leaks

#### 6.3 Heating Element

Heating element durability depends on the type of heat transfer oil. Breakdown of oil causes corrosion and element failure. Follow the steps in [Table 6-2 Heating Element Changing Instructions](#) to replace damaged heating element.

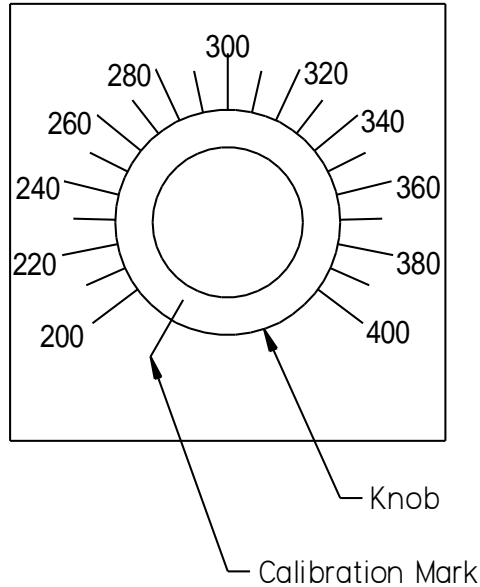
**Table 6-2 Heating Element Changing Instructions**

Step	Action
1	Drain melter as in <a href="#">Table 6-1</a> , steps 1-4
	<b>WARNING</b>
	NEVER turn on heaters without being submerged in heat transfer oil. If heaters are activated dry, they will overheat quickly and become permanently damaged.
2	Install new element (Crafco p/n 40434) (International Model – Crafco p/n 40504N)
3	It is recommended to change electrical plugs on electrical cords
4	Tighten heating element
5	Replace with a high quality, slow oxidizing heat transfer oil such as Mar-Temp 2525
6	Check for leaks

**Chapter 6 Maintenance Instructions**

**6.4 Temperature Control Calibration**

Check the control knob calibration weekly. Calibrate by turning the knob counterclockwise. If the marks do not align, loosen screw in knob and align the line on the control knob with the calibration mark on the scale plate. (See [Figure 6-1 Scale Plate](#))



**Figure 6-1 Scale Plate**

## Chapter 6 Maintenance Instructions

### 6.5 General Maintenance Parts and Suppliers

This section contains references to external suppliers for parts to properly maintain your machine. Refer to Ch. 9: About the Illustrated Parts List for other CrafcO, Inc. parts.

#### 6.5.1 Heat Transfer Oil

All heat transfer oils subjected to high temperatures and air deteriorate with time and lose many of their characteristics.

For best results and safety, the heat transfer oil in this melter must be drained and replaced with new heat transfer oil every 500 hours of operation. Earlier change intervals may be needed if oil becomes contaminated with sealant material.

Crafco has determined that Martemp 2525 has exceptional heat transfer characteristics for use in this melter.

Any other brands should be approved through CrafcO, Inc. customer service

Crafco, Inc. assumes no Liability for an accident or injury incurred through improper use of the melter.

Refer to Table 6-1 Heat Transfer Oil Changing Instructions to change the heat transfer oil.

**Table 6-3 Heat Transfer Oil Suppliers**

Supplier	Phone	Address
Houghton International	Main: (800) 666-4684 (610) 666-4000 Customer Service: (888) 459-9844 Fax: (610) 666-0714	Worldwide Headquarters Mailing Address:  P.O. Box 930 Valley Forge, PA 19482-0930 USA

For more information visit <https://www.houghtonintl.com/en/where-we-are>

## Chapter 6 Maintenance Instructions

### 6.5.2 Sample Can

Can industry specification 404 x 700, 4 1/2" Diameter x 7" tall.  
 Refer to [Table 5-3 Installing Stirrer Paddles](#) to replace the can.


**Table 6-4 Sample Can Suppliers**

Supplier	Phone	Address
Allstate Can Corporation/ Allcan West	USA East Coast: (973) 309-8772 Fax: (973) 560-9217	Allstate Can Corporation One Wood Hollow Road Parsippany, NJ 07054
	USA West Coast: (775) 600-4274 Fax: (775) 841-6802	Allcan West 3535 Arrowhead Drive Carson City, NV 89706
For more information visit <a href="http://allstatecan.com/contact-us">http://allstatecan.com/contact-us</a>		
Freund Can Co.	Main: (800) 363-9822 Fax: (800) 423-7545	Freund Container & Supply 4200 Commerce Court Suite 206 Lisle, IL 60532
For more information visit <a href="https://freundcontainer.com/contact-us/">https://freundcontainer.com/contact-us/</a>		

**Chapter 7 How to Use a Multimeter**

**7.0 How to Use a Multimeter**

This chapter contains instruction on using a Multimeter to check various electric states on the melter. These instructions will help you with troubleshooting the melter. Care should be taken when testing the melter to prevent any electric shock.

	<b>WARNING</b>
	When measuring resistance, ALWAYS disconnect power and isolate the device being measured from all machine circuits.


**7.1 Checking AC Voltage with a Multimeter**

Connect the probes to the meter (See [Figure 7-1 Standard Multimeter](#)). Set the range to a position containing 120 VAC or 240VAC, depending upon the measurement step.

**7.2 Checking Resistance (Ohms)**


Connect probes to the meter (See [Figure 7-1 Standard Multimeter](#)).

**Note:** When checking Ohms the circuit cannot be completed. This means one end of the wire will need to be disconnected.

	<b>WARNING</b>
	When measuring resistance, ALWAYS disconnect power and isolate the device being measured from all machine circuits.

**7.2.1 How to Check Wire Continuity**


Set the meter to “Audible Continuity”. Now touch the probe to each end of the wire in question. The meter will read “0” on the screen and make an audible beep if the wire has continuity from end to end.

	<b>WARNING</b>
	Disconnect power before checking for continuity.

**Chapter 7 How to Use a Multimeter**

**7.2.2 How to Check RTD Sensor**

Set dial to Ohms  $\Omega$ . Disconnect RTD from machine circuits. If your meter has different ranges set to 2K or 2000 ohm range. Touch one probe to each screw or wire of the sensor. The meter will read X.XX if in the 2K range or XXX.X if in the 2000 range. Look up the proper resistance for the temperature at the probe in [Table 8-3](#) and [Table 8-4](#).

	<b>WARNING</b>
<p>Disconnect power and disconnect RTD from machine circuits before checking the RTD.</p>	

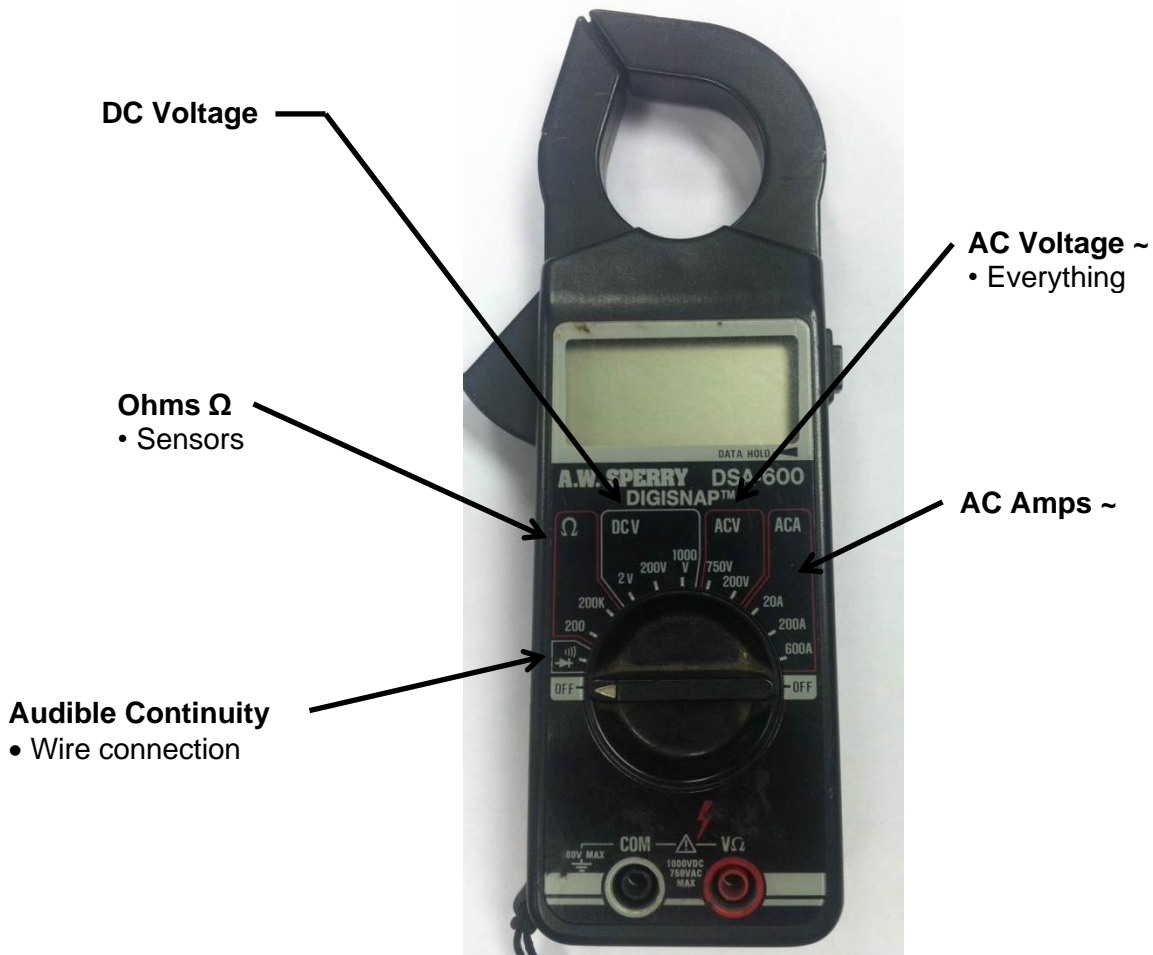
**7.3 Checking Amperage**

The Multimeter can be used to check amperages under 10 amps in AC or DC current.



**Figure 7-1 Standard Multimeter**

**Chapter 7 How to Use a Multimeter**



**Figure 7-2 Clamp – On Amp Meter/Multimeter**





## Chapter 8 Troubleshooting

### 8.0 Troubleshooting

This section will help you diagnose and fix common problems with the melter.

#### 8.1 Slow Heat Up of Sealant

**Table 8-1 Slow Heat Up of Sealant**

Possible Cause	Solution
Low heat transfer oil level	Add heat transfer oil until the heating elements are at least completely covered in oil.
Low heat transfer oil temperature setting	Set the heat transfer oil temperature to 400°F-450°F
Heat transfer oil damaged due to oxidation or contamination	See <a href="#">Table 6-1 Heat Transfer Oil Changing Instructions</a>
Inoperative heating element	Check the heating element by unplugging it from the power supply cable. Then check the resistance across the 2 blade terminals on the heater plug. *Resistance should be 12.25 ±2 Ohms. If resistance is outside of this range, replace the heater as in <a href="#">Table 6-2 Heating Element Changing Instructions</a> .
	<b>WARNING</b>
	NEVER turn on heaters without being submerged in heat transfer oil. If heaters are activated dry, they will overheat quickly and be permanently damaged.
Damaged thermostat	If the thermostat cannot be calibrated as in section 6.4 it should be replaced. See <a href="#">Table 8-2 Thermostat Troubleshooting</a> to check the thermostat function.

\*International Melter – 30.3 ±2 Ohms

## Chapter 8 Troubleshooting

### 8.2 Thermostat Troubleshooting

**Table 8-2 Thermostat Troubleshooting**

Step	
1	Check for 120VAC across terminals 5 and 4 when the heater switch is on. *See <a href="#">Fig. 9-1 Electrical Diagram</a> for terminal locations. If there is not, trace the circuit back to the power entry to find the problem and repair.
2	When the thermostat should be calling for heat, terminal 7 should have 120VAC (measure across terminals 7 and 5). If step 1 has checked out, and there is no output on terminal 7, replace the PakStat.
3	If the temperature display does not seem correct, verify the temperature sensor (RTD) by disconnecting the 2 WHT/BLK wires from the PakStat and measuring resistance (in ohms)... look up the proper resistance for the temperature at the probe in <a href="#">Table 8-3</a> and <a href="#">Table 8-4</a> . If you measure a very low resistance, check the WHT/BLK circuits for a short to metal frame or other parts. If you measure an open circuit, check the WHT/BLK wires for any breaks in either wire. If you measure a resistance greater than 100 ohms but less than 10,000 ohms, but the value is not correct for the temperature according to the table, then replace the RTD.

\*International Melter – See [Figure 9-2 Electrical Diagram, International Lab Melter](#)

## Chapter 8 Troubleshooting

### 8.3 RTD Sensor Ohms vs. Temperature

Table 8-3 and Table 8-4 below show what the ohm reading would be for a given temperature. The following are the instructions for using the table.

Measure the resistance (ohms) of the sensor in question with an ohm meter (See [7.2 Checking Resistance \(Ohms\)](#)) in Section 7 How to Use a Multimeter.

Find the reading in the chart (columns 0 through 9).

Follow the row to the left and get the temperature in 10°F increments, then follow the column up to get the 1°F increment. (For example, 1391 Ohms = 215°F)

**Table 8-3 RTD Sensor Ohms vs. Temperature**

°F	0	1	2	3	4	5	6	7	8	9
0	930.3	932.5	934.7	936.9	939.1	941.3	943.4	945.6	947.8	950.0
10	952.2	954.3	956.5	958.7	960.9	963.0	965.2	967.4	969.6	971.8
20	973.9	976.1	978.3	980.5	982.6	984.8	987.0	989.1	991.3	993.5
30	995.7	997.8	1000.0	1002.2	1004.3	1006.5	1008.7	1010.9	1013.0	1015.2
40	1017.4	1019.5	1021.7	1023.9	1026.0	1028.2	1030.4	1032.5	1034.7	1036.9
50	1039.0	1041.2	1043.4	1045.5	1047.7	1049.8	1052.0	1054.2	1056.3	1058.5
60	1060.7	1062.8	1065.0	1067.1	1069.3	1071.5	1073.6	1075.8	1077.9	1080.1
70	1082.2	1084.4	1086.6	1088.7	1090.9	1093.0	1095.2	1097.3	1099.5	1101.6
80	1103.8	1106.0	1108.1	1110.3	1112.4	1114.6	1116.7	1118.9	1121.0	1123.2
90	1125.3	1127.5	1129.6	1131.8	1133.9	1136.1	1138.2	1140.4	1142.5	1144.7
100	1146.8	1149.0	1151.1	1153.2	1155.4	1157.5	1159.7	1161.8	1164.0	1166.1
110	1168.3	1170.4	1172.5	1174.7	1176.9	1179.0	1181.1	1183.3	1185.4	1187.5
120	1189.7	1191.8	1194.0	1196.1	1198.2	1200.4	1202.5	1204.6	1206.8	1208.9
130	1211.0	1213.2	1215.3	1217.5	1219.6	1221.7	1223.9	1226.0	1228.1	1230.3
140	1232.4	1234.5	1236.7	1238.9	1240.9	1243.0	1245.2	1247.3	1249.4	1251.6
150	1253.7	1255.8	1258.0	1260.1	1262.2	1264.3	1266.5	1268.6	1270.7	1272.8
160	1275.0	1277.1	1279.2	1281.3	1283.5	1285.6	1287.7	1289.8	1292.0	1294.1
170	1296.2	1298.3	1300.4	1302.6	1304.7	1306.8	1308.9	1311.0	1313.2	1315.3
180	1317.4	1319.5	1321.6	1323.8	1325.9	1328.0	1330.1	1332.2	1334.3	1336.5
190	1338.6	1340.7	1342.8	1344.9	1347.0	1349.1	1351.2	1353.4	1355.5	1357.6
200	1359.7	1361.8	1363.9	1366.0	1368.1	1370.2	1372.4	1374.5	1376.6	1378.7
210	1380.8	1382.9	1385.0	1387.1	1389.2	1391.3	1393.4	1395.5	1397.6	1399.7
220	1401.8	1403.9	1406.0	1408.1	1410.3	1412.4	1414.5	1416.6	1418.7	1420.8
230	1422.9	1425.0	1427.1	1429.2	1431.3	1433.4	1435.5	1437.6	1439.6	1441.7
240	1443.8	1445.9	1448.0	1450.1	1452.2	1454.3	1456.4	1458.5	1460.6	1462.7
250	1464.8	1466.9	1469.0	1471.1	1473.2	1475.3	1477.3	1479.4	1481.5	1483.6
260	1485.7	1487.8	1489.9	1492.0	1494.1	1496.1	1498.2	1500.3	1502.4	1504.5

## Chapter 8 Troubleshooting

Table 8-4 RTD Sensor Ohms vs. Temperature

°F	0	1	2	3	4	5	6	7	8	9
270	1506.6	1508.7	1510.8	1512.8	1514.9	1517.0	1519.1	1521.2	1523.3	1525.3
280	1527.4	1529.5	1531.6	1533.7	1535.7	1537.8	1539.9	1542.0	1544.1	1546.1
290	1548.2	1550.3	1552.4	1554.5	1556.5	1558.6	1560.7	1562.8	1564.8	1566.9
300	1569.0	1571.1	1573.1	1575.2	1577.3	1579.4	1581.4	1583.5	1585.6	1587.7
310	1589.7	1591.8	1593.9	1595.9	1598.0	1600.1	1602.2	1604.2	1606.3	1608.4
320	1610.4	1612.5	1614.6	1616.6	1618.7	1620.8	1622.8	1624.9	1627.0	1629.0
330	1631.1	1633.2	1635.2	1637.3	1639.3	1641.4	1643.5	1645.5	1647.6	1649.7
340	1651.7	1653.8	1655.8	1657.9	1660.0	1662.0	1664.1	1666.1	1668.2	1670.2
350	1672.3	1674.4	1676.4	1678.5	1680.5	1682.6	1684.6	1686.7	1688.7	1690.8
360	1692.9	1694.9	1697.0	1699.0	1701.1	1703.1	1705.2	1707.2	1709.3	1711.3
370	1713.4	1715.4	1717.5	1719.5	1721.6	1723.6	1725.7	1727.7	1729.8	1731.8
380	1733.9	1735.9	1737.9	1740.0	1742.0	1744.1	1746.1	1748.2	1750.2	1752.3
390	1754.3	1756.3	1758.4	1760.4	1762.5	1764.5	1766.6	1768.6	1770.6	1772.7
400	1774.7	1776.8	1778.8	1780.8	1782.9	1784.9	1786.9	1789.0	1791.0	1793.1
410	1795.1	1797.1	1799.2	1801.2	1803.2	1805.3	1807.3	1809.3	1811.4	1813.4
420	1815.4	1817.5	1819.5	1821.5	1823.6	1825.6	1827.6	1829.6	1831.7	1833.7
430	1835.7	1837.8	1839.8	1841.8	1843.8	1845.9	1847.9	1849.9	1851.9	1854.0
440	1856.0	1858.0	1860.0	1862.1	1864.1	1866.1	1868.1	1870.2	1872.2	1874.2
450	1876.2	1878.2	1880.3	1882.3	1884.3	1886.3	1888.3	1890.4	1892.4	1894.4
460	1896.4	1898.4	1900.5	1902.5	1904.5	1906.5	1908.5	1910.5	1912.6	1914.6
470	1916.6	1918.6	1920.6	1922.6	1924.6	1926.6	1928.7	1930.7	1932.7	1934.7
480	1936.7	1938.7	1940.7	1942.7	1944.7	1946.8	1948.8	1950.8	1952.8	1954.8
490	1956.8	1958.8	1960.8	1962.8	1964.8	1966.8	1968.8	1970.8	1972.8	1974.8
500	1976.8	1978.8	1980.8	1982.9	1984.9	1986.9	1988.9	1990.9	1992.9	1994.9
510	1996.9	1998.9	2000.9	2002.9	2004.9	2006.9	2008.8	2010.8	2012.8	2014.8
520	2016.8	2018.8	2020.8	2022.8	2024.8	2026.8	2028.8	2030.8	2032.8	2034.8
530	2036.8	2038.8	2040.8	2042.8	2044.7	2046.7	2048.7	2050.7	2052.7	2054.7
540	2056.7	2058.7	2060.7	2062.7	2064.6	2066.6	2068.6	2070.6	2072.6	2074.6
550	2076.6	2078.5	2080.5	2082.5	2084.5	2086.5	2088.5	2090.4	2092.4	2094.4

## Chapter 8 Troubleshooting

### 8.4 Melter is Not Operating (No Hot Oil Heating)

**Table 8-5 Melter Is Not Operating**

Possible Cause	Solution
No power	Check that the melter is plugged in and turned on. If there is still no power, replace electrical cords.
Heating element switch faulty	Check the switch continuity using the following steps. <ol style="list-style-type: none"> <li>1. Disconnect the wires.</li> <li>2. Check continuity across the terminals where the wires were. See <a href="#">7.2.1 How to Check Wire Continuity</a></li> <li>3. With the switch in the on position, there should be continuity.</li> <li>4. With the switch in the off position there should not be any continuity.</li> </ol> Replace switch if needed.
Low thermostat setting	Reset to 400°F-450°F
Faulty thermostat	Check and replace if needed. See <a href="#">Table 8-2 Thermostat Troubleshooting</a>
Faulty heating element(s)	Check as in <a href="#">Table 8-1</a>
RTD sensor not covered with heat transfer oil	Check heat transfer oil level. If the heating elements are not covered add oil to cover them and thermostat probe.

## Chapter 8 Troubleshooting

### 8.5 Mixing Paddle Not Rotating

**Table 8-6 Mixing Paddle Not Rotating**

Possible Cause	Solution
Mixer switch damaged	<p>Check the switch continuity using the following steps.</p> <ol style="list-style-type: none"> <li>1. Disconnect the wires.</li> <li>2. Check continuity across the terminals where the wires were. See <a href="#">7.2.1 How to Check Wire Continuity</a></li> <li>3. With the switch in the on position, there should be continuity.</li> <li>4. With the switch in the off position there should not be any continuity.</li> </ol> <p>Replace switch if needed.</p>
Mixer motor damaged	<p>With the motor switch in the on position, and the motor disconnected from the wiring, check for 120VAC across the BLK and WHT wires leading to the motor. If there is no voltage, trace the circuits back to the power entry to find the problem and fix.</p> <p>Follow these steps to check the motor itself</p> <ol style="list-style-type: none"> <li>1. Disconnect the motor leads</li> <li>2. Measure resistance across circuit where BLK wire was connected and where the GRN wire was connected.</li> <li>3. Measure resistance across circuit where the WHT wire was connected and where the GRN wire was connected.</li> <li>4. The resistances should be either <math>16 \pm 2</math> Ohms, or between 100-200 Ohms.</li> <li>5. If either coil resistance is out of range, replace the motor.</li> </ol>
Paddle coupling set screw(s) loose	Retighten

## Chapter 8 Troubleshooting

### 8.6 Heating Oil Contamination in Sample Can

If paddle is rubbing the can, it will wear a hole in the can and the sample may become contaminated. If rubbing, the paddle may need to be raised or the can centered under paddle by loosening the can hose clamp.

### 8.7 Sealant Temperature is Higher or Lower than Desired Temperature

**Table 8-7 Sealant Temp. Higher or Lower than Desired**

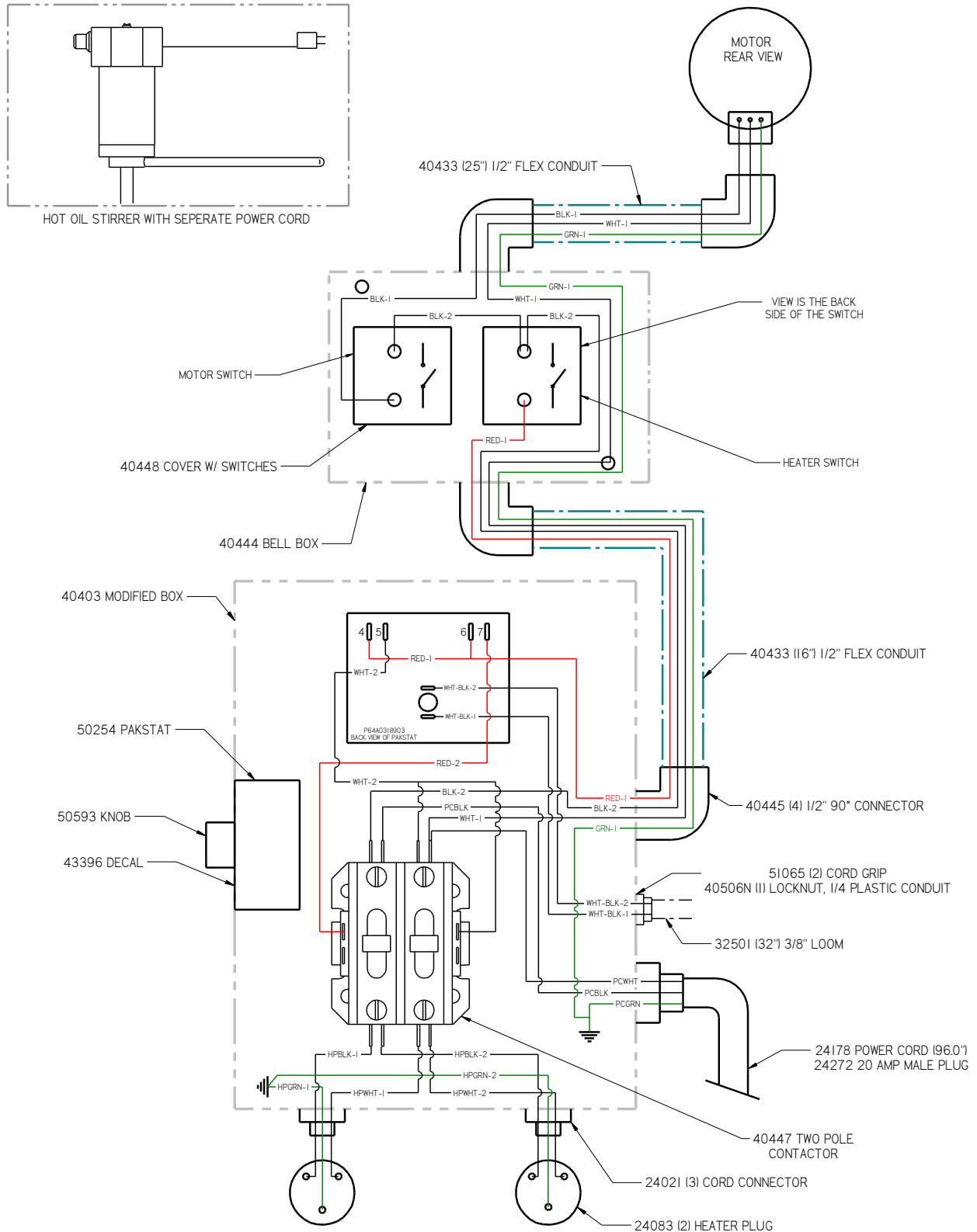
<b>Possible Cause</b>	<b>Solution</b>
Thermostat setting incorrect	Calibrate if needed
Thermostat sensor not covered with heat transfer oil	Add oil if needed
Temperature gauge incorrectly calibrated, faulty, or not covered by heat transfer oil	Check and correct problem





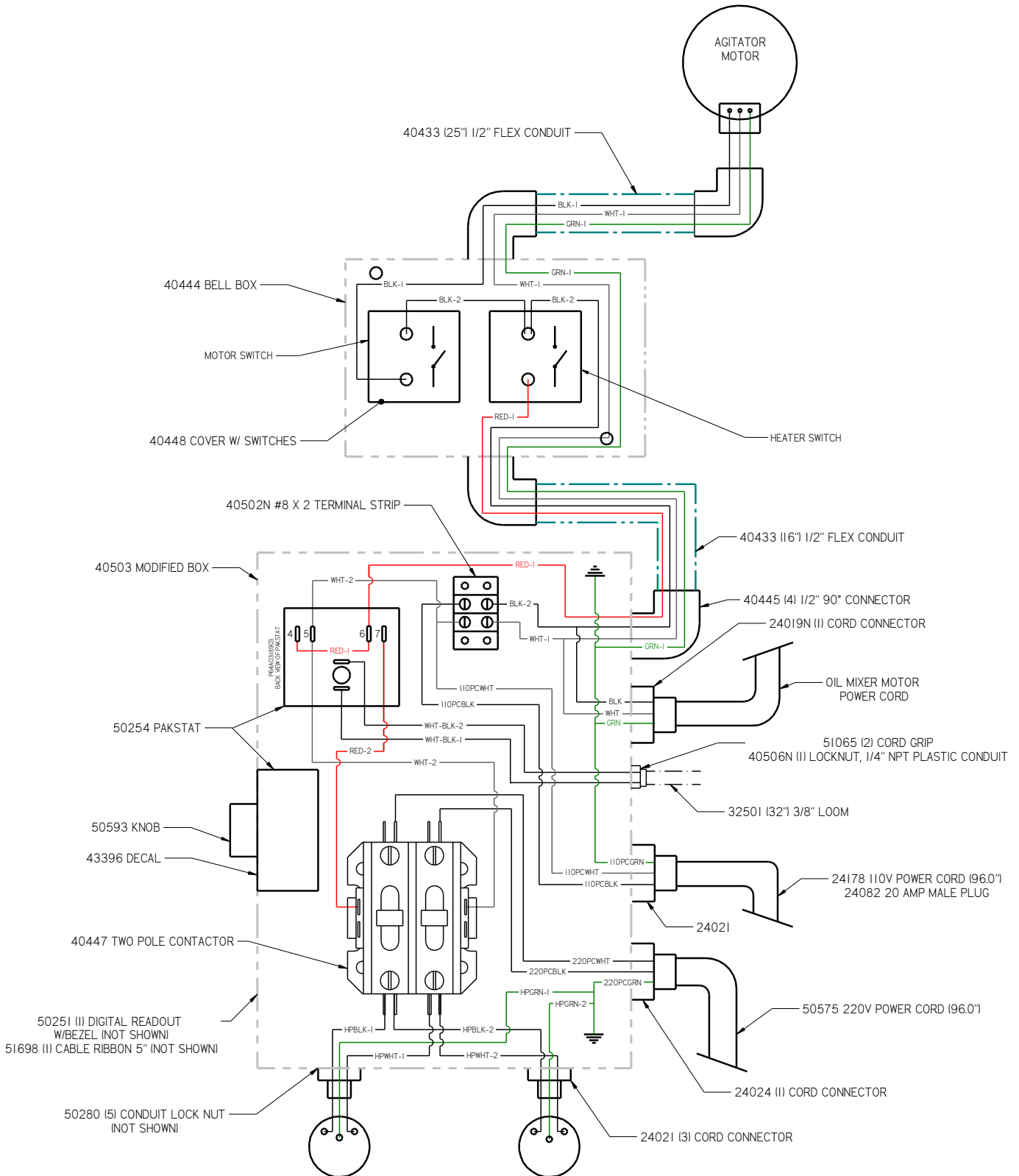
## Chapter 9 Electrical Schematic

### 9.0 Electrical Schematic



**Fig. 9-1 Electrical Diagram, Lab Melter**

## Chapter 9 Electrical Schematic



**Figure 9-2 Electrical Diagram, International Lab Melter**

## Chapter 10 Illustrated Parts List

### 10.0 About the Illustrated Parts List

The Illustrated Parts List (IPL) is designed to help technical service or maintenance personnel correctly identify orderable replacement parts.

The figure and table titles reference the part number (PN) to which they apply.

Illustrations are designed to show general shape and size of a part and the relationship that part has to other parts. Actual size and shape of parts or components may differ or vary from the actual part or component.

### 10.1 Ordering Crafco Parts

Crafco distributors and Crafco Pavement Preservation Supply Centers are strategically located throughout the United States. Parts can be ordered from your local Crafco distributor or directly from Crafco, Inc. if a distributor is not available in your area.

When ordering parts, give the following information:

- Part Number
- Machine Model
- Serial Number

Write, call, or Fax Crafco, Inc. at the following:

Crafco, Inc. Headquarters

6165 W Detroit St.

Chandler, AZ 85226

Phone: (602) 276-0406

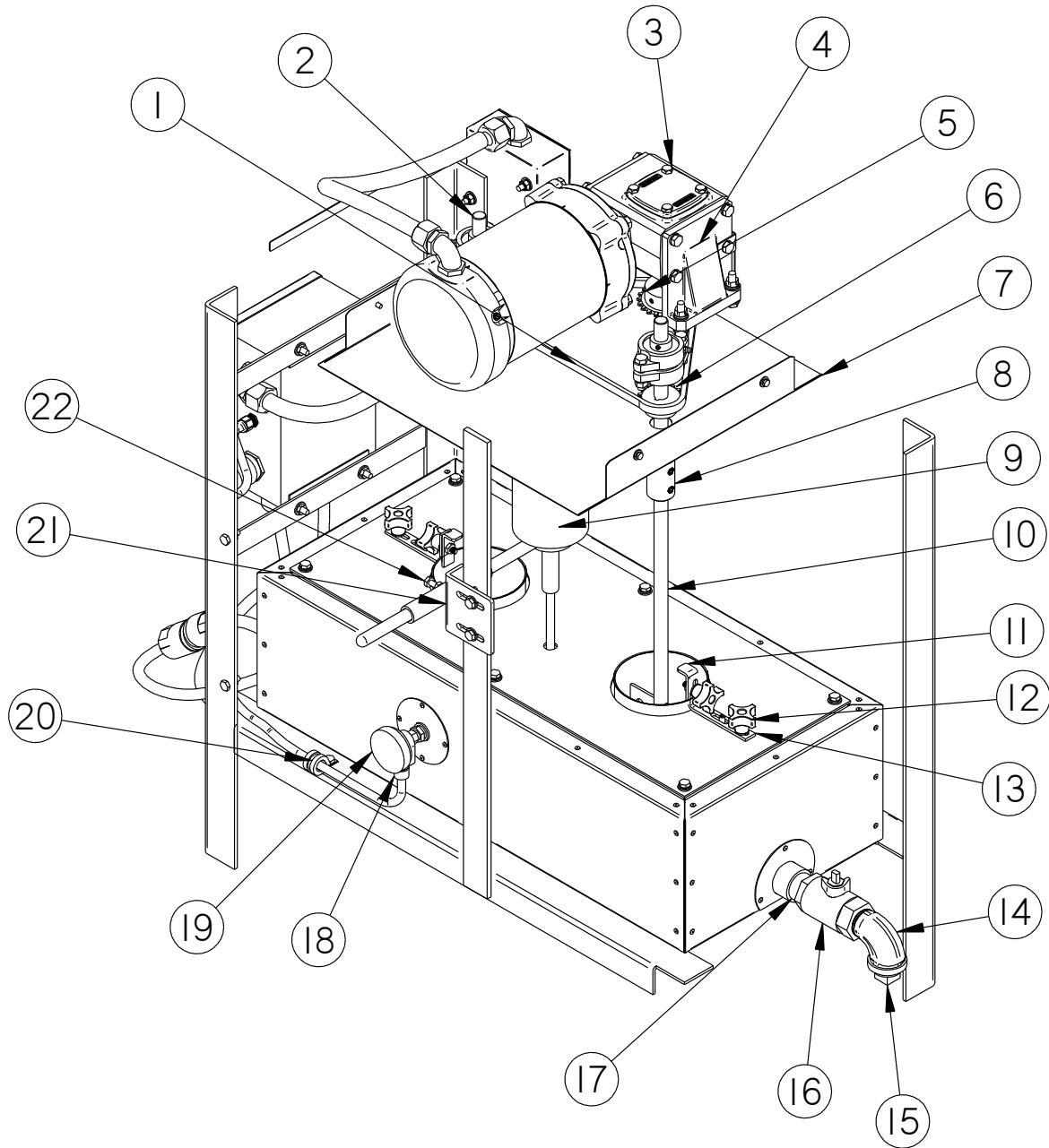
Toll Free: (800) 528-8242

Fax: (480) 961-0513

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**Chapter 10 Illustrated Parts List**

**10.2 Lab Melter**



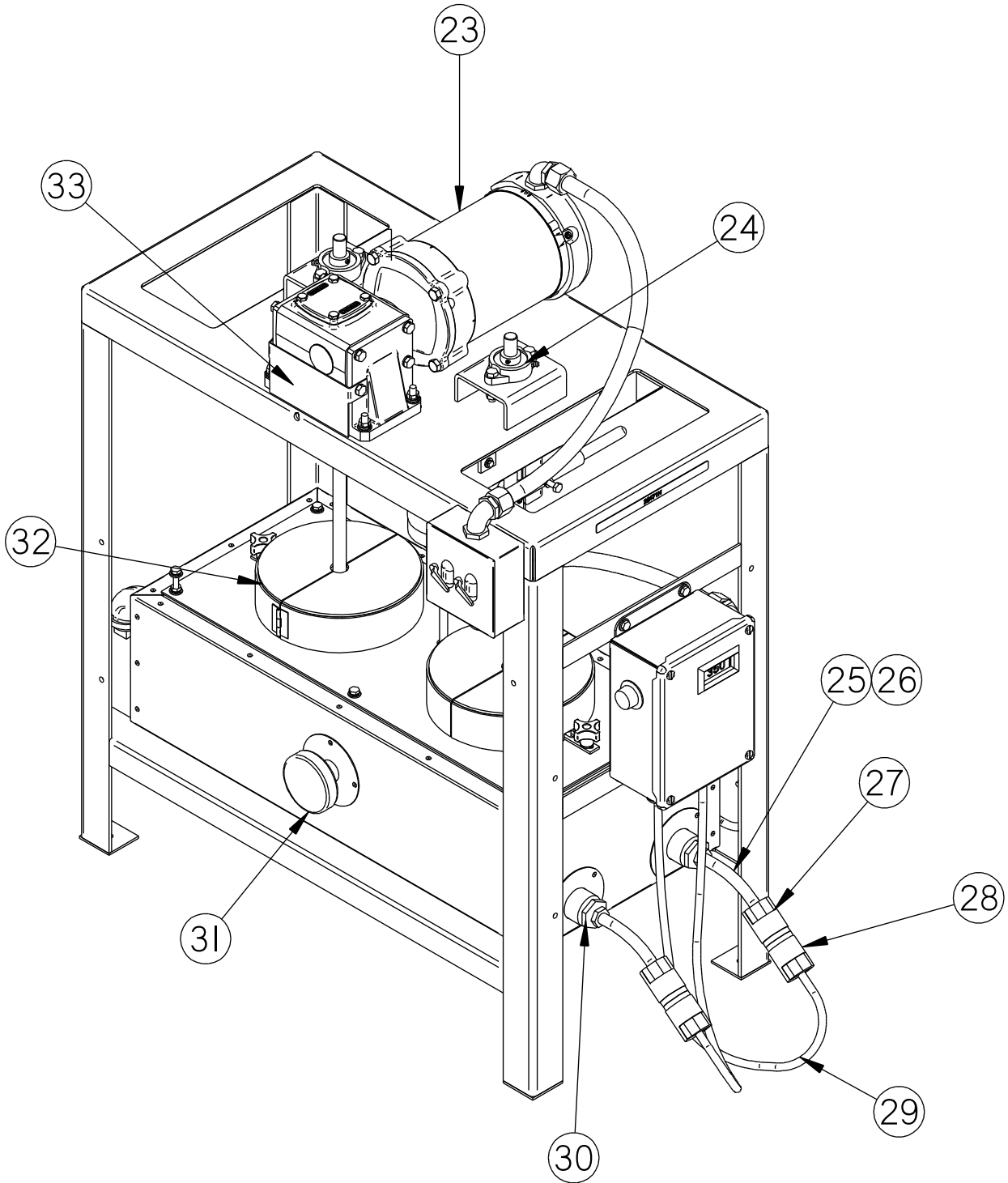
**Fig. 10-1 Lab Melter Cutaway**

## Chapter 10 Illustrated Parts List

**Table 10-1 Lab Melter Parts List**

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-1	1	40486N	#35 ROLLER CHAIN, LAB MELTER	1
	2	40438	SHAFT, UPPER	2
	3	40417	GEAR REDUCER	1
	4	40416	MOUNT, GEAR REDUCER	2
	5	40415	SPROCKET, 21 TOOTH	1
	6	40475	SPROCKET, 16 TOOTH	2
	7	40412	CHAIN COVER	1
	8	40470	5/8" X 2" LONG SHAFT COUPLING	2
	9	40546	HOT OIL MIXER, ELECTRIC	1
	10	40435	40435 ASSY, PADDLE	2
	11	40594	TAB, CAN LOCKING BRACKET	2
	12	40548	THUMB SCREW, CAN CLAMP	4
	13	40595	BRACKET, CAN LOCK	2
	14	28240	1" STREET ELBOW	1
	15	28285	PLUG, PIPE 1" SQ. HD.	1
	16	29240	1" NPT BALL VALVE	1
	17	28005	NIPPLE, 1" XH CLOSE	1
	18	51065	CORD GRIP	1
	19	55120	RTD SENSOR	1
	20	32017	5/8 COVERED CLAMP	3
	21	40539	MIXER MOUNTING BRACKET	1
	22	28701	1/4-20 x 3/4" BOLT	1

**Chapter 10 Illustrated Parts List**



**Fig. 10-2 Lab Melter**

## Chapter 10 Illustrated Parts List

Table 10-2 Lab Melter Parts List (Continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-2	23	40418	MOTOR, 1/6 HP	1
	24	40596	2 BOLT FLANGE BEARING	4
	25	40434	FIREROD HEATER	2
	26	40504N	FIREROD HEATER, INTERNATIONAL MELTER	2
	27	24083	ELECTRICAL CONNECTOR FEMALE	2
	28	24082	ELECTRICAL CONNECTOR MALE	2
	29	40499	LAB MELTER ELECTRIC WIRING	1
	30	28350	1" X 1/2" HEX HEAD BUSHING	2
	31	25050	2 1/2" BOTTOM MOUNT TEMP. GAUGE	1
	32	40599	8" CAN COVER ASSEMBLY	2
	33	40597	CHAIN SPROCKET GUARD	1









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