



SS60 ***Diesel***

Parts Manual - 26618
Revision C

Fill in appropriate fields that apply to this machine

Machine S/N: _____

1st Hose S/N: _____

2nd Hose S/N: _____

1st Pump S/N: _____

2nd Pump S/N: _____

Engine S/N: _____

Compressor S/N: _____

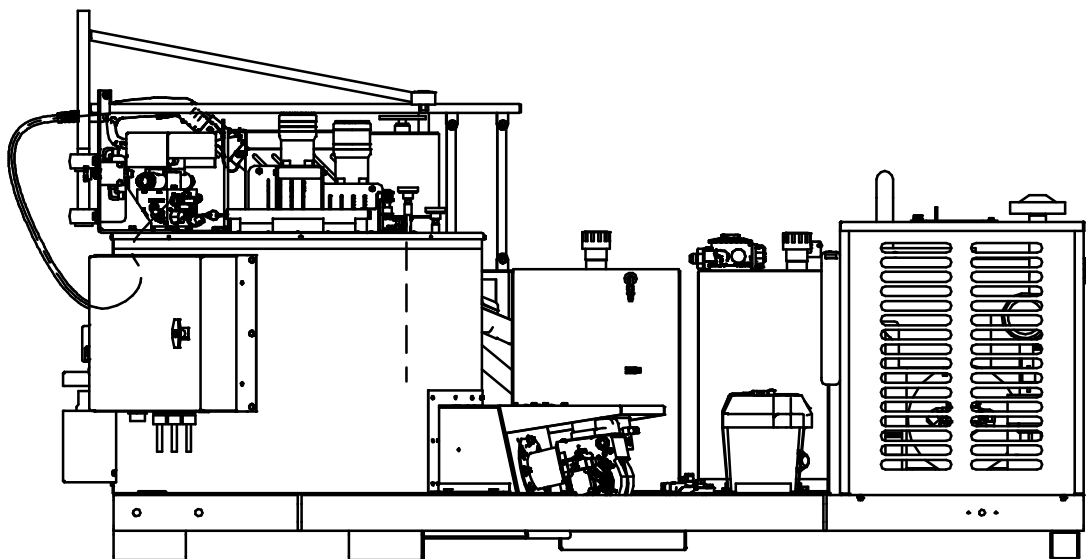
Gear Box S/N (Patcher): _____

Blower S/N (Magnum): _____

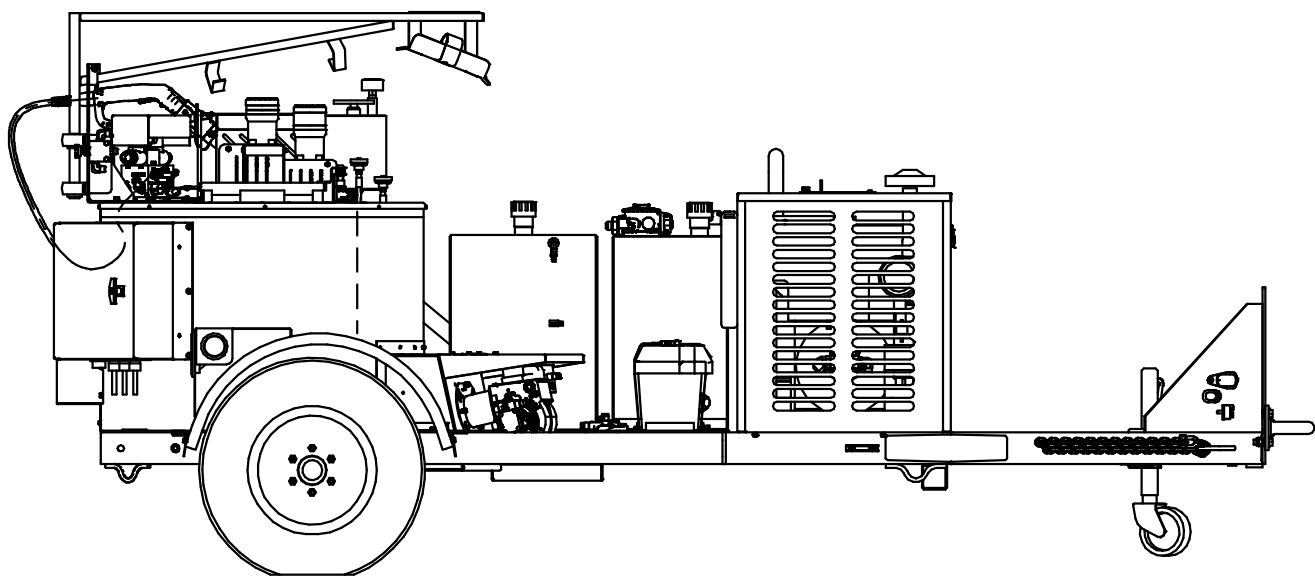
SUPER SHOT 60 Diesel Melter Part Manual

Revisions

[illegible]



SUPER SHOT 60 DIESEL SKID MOUNT MELTER
PN 46800



SUPER SHOT 60 DIESEL TRAILER MELTER
PN 46950

Table of Contents

1.0 About This Manual	1-1
1.1 How to use this manual:	1-1
2.0 Safety Precautions	2-1
2.1 General Safety.....	2-1
2.2 Personal Safety	2-1
2.3 Equipment or Operational Safety.....	2-1
2.4 California Proposition 65.....	2-2
2.4.1 All Crafco, Inc. Equipment.....	2-2
2.4.2 All Crafco, Inc. Equipment using a diesel engine	2-2
2.5 Safety Symbols and Notices	2-3
3.0 Limited Warranty	3-1
3.1 Warranty Claim Instructions.....	3-2
4.0 Machine Specifications	4-1
5.0 Operating Instructions	5-1
5.1 Preparing the Machine for Start Up.....	5-1
5.2 Machine Start Up for Electric Hose	5-3
5.3 About the Heated Hose, Wand, Valve, and Tip Guard	5-5
5.4 Electric Hose Care and Cautions.....	5-6
5.5 Storing the Electric Hose for Transport.....	5-6
5.6 Loading Material into the Sealant Tank.....	5-7
5.6.1 Material Tank Depth Chart.....	5-8
5.7 Dispensing the Material	5-9
5.8 Shutting Down and Cleaning Out the Machine	5-10
5.9 Overnight Heater Use	5-11
5.10 Mounting a Skid Machine	5-12
5.11 Shot Timer Option	5-13
5.12 Storing the Machine.....	5-13
6.0 Maintenance Instructions	6-1
6.1 Engine	6-1
6.2 Hydraulic System.....	6-1
6.3 Heat Transfer Oil	6-1
6.4 Wheel Bearing	6-1
6.5 Material Sensor Tube	6-1
6.6 Lug Nuts.....	6-1

Table of Contents

6.7 Brakes.....	6-2
6.8 Tongue Jack.....	6-2
6.9 Temperature Control Calibration	6-2
6.10 Cleaning the Melter	6-2
6.11 Maintenance Chart.....	6-3
6.12 Service Instructions	6-4
6.13 General Maintenance Parts.....	6-4
6.14 Recommended Spare Parts	6-5
6.15 Recommended Fluids and Lubricants	6-5
6.16 Applicable Brands of Heat Transfer Oil.....	6-6
6.17 Typical Heat Transfer Oil Specifications	6-6
6.18 Material Pump Replacement	6-7
6.19 Wand Repair Instructions	6-19
6.19.1 Cable Replacement	6-19
6.19.2 Switch Replacement.....	6-19
6.19.3 Terminal Block Replacement.....	6-19
6.19.4 Wand Handle Replacement.....	6-20
6.20 Burner Fuel Filter Replacement.....	6-22
7.0 How to Use a Multimeter.....	7-1
7.1 Checking DC Voltage with a Multimeter	7-1
7.2 Checking AC Voltage with Multimeter.....	7-1
7.3 Checking Resistance (Ohms).....	7-1
7.4 Checking Amperage.....	7-2
8.0 Burner Troubleshooting	8-1
8.1 Sealant heating Slowly	8-11
8.2 Mixer Troubleshooting.....	8-12
8.2.1 Symptom: Mixer Does Not Rotate.....	8-12
8.2.2 Mixer Hydraulic Troubleshooting	8-18
8.3 Hose Troubleshooting	8-21
8.3.1 Symptom: Hose Does Not Heat.....	8-21
8.3.2 Symptom: Trigger is not Working.....	8-26
8.3.3 RTD Sensor Ohms vs. Temperature.....	8-27
8.4 Pump Troubleshooting	8-29
8.4.1 Symptom: Material Does Not Dispense When the Pump is Activated	8-29
8.4.2 Pump Hydraulic Troubleshooting	8-35

Table of Contents

9.0 About the Illustrated Parts List.....	9-1
9.1 Ordering CrafcO Parts.....	9-1
9.2 Super Shot 60 Diesel Skid Mount Melter	9-2
9.3 Super Shot 60 Diesel Trailer Melter	9-6
9.4 Tank Assembly	9-10
9.5 Control Box Assembly	9-12
9.6 Engine Assembly.....	9-16
9.7 Hydraulic Control Valve Assembly.....	9-18
9.8 Material Flow Control Assembly: PN 46060.....	9-19
9.9 Pump/Mixer Motor Assembly: PN 44832	9-20
9.10 Diesel Burner Assembly: PN 46380.....	9-22
9.11 Wand Assembly.....	9-24
9.12 Engine Cover.....	9-26
9.13 Fuel System Schematic	9-27
9.14 Hydraulic Schematic PN 46959	9-28
9.15 Electrical Schematic	9-32
10.0 Tools and Accessories	10-1

List of Figures

Figure 5.1 Hydraulic Fluid Level and Temp. Gauge	5-2
Figure 5.2 Heat Transfer Oil Dipstick	5-2
Figure 6.1 Lug Bolt Tightening Sequence	6-1
Figure 6.2 Temperature Control Calibration	6-2
Figure 6.3 Agitator and Pump Shaft Alignment	6-7
Figure 6.4 Removal of Motor Mount Assembly	6-8
Figure 6.5 Supporting the Agitator Away from the Material Pump	6-9
Figure 6.6 Unbolting the Material Pump	6-10
Figure 6.7 Cleaning of the Pump Mounting Plate	6-11
Figure 6.8 Pump Drive Shaft Dry Fit to Material Pump	6-12
Figure 6.9 New Material Pump Mounting	6-13
Figure 6.10 Agitator Shaft and Paddle Mounting	6-14
Figure 6.11 Pump Shaft Placement	6-15
Figure 6.12 Pump Shaft to Hydraulic Motor Placement	6-16
Figure 6.13 Agitator Connecting Link	6-17
Figure 6.14 Agitator Chain Tightening Steps	6-18
Figure 6.15 Switch Wire Location	6-20
Figure 6.16 Wire Routing	6-20
Figure 6.17 Terminal Block Wiring	6-21
Figure 6.18 Actuator Spring Location	6-21
Figure 6.19 Actuator / Trigger Assembly	6-21
Figure 7.1 Standard Multimeter	7-2
Figure 7.2 Clamp – On Amp Meter/Multimeter	7-3
Figure 8.1 Diesel Burner Schematic	8-6
Figure 8.2 Diesel Burner Electrode Adjustment	8-10
Figure 8.3 Diesel Burner Air Settings	8-10
Figure 8.4 Checking Din Plug Voltage	8-16
Figure 8.5 Mixer Circuit Schematic	8-17
Figure 8.6 Hydraulic Valve Pressure Setting	8-19
Figure 8.7 Din Plug Layout	8-20
Figure 8.8 Junction Box Voltage Test	8-23

List of Figures

Figure 8.9 Hose Circuit Schematic	8-24
Figure 8.10 Junction Box Wiring	8-25
Figure 8.11 Pump Circuit Schematic	8-36
Figure 9.1 Super Shot 60 Diesel Skid Mount Melter	9-2
Figure 9.2 Super Shot 60 Diesel Trailer Melter.....	9-6
Figure 9.3 Tank Assembly	9-10
Figure 9.4 Control Box Assembly	9-12
Figure 9.5 Engine Assembly	9-16
Figure 9.6 Hydraulic Control Valve Assembly: PN 45420.....	9-18
Figure 9.7 Material Flow Control Assembly: PN 46060	9-19
Figure 9.8 Pump/Mixer Motor Assembly: PN 44832	9-20
Figure 9.9 Diesel Burner Assembly: PN 46380	9-22
Figure 9.10 Wand Assembly: PN 52200.....	9-24
Figure 9.11 Engine Cover	9-26
Figure 9.12 Fuel System Schematic.....	9-27
Figure 9.13 Hydraulic Schematic: PN 46959.....	9-28
Figure 9.14 Electrical Schematic.....	9-32

List of Tables

Table 2-1 Safety Symbols and Notices	2-3
Table 2-2 Safety Symbols and Notices (continued).....	2-4
Table 4-1 Machine Specifications	4-1
Table 5-1 Preparing the Machine for Start Up.....	5-1
Table 5-2 Starting the Burner.....	5-3
Table 5-3 Electric Hose Care	5-6
Table 5-4 Hose for Transport Instructions.....	5-6
Table 5-5 Loading Material into the Sealant Tank.....	5-7
Table 5-6 Material Tank Depth Chart.....	5-8
Table 5-7 Dispensing the Material	5-9
Table 5-8 Shutting Down the Machine	5-10
Table 5-9 Overnight Heater Use	5-11
Table 5-10 Mounting a Skid Machine.....	5-12
Table 6-1 Maintenance Chart.....	6-3
Table 6-2 Service Instructions.....	6-4
Table 6-3 General Maintenance Parts	6-4
Table 6-4 Recommended Spare Parts.....	6-5
Table 6-5 Recommended Fluids and Lubricants.....	6-5
Table 6-6 Applicable Brand of Heat Transfer Oil.....	6-6
Table 6-7 Material Pump Replacement.....	6-7
Table 6-8 Material Pump Replacement (continued)	6-8
Table 6-9 Material Pump Replacement (continued)	6-9
Table 6-10 Material Pump Replacement (continued)	6-10
Table 6-11 Material Pump Replacement (continued)	6-11
Table 6-12 Material Pump Replacement (continued)	6-12
Table 6-13 Material Pump Replacement (continued)	6-13
Table 6-14 Material Pump Replacement (continued)	6-14
Table 6-15 Material Pump Replacement (continued)	6-15
Table 6-16 Material Pump Replacement (continued)	6-16
Table 6-17 Material Pump Replacement (continued)	6-17
Table 6-18 Material Pump Replacement (continued)	6-18

List of Tables

Table 6-19 Burner Fuel Filter Replacement.....	6-22
Table 8-1 Basic Visual Burner Troubleshooting.....	8-1
Table 8-2 Basic Visual Burner Troubleshooting (continued)	8-2
Table 8-3 Burner Electrical Troubleshooting	8-2
Table 8-4 Burner Electrical Troubleshooting (continued).....	8-3
Table 8-5 Burner Electrical Troubleshooting (continued).....	8-4
Table 8-6 Burner Electrical Troubleshooting (continued).....	8-5
Table 8-7 Smoke Coming Out of Exhaust Stack	8-7
Table 8-8 Burner Lights But Shuts Down After 15 Seconds	8-7
Table 8-9 Testing the DC Controller.....	8-8
Table 8-10 Burner Fuel Solenoid Testing.....	8-8
Table 8-11 Burner Ignition Coil Testing	8-9
Table 8-12 Bleeding the Burner	8-9
Table 8-13 Sealant is Heating Slowly.....	8-11
Table 8-14 Basic Visual Mixer Troubleshooting.....	8-12
Table 8-15 Mixer Electrical Troubleshooting	8-13
Table 8-16 Mixer Electrical Troubleshooting (continued).....	8-14
Table 8-17 Mixer Electrical Troubleshooting (continued).....	8-15
Table 8-18 Mixer Hydraulic Troubleshooting	8-18
Table 8-19 Basic Visual Hose Troubleshooting	8-21
Table 8-20 Hose Electrical Troubleshooting.....	8-21
Table 8-21 Hose Electrical Troubleshooting (continued)	8-22
Table 8-22 Trigger is not Working	8-26
Table 8-23 RTD Sensor Ohms vs. Temperature	8-27
Table 8-24 RTD Sensor Ohms vs. Temperature (continued).....	8-28
Table 8-25 Basic Visual Pump Troubleshooting	8-29
Table 8-26 Pump Electrical Troubleshooting	8-30
Table 8-27 Pump Electrical Troubleshooting (continued)	8-31
Table 8-28 Pump Electrical Troubleshooting (continued)	8-32
Table 8-29 Pump Electrical Troubleshooting (continued)	8-33
Table 8-30 Pump Electrical Troubleshooting (continued)	8-34

List of Tables

Table 8-31 Pump Hydraulic Troubleshooting	8-35
Table 9-1 Super Shot 60 Diesel Skid Mount Melter: PN 46800	9-3
Table 9-2 Super Shot 60 Diesel Skid Mount Melter: PN 46800 (continued)	9-4
Table 9-3 Super Shot 60 Diesel Trailer Melter: PN 46950.....	9-7
Table 9-4 Super Shot 60 Diesel Trailer Melter: PN 46950 (continued)	9-8
Table 9-5 Super Shot 60 Diesel Trailer Melter: PN 46950 (continued)	9-9
Table 9-6 Tank Assembly	9-11
Table 9-7 Control Box Assembly: PN 46962N	9-13
Table 9-8 Control Box Assembly: PN 46962N (continued).....	9-14
Table 9-9 Engine Assembly	9-17
Table 9-10 Hydraulic Control Valve Assembly: PN 45420.....	9-19
Table 9-11 Material Flow Control Assembly: PN 46060	9-19
Table 9-12 Pump/Mixer Motor Assembly: PN 44832.....	9-21
Table 9-13 Diesel Burner Assembly: PN 46380	9-23
Table 9-14 Wand Assembly.....	9-25
Table 9-15 Engine Cover	9-26
Table 9-16 Hydraulic Schematic: PN 46959.....	9-29
Table 9-17 Hydraulic Schematic: PN 46959 (continued)	9-30
Table 9-18 Electrical Schematic.....	9-33

Chapter 1 Introduction

1.0 About This Manual

This manual is supplied with each new CrafcO Super Shot 60 Diesel 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 CrafcO Super Shot 60 Diesel 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.

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 of the machine. If there is indication of water in the heat transfer oil system, warm heating oil to 250-300°F (121.1-148.96°C) for 2 to 3 hours.
- Bodily contact with hot sealant or heat transfer oil can cause severe burns.
- If the mixer is not stopped before adding solid material, hot material can get on an operator's body and cause severe burns.
- Keep hands, feet, and clothing away from all moving parts.

2.3 Equipment or Operational Safety

- Do not operate the machine in buildings or work areas that do not have sufficient airflow.
- Shut-down the burner and the engine before refilling the fuel tank.
- Make sure mixer stops before adding solid material to the sealant tank. Lift the lid, place the material on the lid and close the lid. The mixer should restart automatically.
- Always keep a correctly maintained fire extinguisher near the machine and know how to use it.
- DO NOT heat transfer oil to a temperature of more than 525°F (273.9°C).
- DO NOT put too much heat transfer oil in the reservoir. The expansion of oil while it heats up can cause overflow. With the machine on level ground, check the oil each day before starting the burner. Add oil to the top mark on the dipstick if required (at 70°F (21.1°C)). Use only recommended heat transfer oil. Change the oil after 500 hours of machine operation, or one year, whichever comes first.
- Follow the operating instructions for starting and shutting down the burner. Instructions are mounted on the control box on the machine.
- Calibrate the temperature control operation after each 50 hours of machine operation. Refer to section [6.9 Temperature Control Calibration](#).
- Replace any hoses which show signs of wear, fraying or splitting.
- Make sure all fittings and joints are tight and do not leak each time the machine is used.
- Do not leave the machine unattended while the burner is lit.
- Tighten all bolts and screws every 100 hours of machine operation.

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

26471N

2.4.2 All Crafco, Inc. Equipment using a diesel engine

 **WARNING:** Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to www.P65warnings.ca.gov/diesel.

26307

Chapter 2 Safety

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
WARNING	Warning	Refers to possible bodily injury or death.
CAUTION	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.
	Body Crush Hazard	Do not stand between trailer and hitch when hooking melter to truck.

Chapter 2 Safety

Table 2-2 Safety Symbols and Notices (continued)

Symbol	Item	Remark
	Crush Hazard	Keep feet and legs clear.
	Pinch Hazard	Keep hands and feet clear.
	Exhaust Hazard	Avoid breathing engine exhaust.
	Read Manual	Read and understand operator and safety manuals before operating machine.



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 the 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 the 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 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 inquiries:

Crafco, Inc.

6165 W Detroit St, Chandler, AZ 85226

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

Fax: (480) 961-0513

CustomerService@crafco.com

Chapter 4 Machine Specifications

4.0 Machine Specifications

Table 4-1 Machine Specifications

Specification	PN 46800 SKID	PN 46950 TRAILER
Vat Capacity	58 Gallons (220 Liters)	
Melt Capacity	480 Pounds per hour (218 Kg, per hour)	
Heat Transfer Oil Required	21 Gallons at 70°F (82 Liters at 21°C)	
Tank Construction	Double boiler type	
Tank Opening Size	12.25 in x 14.63 in (31.2 cm x 38.1 cm)	
Maximum Heat Input	205,000 BTUs	
Burner and Temperature Control	Diesel-forced air thermostatic control	
Engine Isuzu Diesel	Three cylinder Model 3CJ1 19 HP @ 3,000 RPM (14.2 kW @ 3,000 RPM)	
Drive Mechanism	All hydraulic with infinite speed forward and reverse on material pump. Fixed speed agitator.	
Mixer	Full sweep mixer with 2 horizontal paddles, vertical risers	
Dry Weight Approximately	2,500 Lbs. (1,134 kg)	3,200 Lbs. (1,451 kg)
Diesel tank Capacity	26 Gallons (98.4 Liters)	
Hydraulic Tank Capacity	26 Gallons (98.4 Liters)	
Axle Capacity	N/A	Single Torsional 4,200 lbs. (1,905 kg)
Tires	N/A	ST225/75 R15 (Load Range D)

Chapter 5 Operating Instructions

5.0 Operating Instructions

The Crafco Super Shot 60 Diesel was developed to melt Crafco sealants. However, it works well with most road asphalt and federal specification crack or joint sealants.

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	Fill the engine fuel tank with diesel fuel. Note: Use No. 1 Diesel fuel in cold weather and No. 2 Diesel fuel in warm weather
2	Check the oil level in the engine crankcase. (Refer to the manufacturer's instruction for the engine.)
3	Check the hydraulic fluid level while at a temperature of 70°F (21.1°C). Add fluid if necessary. See Figure 5.1 Hydraulic Fluid Level and Temp. Gauge
4	With the machine on level surface, check the heat transfer oil level while at a temperature of 70°F (21.1°C). The oil should be at the full mark on the dipstick. DO NOT overfill or spillage may occur when the oil is heated and expands. See Figure 5.2 Heat Transfer Oil Dipstick
5	Make sure all toggle switches are turned "OFF" and all temperature control dials are set to their minimum settings.
WARNING	
	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. Remember the propane flame is approximately 2,200°F (1204.4°C). Some exposed parts of the machine reach 500°F (260°C), the sealant 400°F (204.4°C), and the hydraulic fluid 180°F (82.2°C). Always put on protective clothing, gloves, hard-soled shoes, and safety glasses or a face shield. Be sure that all joints and fittings are tight and leak proof. Immediately replace any hose, which shows any signs of wear, fraying, or splitting. Tighten all bolts, nuts, and screws every 100 hours.

Chapter 5 Operating Instructions



Figure 5.1 Hydraulic Fluid Level and Temp. Gauge

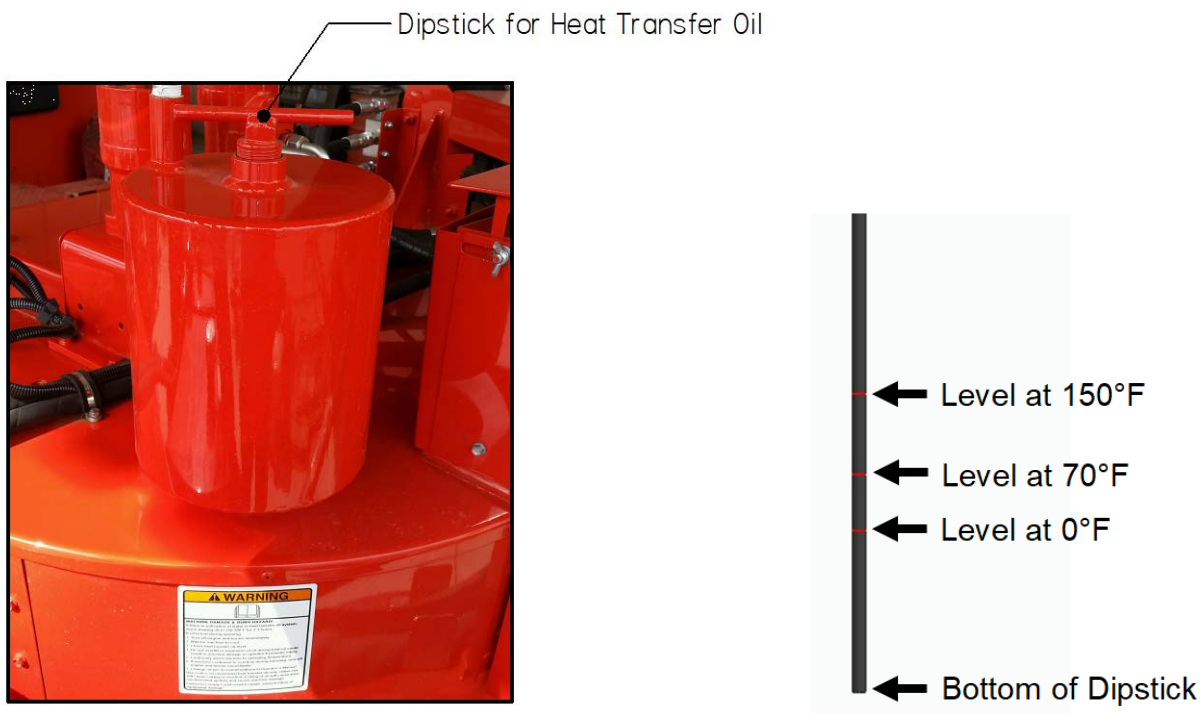


Figure 5.2 Heat Transfer Oil Dipstick

Chapter 5 Operating Instructions

5.2 Machine Start Up for Electric Hose

Table 5-2 Starting the Burner

Step	Action
1	Fully open the exhaust stack cover.
2	Start the engine. (Refer to the manufacturer's instructions for the engine).
3	Turn the "POWER" toggle switch in the control box to the "ON" position. The red light marked "BURNER" will illuminate indicating that the material and hot oil temperatures are below set point. When the red light goes off this indicates the material or oil temperatures are up to the set point. NOTE: Just because this light is illuminated does not indicate the burner is actually working.
4	Set the heat transfer oil temperature at 500°F (260°C).
5	Set the material temperature to the manufacturer's recommended temperature.
	CAUTION If the burner does not ignite the first time, turn the "POWER" toggle switch to the "OFF" position. Turn the toggle switch to "ON" again; the burner should ignite. If the burner still does not ignite, refer to 8.0.1 Symptoms: Burner will Not Ignite to determine the malfunction. Important: The solid material in the tank melts first around the walls and bottom of the tank. The material temperature sensor is located by the wall, therefore, it is possible that at the beginning of the melting process the indicated temperature reaches operating value, but the material between to the center tower and the outside wall of the tank is still solid. This is normal, and when the heated hose is ready for operation, most of the material in the tank will be melted and heated to the proper application temperature.
6	Allow the heat transfer oil to continue to heat.
7	When the material reaches 275°F (135°C), the mixer light will illuminate which indicates the mixer can be engaged by turning the toggle switch at the control panel to "FORWARD" position. If the mixer does not move, allow the material to heat longer. Note: Mixer speed is preset at the factory and cannot be adjusted. The mixer cannot be engaged until the material reaches 275°F (135°C).
	CAUTION Jamming the mixer can cause the hydraulic oil to overheat and damage the machine.
8	The hose automatically turns "ON" when the material temperature reaches 275°F (135°C). The red light marked "HEATED HOSE" will illuminate when the hose control is calling for heat.
9	Adjust the temperature dial to the manufacturer's recommended temperature. Note: The hose reaches operating temperature in approximately 30 minutes.

Chapter 5 Operating Instructions

Table 5-2.1 Starting the Burner for Electric Hose (continued)

Step	Action
10	After the hose reaches the temperature set point, the light in the control box marked "HEATED HOSE" turns off.
11	Once the hose reaches 325°F (162.8°C) the red light marked "PUMP" will illuminate indicating that the temperature interlock will allow operation of material pump.
	Important: The hose must reach 325°F (162.8°C) before dispensing can take place. If the hose does not dispense when the trigger is activated, allow the material to heat longer. If the hose still does not dispense, shut the machine down, locate and remove the plug in the line.
12	See Table 5-7 Dispensing the Material .
	CAUTION
	DO NOT twist or kink the hose. Avoid sharp bends and continuous twisting by maintaining a minimum 10-inch bend radius. DO NOT use a setting on the hose controller if more than 400°F (204.4°C). DO NOT move or bend the hose when cold: it can cause damage to the hose. DO NOT leave the hose cycling for longer than 30 minutes without dispensing material; coking can occur and permanently damage the hose. DO NOT remove the hose from the boom during operation or kinking will occur.
	Important: It is strongly recommended that the hose be stored in the boom (locked position) when not in use or when in transit. This will prevent twisting or kinking.

Chapter 5 Operating Instructions

5.3 About the Heated Hose, Wand, Valve, and Tip Guard

The Heated Hose

The heated hose supplied with the machine is Teflon-lined with steel over braid. It has a heating element, which runs the length of the hose to heat the material within the hose. The hose is covered with high temperature, durable rubber.

The Wand

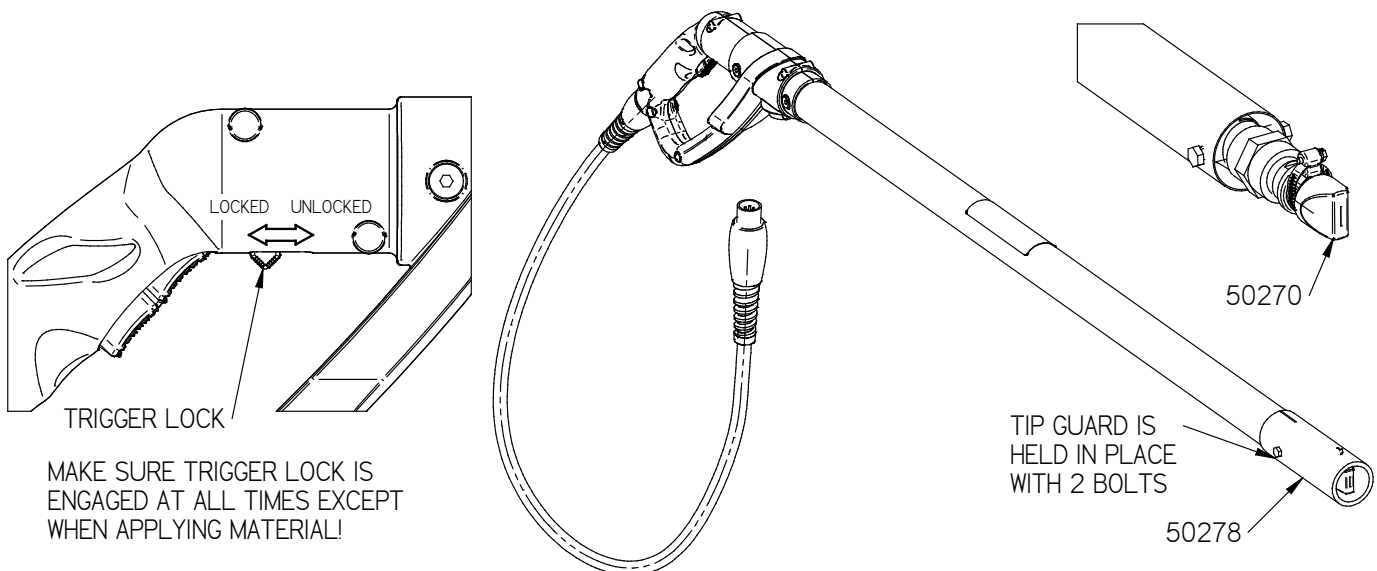
The wand has an aluminum tube to protect both the wand and the operator. The pistol grip actuator is equipped with an electric switch which, when depressed, sends a signal to actuate the pump. The wand is equipped with a trigger lock to prevent accidental pump actuation when it is not pumping material. The trigger must be in the "LOCKED" position at all times except when intentionally pumping material.

The Valve

The wand has a disposable duckbill valve on the end, which shuts off the flow of material when the pump is turned off and prevents excessive dripping of material. This valve also directs the material into a stream for easy application into the crack. Other sealing tips are available. See [10.0 Tools and Accessories](#) for other sealing tips and options.

Tip Guard

The wand has a Tip Guard installed at the factory only when a duckbill is installed. This Tip Guard is not required when using sealing disk or dripless tip adapter. The purpose of this guard is to prolong the life of using a duckbill and to protect the operator in the event of a duckbill failure. Ensure this guard is installed properly before operating equipment. See below.



Chapter 5 Operating Instructions

5.4 Electric Hose Care and Cautions

Table 5-3 Electric Hose Care

Step	Action
	CAUTION
	Twisting and kinking of the electric hose (used on Super Shots, and EZ Series Melters) causes the hose to fail; the electric heating wires could short out to the metal hose cover and the hose stops heating. This type of failure is not covered under the CrafcO warranty.
1	Set the hose temperature at 380°F (193.3°C), or manufacturer recommended operating temperature.
2	Allow the hose to be turned "ON" and heating for a minimum of 30 minutes.
3	Make sure the hose swivel between the hose and wand moves freely. Note: Do not twist or bend the hose over sharp edges such as the edge of the frame or tank. CrafcO, Inc. recommends you do not work directly under the boom; this may cause damage to the hose.
4	Follow all machine instructions in this manual.
	CAUTION
	Hose damage occurs if: The hose is bent or moved when cold. The hose is twisted or bent at a sharp radius. The hose is moved before being heated a minimum of 30 minutes and set at 380°F (193.3°C). The operator crosses over or under the hose causing the wires between the hose and wand connection to twist or wrap up. The swivel is cold and is not flexible which can cause the hose to twist. The wiring between the hose and the wand is pulled, stressed, or used to support the wand.

5.5 Storing the Electric Hose for Transport

Table 5-4 Hose for Transport Instructions

Step	Action
1	Leave the hose in the boom, swing the boom clockwise towards the front of the machine and lock the boom into position with the latch provided.
2	Place the wand in the wand holder and lock the wand into position with the latch provided.

Chapter 5 Operating Instructions

5.6 Loading Material into the Sealant Tank

This unit is equipped with a safety interlock system on the loading door. This system disables the mixer hydraulic system when the lid is open to stop the mixer from turning. This is a safety feature for the operator and should never be disabled for any reason.

CAUTION

Personal injury could occur if this safety system is disabled.

Table 5-5 Loading Material into the Sealant Tank

Step	Action
	WARNING
	Following this procedure prevents hot material from getting on operators and causing severe burns. Never throw blocks of material directly into tank. Hot material splash hazard will result.
1	To load material into the sealant tank first open the lid.
2	Place the solid material on the lid then close the lid.
3	Continue adding solid material at intervals to allow the mixer to rotate without jamming. Note: If blocks of solid material are added too quickly, jamming results and slows down the melting process.
	Note: When sealant placement volume is low, or the crew has stopped working for lunch hot oil and material temperatures can equalize. To lower material temperature add a few blocks of cold sealant. This may not be an option if the tank is full.

Chapter 5 Operating Instructions

5.6.1 Material Tank Depth Chart

Table 5-6 Material Tank Depth Chart

DEPTH OF MATERIAL TANK		CAPACITY IN GALLONS BOTTOM UP	CAPACITY IN LITERS BOTTOM UP	CAPACITY IN GALLONS TOP DOWN	CAPACITY IN LITERS TOP DOWN
INCH	MM				
1	25.4	3.06	11.58	55.66	210.70
2	50.8	6.12	23.17	52.6	199.11
3	76.2	9.18	34.75	49.54	187.53
4	101.6	12.24	46.33	46.48	175.95
5	127	15.30	57.92	43.42	164.36
6	152.4	18.36	69.50	40.36	152.78
7	177.8	21.42	81.08	37.3	141.20
8	203.2	24.48	92.67	34.24	129.61
9	228.6	27.54	104.25	31.18	118.03
10	254	30.60	115.83	28.12	106.45
11	279.4	33.66	127.42	25.06	94.86
12	304.8	36.72	139.00	22	83.28
13	330.2	39.78	150.58	18.94	71.70
14	355.6	42.84	162.17	15.88	60.11
15	381	45.90	173.75	12.82	48.53
16	406.4	48.96	185.33	9.76	36.95
17	431.8	52.02	196.92	6.7	25.36
18	457.2	55.08	208.50	3.64	13.78
19	482.6	58.14	220.08	0.58	2.20
19.19	487.4	58.72	222.28	0	0

Chapter 5 Operating Instructions

5.7 Dispensing the Material

Table 5-7 Dispensing the Material

Step	Action
	WARNING
	Put on protective clothing, gloves, hard-soled shoes, and face shield or safety glasses when operating or filling this machine. Read the entire manual before operating the machine. Never point the wand at any part of the body or at any other person. Hot material can cause severe burns. Important: Some difficulty may be encountered when starting up on cold days. Although the wand is designed to heat the material all the way down to the tip, on cold days you can place the tip of the wand under the lid to facilitate material melting in the valve. Insert the wand tip for only a short time before proceeding.
1	When the material and hose have reached manufacturer's application temperature, you are ready to dispense material.
2	Turn the pump speed control to the lowest setting by turning the speed control knob fully clockwise.
3	Insert the wand tip under the lid, depress trigger on the wand and slowly increase pump speed until the pump motor starts to turn.
4	Adjust the pump speed for the desired flow rate for the application. The rate of flow may be varied while the pump is running.

Chapter 5 Operating Instructions

5.8 Shutting Down and Cleaning Out the Machine

When shutting down the machine for the day, Crafco recommends leaving the melter about half full with material. This will give a fairly rapid heat up rate in the morning, but allows enough material to start dispensing right away when the material becomes molten.

Table 5-8 Shutting Down the Machine

Step	Action
1	Leaving the hose in the boom, swing the boom clockwise towards the front of the machine and lock the boom into position with the latch provided.
	CAUTION
	DO NOT kink or twist the hose or permanent damage may result.
2	Place the wand in the wand holder and lock the wand into position with the latch provided.
3	Reverse the pump for approximately 30 seconds.
4	Turn the mixer toggle switch to the "OFF" position.
5	Turn the "POWER" switch to the "OFF" position.
6	Stop the engine by turning the key to the "OFF" position.

Chapter 5 Operating Instructions

5.9 Overnight Heater Use

An overnight heater rod is available as an option. PN 24190 for 110V and PN 24194 for 220V. The overnight heater may be used to maintain an overnight heat transfer oil temperature of approximately 200-250°F (93.3°C)

Table 5-9 Overnight Heater Use

Step	Action
	WARNING
	The overnight heaters are for overnight use only. If the overnight heater is used, the material must be dispensed the next day. If the material can't be dispensed, the machine needs to be heated to mixing temperatures, and agitated to prevent settling. If you don't dispense the material after 1 nights use, you risk damaging the material and possibly the machine due to settled material, which can harden in the bottom of the material tank
1	Attach the heater power cord to a suitable extension cord.
2	Attach the extension cord to its own outlet rated for 15 amps minimum.
	WARNING
	Suitable extension cord size requirements for 110 Volt use: 25-50 FT • 16-20 Amps • 12 Gauge (Heavy Duty) or 10 Gauge (Extra Heavy Duty) 100 FT • 16-20 Amps • 10 Gauge (Extra Heavy Duty) Suitable extension cord size requirements for 220 Volt use: 25-50 FT • 8-10 Amps • 14 Gauge (Medium Duty) or 12 Gauge (Heavy Duty) 100 FT • 8-10 Amps • 12 Gauge (Heavy Duty) Failure to use the correct size extension cord could result in damage and possible fire!
3	Disconnect the heater when using the machine's burner system.
	CAUTION
	Do not use the heater without heat transfer oil in the tank. Doing so will overheat and damage the heater, and it will have to be replaced.

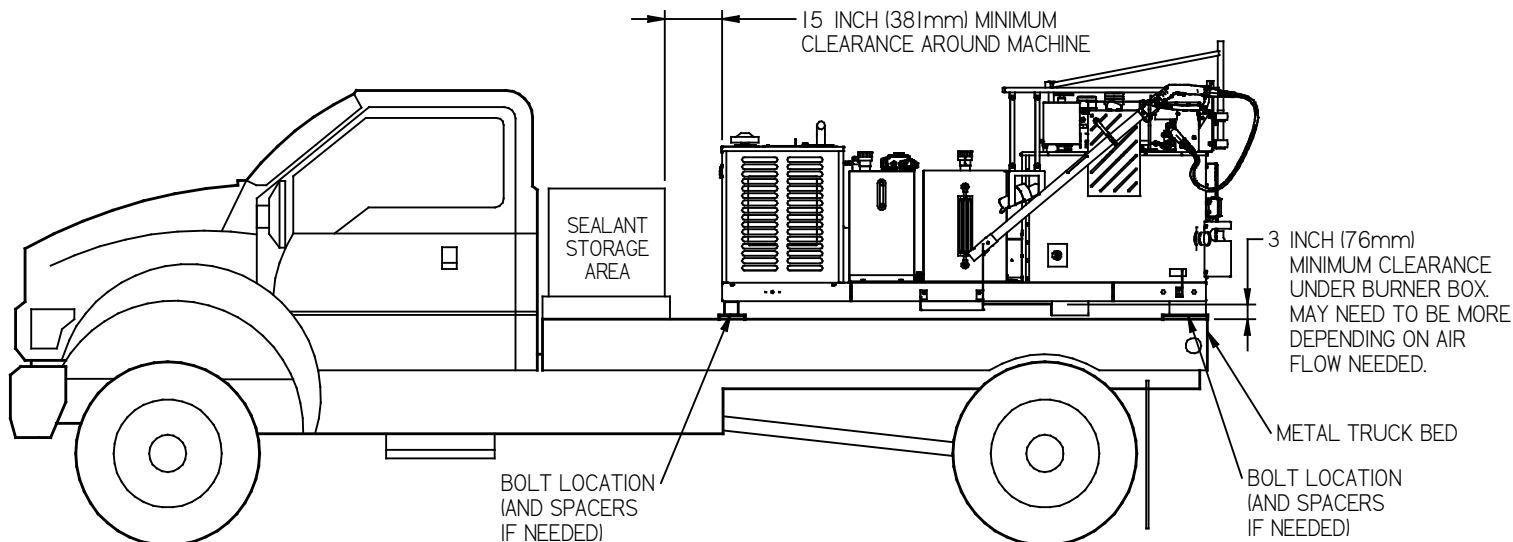
Chapter 5 Operating Instructions

5.10 Mounting a Skid Machine

Table 5-10 Mounting a Skid Machine

Step	Action
	WARNING
	The truck needs to be of proper size to hold the loaded weight and size of the machine and any extra material to be carried. The center of gravity of the loaded machine should be above or in front of the rear main axle. Contact CrafcO for help in determining the location of the center of gravity of your machine before mounting.
	WARNING
	Only mount the unit to a metal truck bed or any other non-flammable surface that can support the weight of the machine.
	Failure to use the correct mounting surface could result in damage and possible fire!
1	WARNING
	Mount the machine a minimum of 3" (76mm) above the truck bed. Depending on the machine and airflow, you may have to mount it higher to prevent excessive temperatures on the machine and truck bed.
	Mount with four ½" diameter Grade 5 bolts (or 12mm Grade 10.9) minimum, using the loading tubes at each corner of the machine to secure it in place.
	WARNING
	Leave 15" (381mm) clearance around the machine. Keep this area clear of any flammable material such as empty sealant boxes.
	Failure to keep this area clear could result in damage and possible fire!

TYPICAL SKID MOUNT GUIDELINES



Chapter 5 Operating Instructions

5.11 Shot Timer Option

For more information on Shot Timer use, installation, and troubleshooting, please see the supplement manual that came with your machine or with the Shot Timer Kit if it was purchased separately. You can also view, print, or download the Shot Timer Manual from our website at <https://crafcO.com/equipment-documentation/>

5.12 Storing the Machine

Store the machine in an area where moisture cannot enter the heating system such as the heat transfer oil tank, etc. Extended down time can cause moisture build up in the heating tank.

Evidence that moisture has collected in the heat transfer oil is a constant popping noise. If this popping noise is heard, warm the heat transfer oil to 300°F (148.9°C) for two to three hours to evaporate the moisture. Failure to follow this procedure will cause the heat transfer oil to overflow the tank resulting in possible machine damage and/or personal injury.

Best practice is to check in the material tank prior to starting the burner. If water is present, try and remove as much as possible, heat the material to 300°F (148.9°C) for two to three hours to evaporate the moisture. Failure to follow this procedure will cause the material to overflow the tank resulting in possible machine damage and/or personal injury.

Store the machine for longer periods with the material tank empty.

Chapter 6 Maintenance Instructions

6.0 Maintenance Instructions

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

6.1 Engine

Refer to the manufacturer's operating and maintenance instructions for the engine.

6.2 Hydraulic System

Check hydraulic fluid daily.

Change hydraulic filter every 250 hours of machine operation. Replace if necessary.

Change hydraulic fluid every 500 hours of operation.

6.3 Heat Transfer Oil

Check the oil level at the start of every day.

Change the oil every 500 hours of machine operation or 1 year, whichever comes first. Failure to follow this oil change interval will result in machine damage.

6.4 Wheel Bearing

Pack the wheel bearing every 24,000 miles or every two years, whichever comes first. Use a good grade of bearing grease.

6.5 Material Sensor Tube

Check for heat transfer oil in tube every 50 hours of operation. 2 ounces required.

6.6 Lug Nuts

Torque all nuts/bolts before first road use and after each wheel removal. Check and torque after the first 10 miles, 25 miles, and again at 50 miles. Check periodically thereafter.

Torque in stges as follows:

First stage 20-25 foot-pound (ft-lb)

Second stage 50-60 foot pound (ft-lb)

Third stage 90-120 foot pound (ft-lb)

Tighten bolts and nuts in the sequence shown in [Figure 6.1 Lug Bolt Tightening Sequence](#).

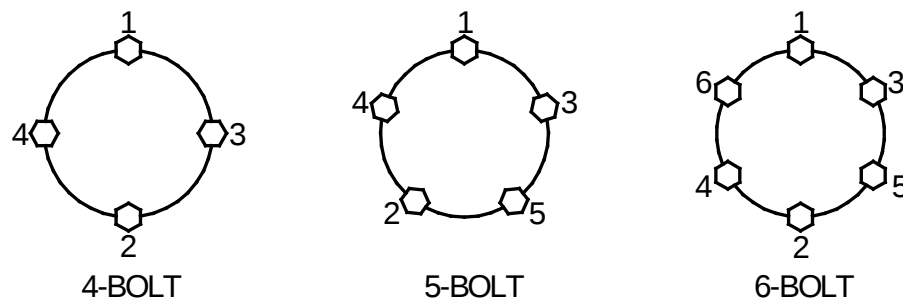


Figure 6.1 Lug Bolt Tightening Sequence

Chapter 6 Maintenance Instructions

6.7 Brakes

Check the brakes daily.

6.8 Tongue Jack

Lubricate the tongue jack, using a good grade of bearing grease.

6.9 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 6.2](#))

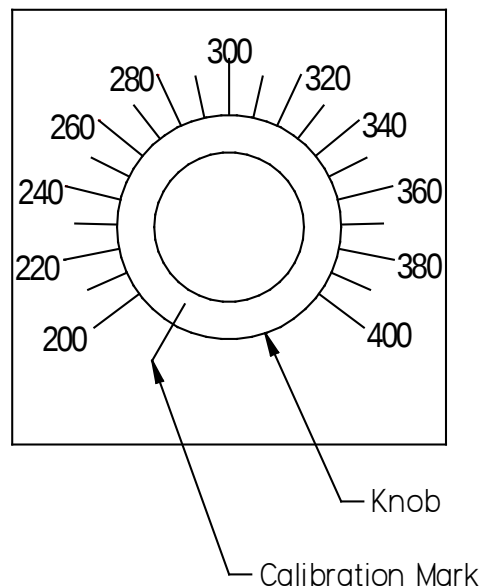


Figure 6.2 Temperature Control Calibration

6.10 Cleaning the Melter

We recommend using Orange-Sol industrial cleaner for cleaning the exterior of the machine. Here is the website for the cleaner; <https://www.orange-sol.com/industrial-formula/>.

Chapter 6 Maintenance Instructions

6.11 Maintenance Chart

Table 6-1 Maintenance Chart

Possible Cause	Procedure	Hours			
		8	50	250	500
Engine Check Oil Level	Refer to the manufacturer's instructions for the engine	X			
Other Engine Maintenance	Refer to the manufacture's operating and maintenance instructions for the engine.				
Material Sensor Tube	Check for HTO fluid		X		
	Add	As needed			
Heat Transfer Oil	Check	X			
	Change				X
Hydraulic Oil	Check	X			
	Change				X
Hydraulic Oil Filter	Change			X	
Burner	Check burner box insulation				X
	Clean CAD cell.				X
	Check Electrodes				X
	Check Flame Retainer/Head				X
	Replace burner nozzle				X
Wheel Bearings	Clean and re-pack using a good grade of bearing grease	Every 24,000 miles or two years			
Tongue Jack	Grease using a good grade of bearing grease	Once a year			
Material Tank	Scrape out built up material in the material tank	Once a year or as needed			
Material Sensor	Scrape out built up material around guard in tank.				X
	Check and/or add HTO fluid to sensor tube		X		

For a list of parts required for maintenance see [Table 6-3 General Maintenance Parts](#).

Chapter 6 Maintenance Instructions

6.12 Service Instructions

Table 6-2 Service Instructions

Step	Action
1	Do a general inspection of the machine at least once a week.
2	Replace all worn or damaged parts. Note: Keep regular replacement items in stock for emergency repairs to prevent costly downtime. See Table 6-4 Recommended Spare Parts
3	Make necessary adjustments and tighten all loose nuts or screws.
4	Watch for leaks. Tighten fittings or repair as necessary.
5	Clean the external surfaces of the machine at regular intervals. Note: Refer to the material manufacturer's instructions for recommendations.
6	Follow the recommended maintenance per Table 6-1 Maintenance Chart

For service, find a list of authorized Distributors and service centers at CrafcO.com/Distributors.

6.13 General Maintenance Parts

Table 6-3 General Maintenance Parts

Quantity	Description	Part No.
1	Engine and Burner Fuel Filter	41867
1	Engine Oil Filter	45389
1	Engine Air Filter	45391
1	Nozzle, Burner 1.25x80A	46912
1	Hydraulic Oil Filter	45438
Table 6-5	Hydraulic Oil	Table 6-5
Table 6-5	Heat Transfer Oil	Table 6-6

Chapter 6 Maintenance Instructions

6.14 Recommended Spare Parts

Table 6-4 Recommended Spare Parts

Quantity	Description	Part No.
1	Temperature Controller, Material	51672
1	Temperature Controller, Electric Hose	51691
1	Temperature Controller, Hot Oil	43391
1	DC Controller	42335
1	Coupling, Fuel Pump	41970
1	Electric Hose, 15ft	52400
1	Solenoid	39602

6.15 Recommended Fluids and Lubricants

Table 6-5 Recommended Fluids and Lubricants

Application	Recommended	Full Point
Engine Oil	Refer to engine manual	3 Qts. (2.8 L.)
Hydraulic Oil	Shell AW Hydraulic 46	26 Gals. (98.4 L.)
Heat Transfer Oil	Shell Turbo T 68 (Group II)	21 Gals. (82 L.)

Chapter 6 Maintenance Instructions

6.16 Applicable Brands of Heat Transfer Oil

Table 6-6 Applicable Brand of Heat Transfer Oil

Manufacturer	Product Name	Crafco Heat Transfer Fluid
Chevron	Heat Transfer Oil Grade 46	Shell Turbo T 68 (Group II)
Citgo	Hytherm Oil 46	Shell Turbo T 68 (Group II)
Conoco	Hydroclear Heat Transfer Oil	Shell Turbo T 68 (Group II)
Fina	Vulcan Heat Transfer Oil 46	Shell Turbo T 68 (Group II)
Lubrication Engineers	Heat Transfer Oil	Shell Turbo T 68 (Group II)
Exxon Mobile	Caloria HT 43	Shell Turbo T 68 (Group II)
Mobil	Mobiltherm 43	Shell Turbo T 68 (Group II)
Mobil	Mobiltherm 603	Shell Turbo T 68 (Group II)
Phillips 66	Heat Transfer Oil #3`	Shell Turbo T 68 (Group II)
Phillips 66	Magnus Oil 68	Shell Turbo T 68 (Group II)

CAUTION

The heat transfer oil in this machine is a grade that has been tested and recommended by Crafco, Inc. Using a grade of oil not specifically recommended by Crafco, Inc., is cause for warranties to be voided.

All oils subjected to high temperatures deteriorate with time and lose many of their characteristics. Tests conducted by Crafco, Inc. have determined that for best results and safety, the heat transfer oil in this machine must be drained and replaced with Crafco, Inc. recommended oil after five hundred (500) hours of machine operation or one (1) year, whichever occurs first.

6.17 Typical Heat Transfer Oil Specifications

ISO	68
Flash Point, COC	445°F (229.4°C)
Viscosity @ 100°F-SUS	325
Viscosity @ 210°F-SUS	50
Viscosity Index	95-100
Pour Point	0°F (-17.78°C)
Carbon Residue	1%

Chapter 6 Maintenance Instructions

6.18 Material Pump Replacement

Table 6-7 Material Pump Replacement

Step	Action
1	Bring the melter to temperature as preparation to drain the sealant tank.
2	Remove the pipe cap located at the rear of the machine and drain the sealant tank.
	WARNING
	The material in the sealant tank is extremely hot. Bodily contact with hot sealant can cause severe burns. The high operating temperatures of this machine and the sealant it contains require that protective clothing, gloves, hard-soled shoes, and safety glasses or a face shield be worn at all times by operators of the machine.
3	Remove both guards from the motor mount to access the chain and the sprockets.
4	Rotate the agitator and pump shafts until the connecting link and set screws are accessible. (See Figure 6.3 Agitator and Pump Shaft Alignment)



Figure 6.3 Agitator and Pump Shaft Alignment

Chapter 6 Maintenance Instructions

Table 6-8 Material Pump Replacement (continued)

Step	Action
5	Disassemble the connecting link and remove the drive chain.
6	Loosen the set screw in the lower coupling half located between the hydraulic motor and the material pump drive shaft.
7	Remove the four (4) hydraulic hoses and put caps on all the ports. Note: Mark the hoses for ease of replacement.
8	Remove the four (4) bolts holding the motor mount on top of the melter.
9	Lift off the motor mount and set aside.
10	Remove the pump drive shaft from the center of the agitator shaft.
11	Remove the two (2) bolts holding the agitator shaft bearing. Note: Do not remove the bearing from the agitator shaft.



Figure 6.4 Removal of Motor Mount Assembly

Chapter 6 Maintenance Instructions

Table 6-9 Material Pump Replacement (continued)

Step	Action
12	When the unit has cooled sufficiently, remove the six (6) bolts holding the paddles on top of the screen.
13	Remove the paddles from the tank.
14	Remove the pump drive shaft from the center of the agitator shaft, next lift the agitator shaft and screen assembly as high as possible and insert a screw driver into the shaft hole. Note: This will support the assembly while removing the pump from the tank.



Figure 6.5 Supporting the Agitator Away from the Material Pump

Chapter 6 Maintenance Instructions

Table 6-10 Material Pump Replacement (continued)

Step	Action
15	Remove the six (6) bolts (circled) attaching the pump to the tank. Note: A clean pump was used in the figure below for clarity.
16	Lift the pump from the sealant tank.
 	WARNING
	Crush Hazard. The pump weighs approximately 90 pounds. Take precautions not to drop the pump on any part of your body or pinch any part of your body between the pump and another object.

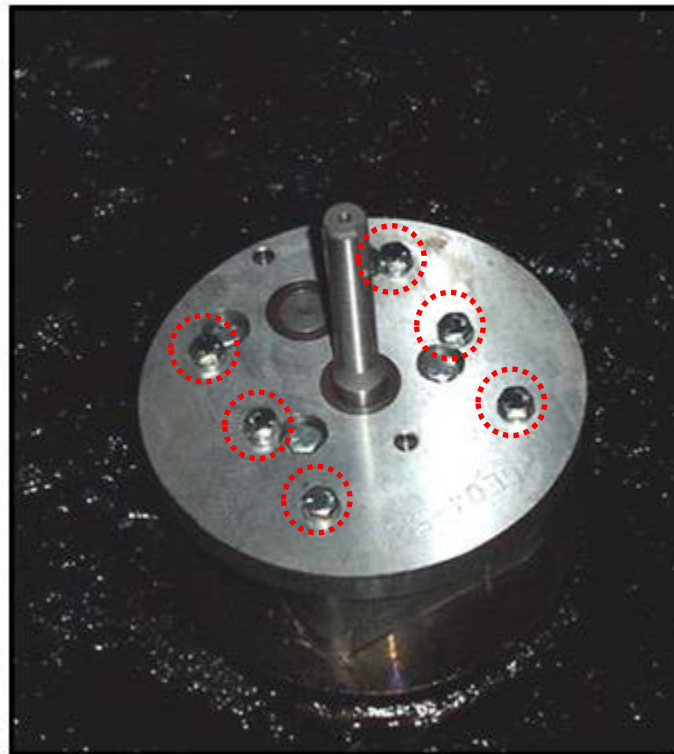


Figure 6.6 Unbolting the Material Pump

Chapter 6 Maintenance Instructions

Table 6-11 Material Pump Replacement (continued)

Step	Action
17	Clean any sealant from the top of the pump mounting plate and clean the shaft holes. (See Figure 6.7 Cleaning of the Pump Mounting Plate)
	CAUTION
	Premature pump wear results if the pump mounting plate and bolt holes are not properly cleaned.



Figure 6.7 Cleaning of the Pump Mounting Plate

Chapter 6 Maintenance Instructions

Table 6-12 Material Pump Replacement (continued)

Step	Action
18	Make sure that the pump shaft coupling fits correctly onto the new material pump before mounting the material pump inside the tank. Also make sure the pump spins freely.



Figure 6.8 Pump Drive Shaft Dry Fit to Material Pump

Chapter 6 Maintenance Instructions

Table 6-13 Material Pump Replacement (continued)

Step	Action
18	Make sure the 1" material port matches the 1" hole in the pump plate; there should be an alignment pin in the pump plate to insure the correct positioning. Use new hardware to secure the material pump to the pump plate (6) 3/8"-16 x 5" bolt with (6) 3/8" lock washer. Torque these six bolts at 33 lb-ft. Note: Make sure the material pump shaft spins freely after torquing these bolts.



Figure 6.9 New Material Pump Mounting

Chapter 6 Maintenance Instructions

Table 6-14 Material Pump Replacement (continued)

Step	Action
19	Crafco, Inc. recommends that you use a new screen assembly to insure the agitator and paddles have good threads to secure with, along with new hardware. (See Figure 9.3 Tank Assembly)
20	Remove the paddles from the old screen assembly and bolt them to the new screen assembly, using (6) ½"-13 x 1" bolts with (6) ½" grade 8 washers. The use of Loctite on the threads before assembling and the special dual lock washers are also recommended.
21	Place the material screen and paddle assembly onto the material pump. Lower the agitator shaft down onto the screen assembly and secure it with (4) ½"-13 x 1" bolts with (4) ½" grade 8 washers. The use of Loctite on the threads before assembling is also recommended.



Figure 6.10 Agitator Shaft and Paddle Mounting

Chapter 6 Maintenance Instructions

Table 6-15 Material Pump Replacement (continued)

Step	Action
22	Secure the agitator bearing using new hardware (2) ½" grade 8 washers, (2) ½" lock washer and (2) ½-13 hex nut. Note: Make sure the agitator spins freely at this point.
23	Place the pump shaft into the agitator shaft. You might need to spin the pump shaft to get the keyway in the pump shaft coupling to align with the material pump shaft Note: Make sure the when the pump shaft spins the material pump spins as well.



Figure 6.11 Pump Shaft Placement

Chapter 6 Maintenance Instructions

Table 6-16 Material Pump Replacement (continued)

Step	Action
24	Place the motor mounting bracket back into place, using new hardware (4) 5/16"-18 x 1" bolt and (4) 5/16" lock washer.
25	Slide the pump shaft onto the hydraulic motor shaft and tighten the set screws.



Figure 6.12 Pump Shaft to Hydraulic Motor Placement

Chapter 6 Maintenance Instructions**Table 6-17 Material Pump Replacement (continued)**

Step	Action
26	Loosen the four bolts holding the agitator hydraulic motor in place and slide it towards the material pump hydraulic motor.
27	Using a new chain assembly, wrap the double chain around both sprockets, with the master link provided with the chain.
28	Insert the master link from below up through the chain assembly first row, then add two spacers, then push the master link through the second row of the double chain, then add the last spacer and the locking clip.

**Figure 6.13 Agitator Connecting Link**

Chapter 6 Maintenance Instructions

Table 6-18 Material Pump Replacement (continued)

Step	Action
29	Slide the agitator hydraulic motor away from the material pump hydraulic motor to tighten the agitator chain and then tighten the (4) bolts that hold the agitator hydraulic motor in place.
30	Place both chain guards back into place and replace all four of the hydraulic hoses.

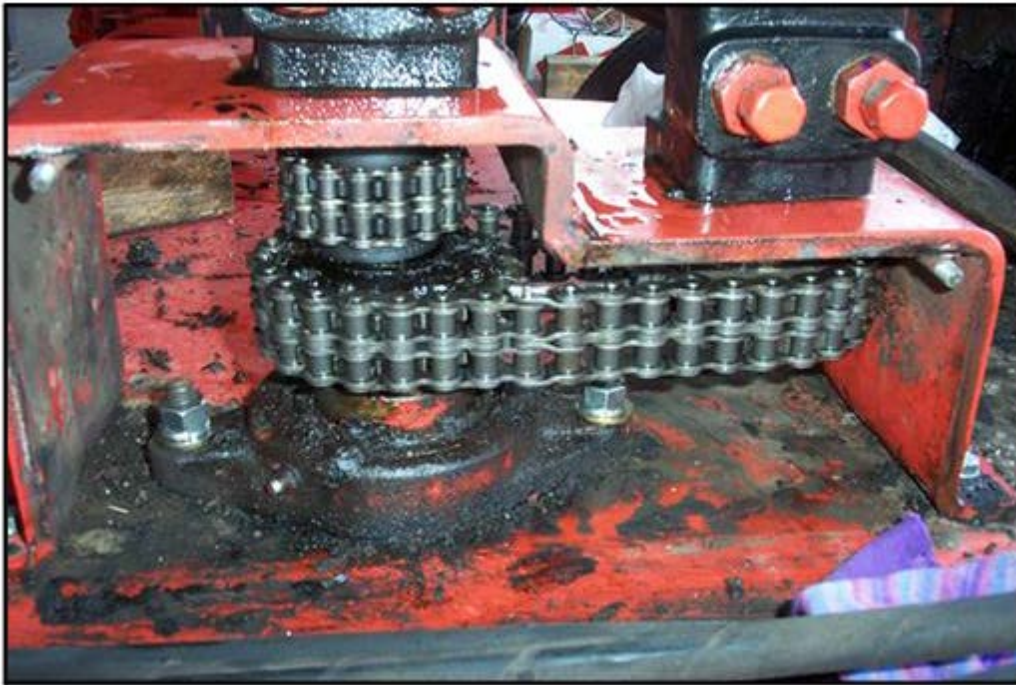


Figure 6.14 Agitator Chain Tightening Steps

Chapter 6 Maintenance Instructions

6.19 Wand Repair Instructions

The following sections will address how to replace the wand handle, wand cable, switch, and terminal block of the 52200 wand assembly. Actuator, actuator lock, and spring can also be replaced. See section [Table 9-14 Wand Assembly](#) for parts breakdown.

6.19.1 Cable Replacement

1. Disconnect the cable from the electric hose. Lay wand on flat surface with socket head screws facing up.
2. Remove (7) #10-32 x 1" socket head screws and (2) 1/4-20 x 1/2" socket head screws.
3. Carefully remove top handle half. **Caution:** Actuator pin may lift actuator and spring from bottom handle half. Do not loose spring or pin.
4. Remove red and orange wire from switch.
5. Remove green, white, and black wires from terminal block.
6. Remove cable from handle.
7. Replace cable in handle. Note: Look for flats on strain relief of cable that correspond to flats on handle.
8. Install red wire on top of switch (see [Figure 6.15 Switch Wire Location](#)), then install orange wire on (NO) terminal (top rear of switch).
9. Strip green, white, and black wires 3/8" and twist wires strands then install (**Note** white black wire is routed under switch see [Figure 6.16 Wire Routing](#)) on open terminals of terminal block. Make sure to install completely under the clamp before tightening screws. Torque screws to 16 in-lbs. Bend all (3) wires over the top of terminal block (see [Figure 6.17 Terminal Block Wiring](#)).
10. Replace top wand handle half.
11. Use blue Locktite® on all external handle screws before installation. Install (7) #10-32 x 1" socket head screws hand tight, then install (2) 1/4-20 x 1/2" socket head screws hand tight. Now torque all #10-32 screws to 12 in-lbs. and all 1/4-20 screws to 25 in-lbs.
12. Reconnect cable to electric hose.

6.19.2 Switch Replacement

1. Follow steps 1-4 from [6.19.1](#) above.
2. Remove (2) #4-40 x 1/2" pan head screws from switch, then remove switch from handle.
3. See [Figure 6.18 Actuator Spring Location](#) and [Figure 6.19 Actuator / Trigger Assembly](#) for proper assembly of actuator to switch.
4. Replace switch and install (2) #4-40 x 1/2" screws and tighten.
5. Follow Steps 10-12 from [6.19.1](#) above.

6.19.3 Terminal Block Replacement

1. Follow steps 1-4 from [6.19.1](#) above.
2. Remove (2) #10-32 x 5/8" round head machine screw from terminal block then remove terminal block from handle.
3. Replace terminal block and install (2) #10-32 x 5/8" screws and tighten.
4. Follow steps 10-12 from [6.19.1](#) above. If actuator, pin, and spring need to be reinstalled see [Figure 6.18 Actuator Spring Location](#) and [Figure 6.19 Actuator / Trigger Assembly](#).

Chapter 6 Maintenance Instructions

6.19.4 Wand Handle Replacement

1. Follow steps 1-6 from [6.19.1 above](#).
2. Remove actuator, actuator lock, pin, and spring.
3. Remove (2) #4-40 x 1/2" pan head screws from switch, then remove switch from handle.
4. Remove (2) #10-32 x 5/8" round head machine screw from terminal block then remove terminal block from handle.
5. Flip wand over and remove the remaining (2) 1/4-20 x 1/2" screws from the handle. Remove handle from wand tube.
6. Install new handle by reversing previous steps.



Figure 6.15 Switch Wire Location



Figure 6.16 Wire Routing

Chapter 6 Maintenance Instructions



Figure 6.17 Terminal Block Wiring



Figure 6.18 Actuator Spring Location

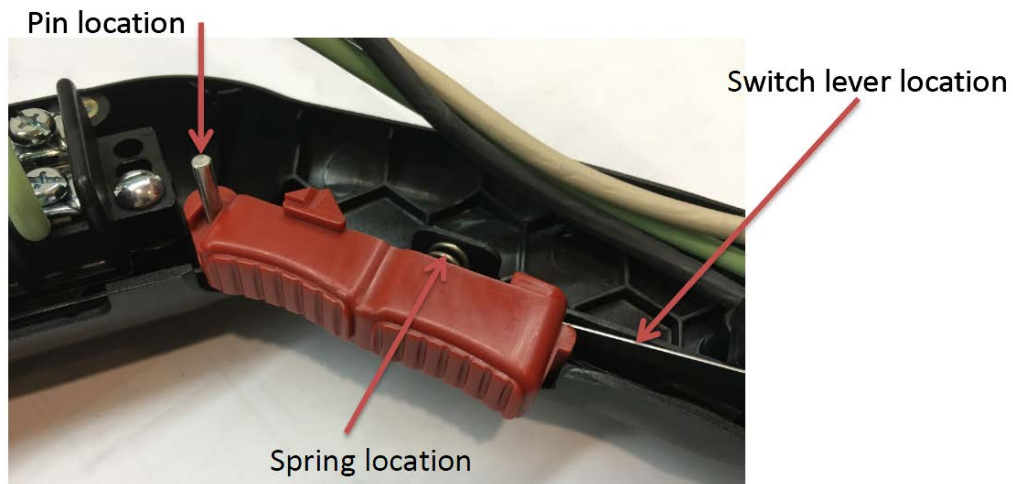


Figure 6.19 Actuator / Trigger Assembly

Chapter 6 Maintenance Instructions

6.20 Burner Fuel Filter Replacement

Follow the steps below to replace the fuel filter. See Table 6-3 General Maintenance Parts for part number information.

Table 6-19 Burner Fuel Filter Replacement

Step	Action
1	The machine should be off, and cooled to ambient temperature.
2	Place a drain pan below the burner fuel filter assembly.
3	Close the ball valve that is located inline before the burner fuel filter assembly.
4	Unscrew the filter from the assembly using an oil filter or strap style wrench.
5	Screw the new filter into place, and tighten by hand.
6	Open the ball valve to allow fuel to flow.
7	Turn on the power key, and turn on the main power switch. The burner should self-prime and start. It may take a couple cycles to fill the new fuel filter and bleed the fuel system.
8	Once the burner is running, check for any fuel leaks and tighten the filter if needed.
9	Turn off the main power switch and power key.

Chapter 7 How to Use a Multimeter

7.0 How to Use a Multimeter

Melters use 12-volt direct current (DC) to power the burner, hydraulic valves, and trigger on electric wand. The DC power is from a 12-volt battery.

The electric hose and wand uses 24-volt 3-phase alternating current (AC). The AC power is from the generator which hangs under the radiator. This system has no reference to ground so there is no possibility of electrical shock unless you are between 2 of the phases. NOTE: ONLY CHECK AMPERAGE ON A HOSE WITH A CLAMP-ON AMP METER. (See [Figure 7.2 Clamp – On Amp Meter/Multimeter](#))

12-volt DC power has little danger of electrical shock. Care must still be taken when dealing with DC power systems because it is capable of producing large amounts of current.

7.1 Checking DC Voltage with a Multimeter

Connect the probes to the meter.

Set the range to a position that includes 12-volts or higher.

Touch the red probe to the positive side of accessory and black probe to ground. If the item you are checking has a ground wire attached then use that ground or you can use a non-painted surface on the frame.

7.2 Checking AC Voltage with Multimeter

Connect the probes to the meter (See [Figure 7.1 Standard Multimeter](#)).

Set the range to a position that includes 24-volts or higher.

There are three steps to test the generator voltage. All 3 values should be in the range of 24-30 volts AC.

- Touch red probe to the white wire of the generator and the black probe to the green wire of the generator.
- Next move black probe to black wire.
- Then move red probe to green wire.

7.3 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.

7.3.1 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.

7.3.2 How to Check RTD Sensor

Set dial to Ohms Ω . 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.

Chapter 7 How to Use a Multimeter

7.4 Checking Amperage

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

When checking the amperage of the electric hose **always use a clamp-on amp meter** (See [Figure 7.2 Clamp – On Amp Meter/Multimeter](#)). The amperage in the hose can reach as high as 35 amps.

Clamp the meter around one wire at a time. Remember most clamp-on meters do not work on DC current.



Figure 7.1 Standard Multimeter

Chapter 7 How to Use a Multimeter

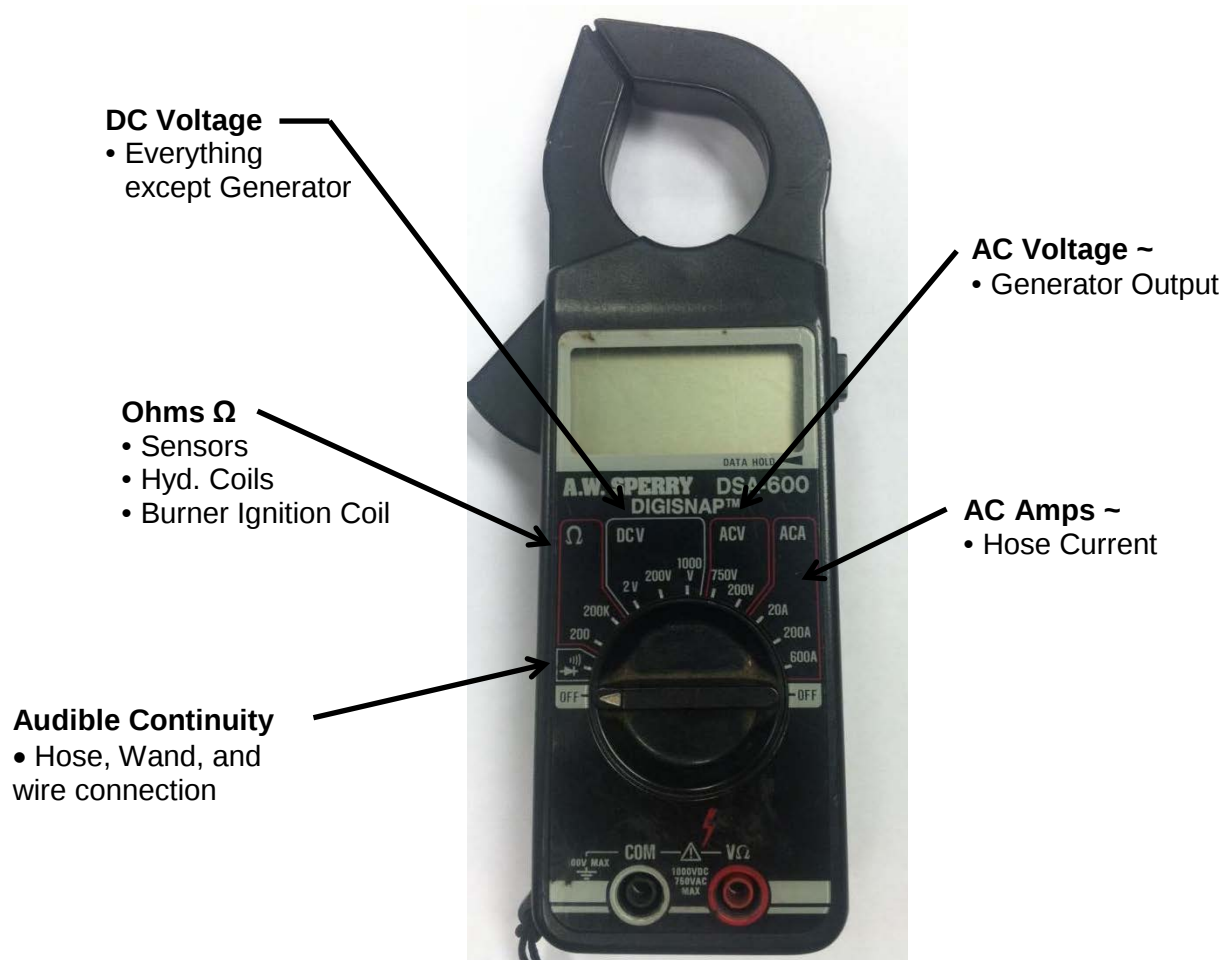


Figure 7.2 Clamp – On Amp Meter/Multimeter

Chapter 8 Troubleshooting

8.0 Burner Troubleshooting

8.0.1. Symptoms: Burner will Not Ignite

Table 8-1 Basic Visual Burner Troubleshooting

Step	Possible Cause	If . . .
1	Is the engine running? NOTE: You can troubleshoot the burner without the engine running, but you must connect a battery charger to the battery and the ignition must be in the "ON" position.	• Yes, go to Step 2. • No, start the engine.
2	Is the "POWER" toggle switch in the "ON" position?	• Yes, go to Step 3. • No, turn the toggle switch to the "ON" position.
3	Is the red "Burner" light "ON"?	• Yes, go to Step 6. • No, go to Table 8-3 Burner Electrical Troubleshooting Step 4.
4	Are both the Material and Hot Oil temperature dials set above the current temperatures?	• Yes, go to Step 4. • No, set the Material temperature according to the type of material you are using and the Hot Oil 100°F (37.8°C) above the Material set point.
5	Does either readout display a -1? NOTE: This occurs only when there is a short in the sensor circuit.	• Yes, this indicates a short in the circuit. Check the RTD sensor for water under the cap causing a short. Also look for worn wires possibly shorting to frame between sensor and control box. • No, go to Step 4a.
5a	Does either readout display a 1? NOTE: This occurs only when the sensor circuit is not completed.	• Yes, this indicates a break in one or both of the sensor wires between the RTD sensor and the PAKSTAT. Check for broken wires between sensor and PAKSTAT. • No, go to Step 6.
6	Is the circuit breaker tripped?	• Yes, reset by pushing in the button that popped out. • No go to Step 7.
7	Is the fuel level low or empty?	• Yes, fill with #2 diesel fuel. Then bleed the burner, see Table 8-12 Bleeding the Burner. • No, go to Step 8.

Chapter 8 Troubleshooting

Table 8-2 Basic Visual Burner Troubleshooting (continued)

Step	Possible Cause	If . . .
8	Is there smoke coming out of the exhaust stack?	• Yes, go to Table 8-13 Sealant is Heating Slowly. • No, go to Step 9.
9	Is your burner working properly, but it seems to take a while to reach operating temperature?	• Yes, go to Table 8-13 Sealant is Heating Slowly. • No, Call CrafcO, Inc. and speak to a customer service technician.

Note: Use [Figure 8.1 Diesel Burner Schematic](#) while troubleshooting the burner electrical system.

Table 8-3 Burner Electrical Troubleshooting

Step	Possible Cause	If . . .
1	Is there 12Vdc between the 2 center terminals of the frame solenoid?	• Yes, go to 1a. • No, check for poor connection or broken wire between frame solenoid and engine oil pressure switch white/red wire.
1a	Is there 12Vdc between the large terminal (red wire going to burner plug) of the frame solenoid and the black wire in the burner plug?	• Yes, go to Step 4. • No, go to Step 1b.
1b	Is there 12Vdc between the other large terminal (red wire going to the circuit breaker) of the frame solenoid and the ground wire attached to the mounting bolt?	• Yes, replace frame solenoid. • No, go to Step 2.
2	Is there 12Vdc between the circuit breaker (red wire going to frame solenoid) located under the battery and the ground lug on the battery tray?	• Yes, check for loose or broken wires between circuit breaker and frame solenoid. • No, go to Step 2a.
2a	Is there 12Vdc between the circuit breaker (red wire going to battery positive cable) and the ground lug on the battery tray?	• Yes, wait 15 seconds then repeat step 2. • If still no voltage then replace circuit breaker. • No, go to Step 2b.
2b	Check for loose or broken wires between circuit breaker and battery positive cable.	• Yes, replace or repair damaged wire and repeat Step 3. • No, go to Step 3.

Chapter 8 Troubleshooting

Table 8-4 Burner Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
3	Is there 12Vdc between the positive and negative battery post? If this check is done while the engine is running the reading should be 13.8 volts.	• Yes, then there should be 12Vdc on the battery side of the circuit breaker. • No, replace battery. • NOTE: If the reading is less than 13.8 volts while the engine is running the alternator needs to be rebuilt or replaced.
4	Find insulated quick connect between green wire and white wire that goes to burner plug. Is there 12Vdc between the green wire and a nearby ground source (black wire)?	• Yes, go to Table 8-9 Testing the DC Controller. • No, go to Step 4a.
4a	Is there 12Vdc between green wire labeled "GRN-BRNR" on upper terminal blocks and nearby ground source (black wire).	• Yes, check for loose or broken wires between burner plug and terminal block. • No, go to Step 5.
5	Is there 12Vdc between gray wire labeled "GRY-2" and nearby ground source?	• Yes, replace terminal block. • No, go to Step 5a.
5a	Is there 12Vdc between terminal #7 gray wire and terminal #5 black wire of the hot oil PAKSTAT?	• Yes, check for loose or broken wires between terminal block and terminal #7 of the hot oil PAKSTAT. • No, go to Step 5b.
5b	Is there 12Vdc between terminal #6 gray wire and terminal #5 black wire of hot oil PAKSTAT?	• Yes, replace hot oil PAKSTAT. • No, go to Step 6.
6	Is there 12Vdc between gray wire labeled "GRY-3" on upper terminal blocks and a nearby ground source (black wire)?	• Yes, check for loose or broken wires between terminal block and terminal #6 of the hot oil PAKSTAT. • No, go to Step 6a.
6a	Is there 12Vdc between gray wire labeled "GRY-1" on upper terminal blocks and a nearby ground source (black wire)?	• Yes, replace terminal block. • No, go to Step 7.
7	Is there 12Vdc between terminal #4 gray wire and terminal #8 black wire of the material PAKSTAT?	• Yes, check for loose or broken wires between terminal block and terminal #4 of the material PAKSTAT. • No, go to Step 7a.

Chapter 8 Troubleshooting

Table 8-5 Burner Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
7a	Is there 12Vdc between terminal #3 orange wire and terminal #8 black wire of the material PAKSTAT?	• Yes, replace PAKSTAT. • No, go to step 7b.
7b	Is there 12Vdc between terminal #1 orange wire and terminal #8 black wire of the material PAKSTAT?	• Yes, check for loose or broken wires between terminal #1 and #3 of material PAKSTAT. • No, go to Step 7c.
7c	Is there 12Vdc between terminal #9 orange wire and terminal #8 black wire of the material PAKSTAT?	• Yes, check for loose or broken wires between terminal #9 and #1 of material PAKSTAT. • No, go to Step 8.
8	Is there 12Vdc between orange wire labeled "ORN-1" on upper terminal blocks and a nearby ground source (black wire)?	• Yes, check for loose or broken wires between terminal #9 of the material PAKSTAT and terminal block. • No, go to Step 8a.
8a	Is there 12Vdc between orange wire labeled "ORN-2" on upper terminal blocks and a nearby ground source (black wire)?	• Yes, replace terminal block. • No, go to Step 9.
9	Is there 12Vdc between terminal #3 orange wire and terminal #5 black wire on hot oil PAKSTAT?	• Yes, check for loose or broken wires between terminal #3 of the hot oil PAKSTAT and terminal block. • No, go to Step 10.
10	Is there 12Vdc between top terminal (orange wire) of power switch and nearby ground source (black wire)?	• Yes, check for loose or broken wires between top terminal power switch and terminal #3 of the hot oil PAKSTAT. • No, go to Step 11.
11	Is there 12Vdc between bottom terminal (red wire) of power switch and nearby ground source (black wire)?	• Yes, replace switch. • No, go to Step 12.
12	Is there 12Vdc between top terminal of circuit breaker (red wire) and nearby ground source (black wire)?	• Yes, check for loose or broken wires between top terminal of circuit breaker and bottom terminal (red wire) of power switch. • No, go to Step 12a.

Chapter 8 Troubleshooting

Table 8-6 Burner Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
12a	Is there 12Vdc between bottom terminal of circuit breaker (red wire) and nearby ground source (black wire)?	• Yes, replace circuit breaker. • No, go to Step 13.
13	Is there 12Vdc between “ACC” (red wire) of ignition switch and nearby ground source (black wire)?	• Yes, check for loose or broken wires between “ACC” of ignition switch and bottom terminal of circuit breaker. • No, go to Step 13a.
13a	Is there 12Vdc between “B” (blue wire) of ignition switch and nearby ground source (black wire)?	• Yes, replace ignition switch. • No, go to Step 14.
14	Is there 12Vdc between blue wire on starter solenoid and nearby ground source (black wire or bare metal on engine case)?	• Yes, check for loose or broken wire between starter solenoid and ignition switch. • No, go to Step 14a.
14a	Check connections and condition of red battery cable	• Yes, there should be 12Vdc at all previous steps. • No, replace battery cable.

Chapter 8 Troubleshooting

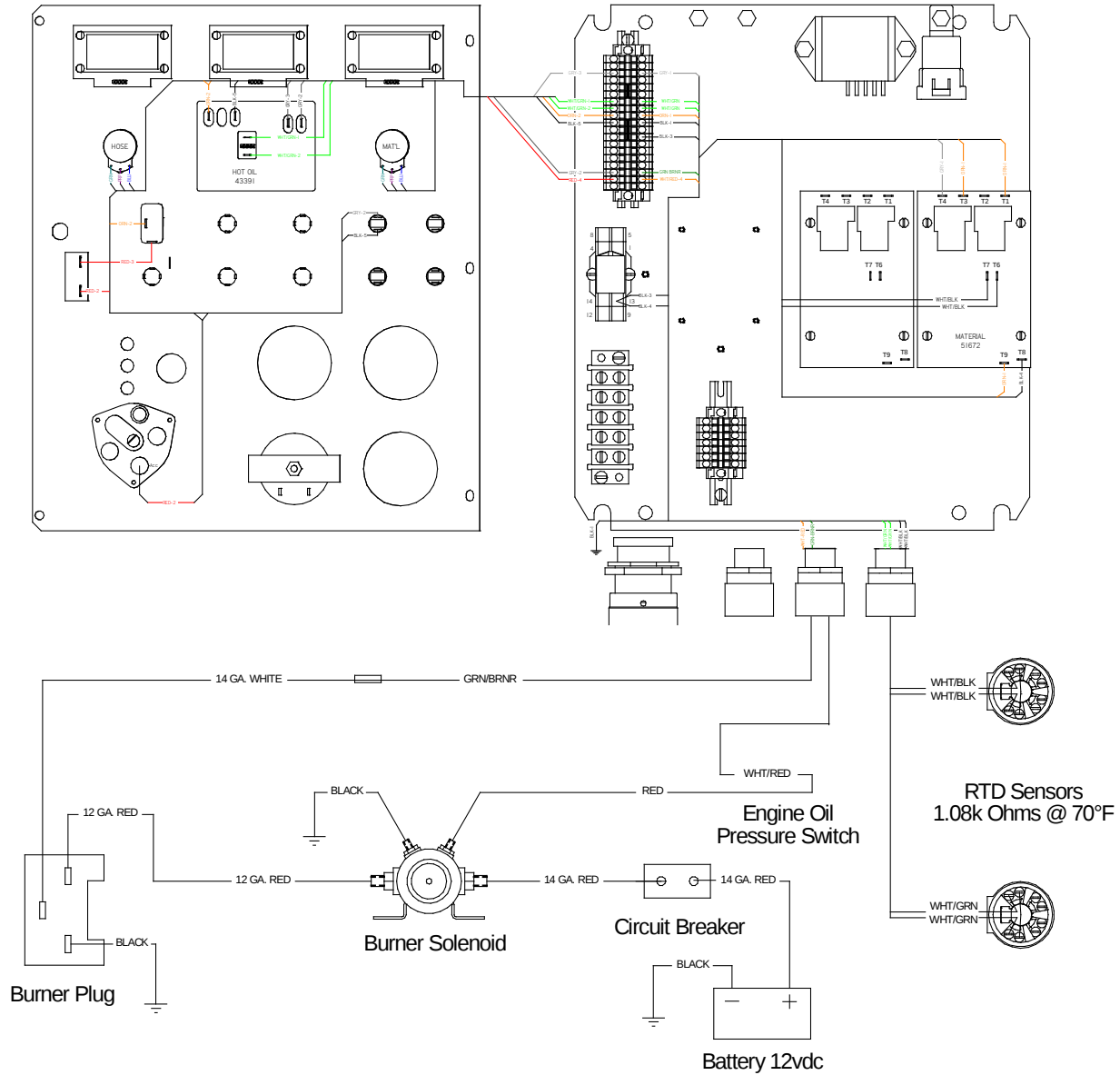


Figure 8.1 Diesel Burner Schematic

Chapter 8 Troubleshooting

8.0.2. Excessive Smoke Coming Out of Exhaust Stack

Table 8-7 Smoke Coming Out of Exhaust Stack

Step	Smoke Coming Out of the Exhaust Stack
1	White smoke indicates that there is too much air being forced through the burner. Loosen the Air Shutter screw and rotate the Air Shutter counter clockwise to reduce air. Refer to Figure 8.3 Diesel Burner Air Settings , for the proper air settings and diagram.
2	Black smoke indicates that there is not enough air being forced through the burner. First check the air settings, if more air is required rotate Air Shutter clockwise. Refer to Figure 8.3 Diesel Burner Air Settings .
3	Refer to Figure 8.3 Diesel Burner Air Settings to locate the following components. Using a 7/16" wrench, remove the copper fuel line nut attached to the nozzle line. Next remove the locking nut for the nozzle tube. Then loosen the locking tabs on the ignition coil and open the ignition coil. Remove the nozzle line assembly.
4	Using Figure 8.2 Diesel Burner Electrode Adjustment , make sure the electrodes are in the correct position. Loosen the clamp holding the electrodes in place so they can be adjusted. Inspect the porcelain ceramic insulator for any cracks. Also check the tip of each of the electrodes to make sure they still have a sharp point and are not rounded off.
5	If it has been longer than 500 hours since the last time the burner nozzle was replaced, CrafcO recommends replacing the burner nozzle at this time.
6	Reassemble the burner, using the reverse order in Step 3.
7	Remove the burner box assembly by removing the four (4) 1/2" bolts, flat washer, lock washer, and nuts holding the burner box onto the trailer.
7a	Make sure the insulation inside the burner box is not soaked with diesel fuel.
7b	If the insulation is soaked with diesel fuel, you will need to replace the insulation.
7c	Reassemble the burner box.

8.0.3. Burner Lights but Shuts Down After 15 Seconds

Table 8-8 Burner Lights But Shuts Down After 15 Seconds

Step	Burner Troubleshooting
1	Remove cord set from fuel solenoid.
2	Check the ohms between the terminals of fuel solenoid.
3	If the reading is between 15-25 ohms the coil is good.
4	If the reading is outside the above range or the meter indicates an open circuit, replace the fuel solenoid.

Chapter 8 Troubleshooting

8.0.4. Testing the DC Controller

Table 8-9 Testing the DC Controller

Step	Bench Test DC Controller
1	Remove all wire nuts attaching the DC Controller to the burner.
2	Attach the black ground wire to the negative battery post.
3	Attach the red wire to the positive battery post.
4	Attach the white (Enable) wire to the positive battery post to start the test. (Genesis II Controllers will have a 15-second delay.) • Orange (Blower Motor) wire should have 12Vdc (all the time). • Blue (Igniter) wire should have 12Vdc.
5	Twist the yellow wires together (once voltage registers) on the orange, blue and purple wires. • Orange (Blower Motor) wire should maintain 12Vdc. • Blue (Igniter) wire should lose voltage after 15 seconds. • Purple (Valve) wire should maintain 12Vdc.
6	If any of the above tests fail, replace the DC Controller.

8.0.5. Burner Fuel Solenoid Testing

Table 8-10 Burner Fuel Solenoid Testing

Step	Fuel Solenoid Test
1	Remove cord set from fuel solenoid.
2	Check the ohms between the terminals of fuel solenoid.
3	If the reading is between 15-25 ohms the coil is good.
4	If the reading is outside the above range or the meter indicates an open circuit, replace the fuel solenoid.

Chapter 8 Troubleshooting

8.0.6. Burner Ignition Coil Testing

Table 8-11 Burner Ignition Coil Testing

Step	Ignition Coil Test
1	Make sure the burner is off. Open the ignition transformer (located above the blower) to expose the springs.
2	Check resistance between each of the springs and the ground (exposed metal on the burner).
3	The meter should read less than 2,000 ohms. (Take note of the readings, you will use them in Step 5.)
4	Check resistance between both springs. (Take note of the reading, you will use it in Step 5.)
5	The igniter should be replaced if: • The difference between the two springs to ground resistance readings is greater than 20%. • Or the spring-to-spring resistance does not read approximately twice the spring to ground.

8.0.7. Bleeding the Burner

Table 8-12 Bleeding the Burner

Step	Bleeding the Diesel Burner
1	Place an oil pan under the machine in front of the burner.
2	Using a 3/8" wrench, loosen the bleeder valve on the fuel pump refer to Figure 8.3 Diesel Burner Air Settings for bleeder location.
3	Turn the ignition key to the "ON" position, then turn the power toggle switch to the "ON" position. Fuel should flow out of the bleeder valve. You want the fuel to be clear from any air bubbles, this may require you to turn the ignition key "OFF" and "ON" a couple of times.
4	Allow burner to cycle itself off 30 seconds.
5	Tighten the bleeder valve.

Chapter 8 Troubleshooting

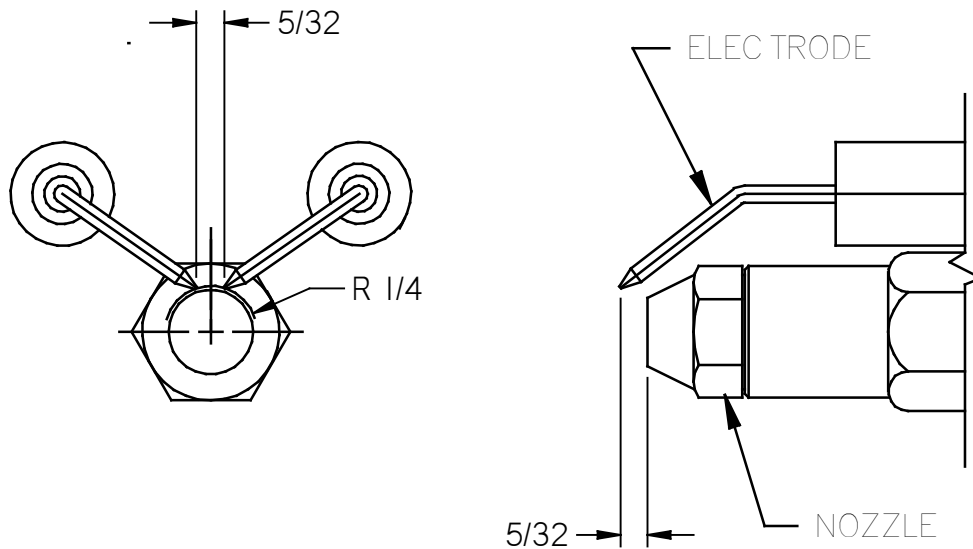


Figure 8.2 Diesel Burner Electrode Adjustment

Air Shutter = 4
Air Band = 0
Fuel Pressure = 140 PSI (9.65 bar)
Adjustment Plate = 3

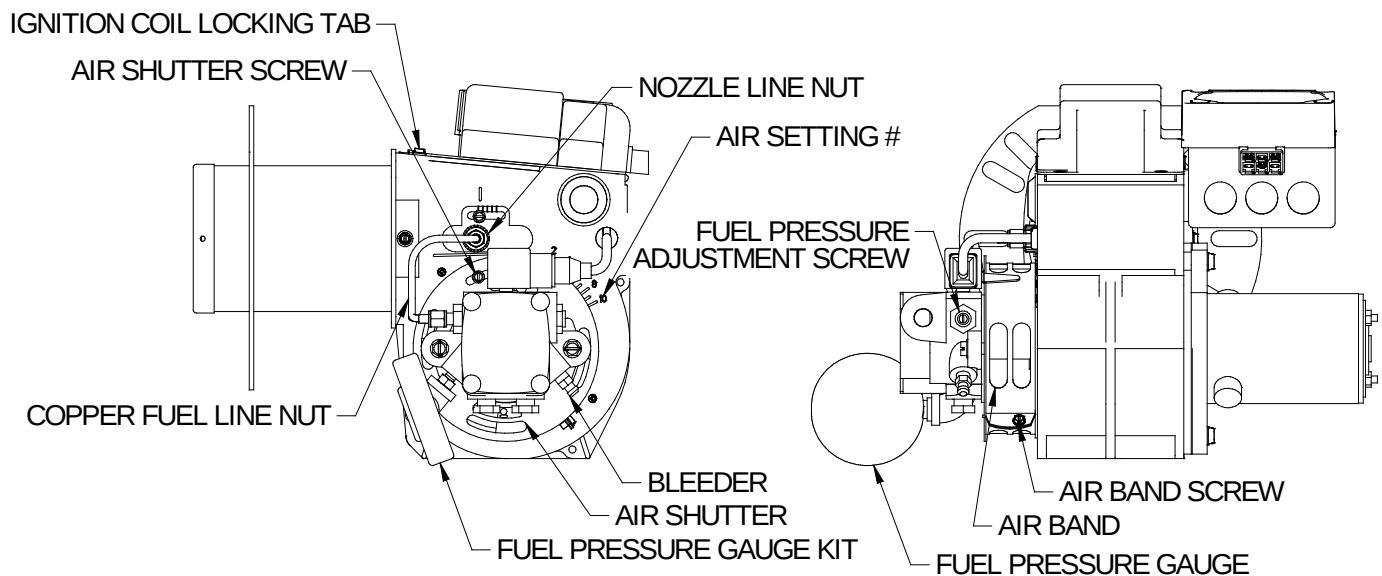


Figure 8.3 Diesel Burner Air Settings

Chapter 8 Troubleshooting

8.1 Sealant heating Slowly

Table 8-13 Sealant is Heating Slowly

Step	Sealant is Heating Slowly
1	With the material level half or less, open the loading lid and inspect the inside edge of the material tank. Check if there is a buildup of old, dried out and hardened material along the top half of the material tank.
2	If this is the case you will need to drain out (use up) the rest of the material inside the tank. When the tank is empty, use an air chisel to remove this built up material. Remove as much as possible all around the tank including the roof of the material tank. Remove all the old sealant chunks from the bottom of the material tank. This should be done every year or as conditions require.
3	Check your level of the heat transfer oil, the mark on the dipstick is for 70°F (21.1°C).
4	Check your records of the last service replacement of the heat transfer oil. If it has been longer than 500 hours, or one year, you need to change your oil.
5	Many of Crafco, Inc. service centers can perform these service steps for you if you cannot. Call your local service center to find out if they can.

Chapter 8 Troubleshooting

8.2 Mixer Troubleshooting

8.2.1 Symptom: Mixer Does Not Rotate

Table 8-14 Basic Visual Mixer Troubleshooting

Step	Possible Cause	If . . .
1	Is the Material Temperature Display at or above (135 ⁰ C) 275°F?	• Yes, go to Step 2. • No, continue to allow the machine to heat. (Make sure the Material dial and the Hot Oil dial are set at operating temperatures.)
2	Is the red "Mixer" light "ON"?	• Yes, go to Step 4. - No, go to Table 8-15 Mixer Electrical Troubleshooting.
3	Is the loading door closed?	• Yes, go to Step 4. • No, shut the loading door.
4	Is the "Mixer" toggle switch in the "Forward" position?	• Yes, go to Step 5. • No, move the toggle switch to the forward position.
5	Move the "Mixer" toggle switch to the "Reverse" position. Is the agitator moving?	• Yes, allow mixer to reverse for 15 seconds and then move the "Mixer" toggle switch to the "Forward" position. Go to Step 6. • No, go to Table 8-15 Mixer Electrical Troubleshooting.
6	Open the Material loading door. Are there several un-melted blocks in the tank?	• Yes, this may cause the agitator to jam. Use the mixer toggle switch to move the agitator forward and backward until the material melts enough to allow forward movement without jamming. Crafco, Inc. recommends you add one to two blocks every three to four minutes during dispensing of product. • No, go to Table 8-15 Mixer Electrical Troubleshooting.
7	Is the hydraulic fluid level near the center of the sight gauge? Check at ambient temperature. See Figure 5.1 Hydraulic Fluid Level and Temp. Gauge .	• Yes, go to Table 8-15 Mixer Electrical Troubleshooting. • No, fill oil to the center of the sight gauge.

Chapter 8 Troubleshooting

Note: Use [Figure 8.5 Mixer Circuit Schematic](#) while troubleshooting the mixer electrical system.

Table 8-15 Mixer Electrical Troubleshooting

Step	Possible Cause	If . . .
1	Is the amber light "ON" on the Din Plug when the "Mixer" toggle switch is in the "Forward" position? (For forward din plug location, refer to Figure 8.7 Din Plug Layout).	• Yes, then the mixer should be working. If it is not working see Table 8-18 Mixer Hydraulic Troubleshooting. • No, go to Step 1a.
1a	Unscrew the din plug center screw so you can pull the din plug up about 1/4" in order to check for voltage. Is there 12Vdc from side post to side post?	• Yes, the electrical system for the agitator is working properly, go to Table 8-18 Mixer Hydraulic Troubleshooting. Also replace din plug at earliest convenience to retain visual troubleshooting ability. • No, go to Step 2.
2	Is there 12Vdc between the "Mixer" toggle switch bottom post brown wire and nearby ground wire (blue wire)? (With the "Mixer" toggle switch in the "Forward" position.) See Figure 8.5 Mixer Circuit Schematic .	• Yes, replace din plug. • No, go to Step 2a.
2a	Is there 12Vdc between the "Mixer" toggle switch center post red wire and nearby ground source (blue wire)?	• Yes, replace mixer toggle switch. • No, go to Step 3.
3	Is there 12Vdc between the lid switch red wires and a nearby ground source? (Check both red wires on the bottom of the lid switch with the lid closed.)	• Yes, on both red wires check for loose connections or broken wires between lid switch and mixer toggle switch. • Yes, on only one red wire when the lid is closed. Readjust the lid switch so that the lid completely depresses the switch, and then recheck for 12Vdc. If the same result happens, replace the lid switch. • No, go to Step 4.
4	Check for 12Vdc at red wire labeled Red Lid and pink wire labeled Pink-2 on terminal block and a nearby ground source (black wire).	• Yes on both, check for loose connections or broken wires between lid switch and terminal block. • No on Red Lid and Yes on Pink-2, ensure yellow jumper bar is securely installed between the two terminal blocks. • No, go to Step 4a.

Chapter 8 Troubleshooting

Table 8-16 Mixer Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
4a	Is there 12Vdc between the Material PAKSTAT terminal #2 pink wire and terminal #8 black ground wire? (Refer to Figure 8.5 Mixer Circuit Schematic).	• Yes, check for loose connections or broken wires between PAKSTAT terminal #2 and terminal block. • No, go to Step 4b.
4b	Is there 12Vdc between the Material PAKSTAT terminal #1 orange wire and terminal #8 black ground wire?	• Yes, replace the Material PAKSTAT. • No, go to Step 4c.
4c	Is there 12Vdc between orange wire labeled ORN-1, terminal #9 and terminal #8 ground source (black wire)?	• Yes, check for loose connections or broken wires between terminals #8 and #1. • No, go to Step 5.
5	Is there 12Vdc at orange wire labeled ORN-1 and ORN-2 on the terminal block?	• Yes on both, check for loose connections or broken wires between terminal block and material PAKSTAT. • Yes on ORN-2 and No on ORN-1 replace terminal block. • No on both, go to Step 6.
6	Is there 12Vdc between orange wire labeled ORN-2 terminal #3 and terminal #5 black ground of hot oil PAKSTAT?	• Yes, check for loose connections or broken wires between terminal #3 and terminal block. • No, go to Step 7.
7	Is there 12Vdc between top terminal of the power switch and a nearby ground (black wire)?	• Yes, check for loose connections or broken wires between toggle switch and hot oil PAKSTAT terminal #3. • No, go to step 7a.
7a	Is there 12Vdc between bottom terminal wire labeled RED-3 and a nearby ground source (black wire)?	• Yes, replace toggle switch. • No, go to Step 8.
8	Is there 12Vdc between the top terminal of circuit breaker red wire labeled RED-3 and nearby ground source (black wire)?	• Yes, check for loose connections or broken wires between circuit breaker and toggle switch. • No, go to Step 8a.
8a	Is there 12Vdc between the bottom terminal of circuit breaker red wire labeled RED-2 and nearby ground source (black wire)?	• Yes, replace circuit breaker. • No, go to Step 9.

Chapter 8 Troubleshooting

Table 8-17 Mixer Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
9	Is there 12Vdc between ignition switch “ACC” terminal and nearby ground source (black wire)?	• Yes, check for loose connections or broken wires between “ACC” terminal and circuit breaker. • No, go to Step 9a.
9a	Is there 12Vdc between “B” (blue wire) of ignition switch and nearby ground source (black wire)?	• Yes, replace ignition switch. • No, go to Step 10.
10	Is there 12Vdc between blue wire on starter solenoid and nearby ground source (black wire or bare metal on engine case)?	• Yes, check for loose or broken wire between starter solenoid and ignition switch. • No, go to Step 10a.
10a	Check connections and condition of red battery cable?	• Yes, there should be 12Vdc at all previous steps. • No, replace battery cable.

Chapter 8 Troubleshooting



Figure 8.4 Checking Din Plug Voltage

Chapter 8 Troubleshooting

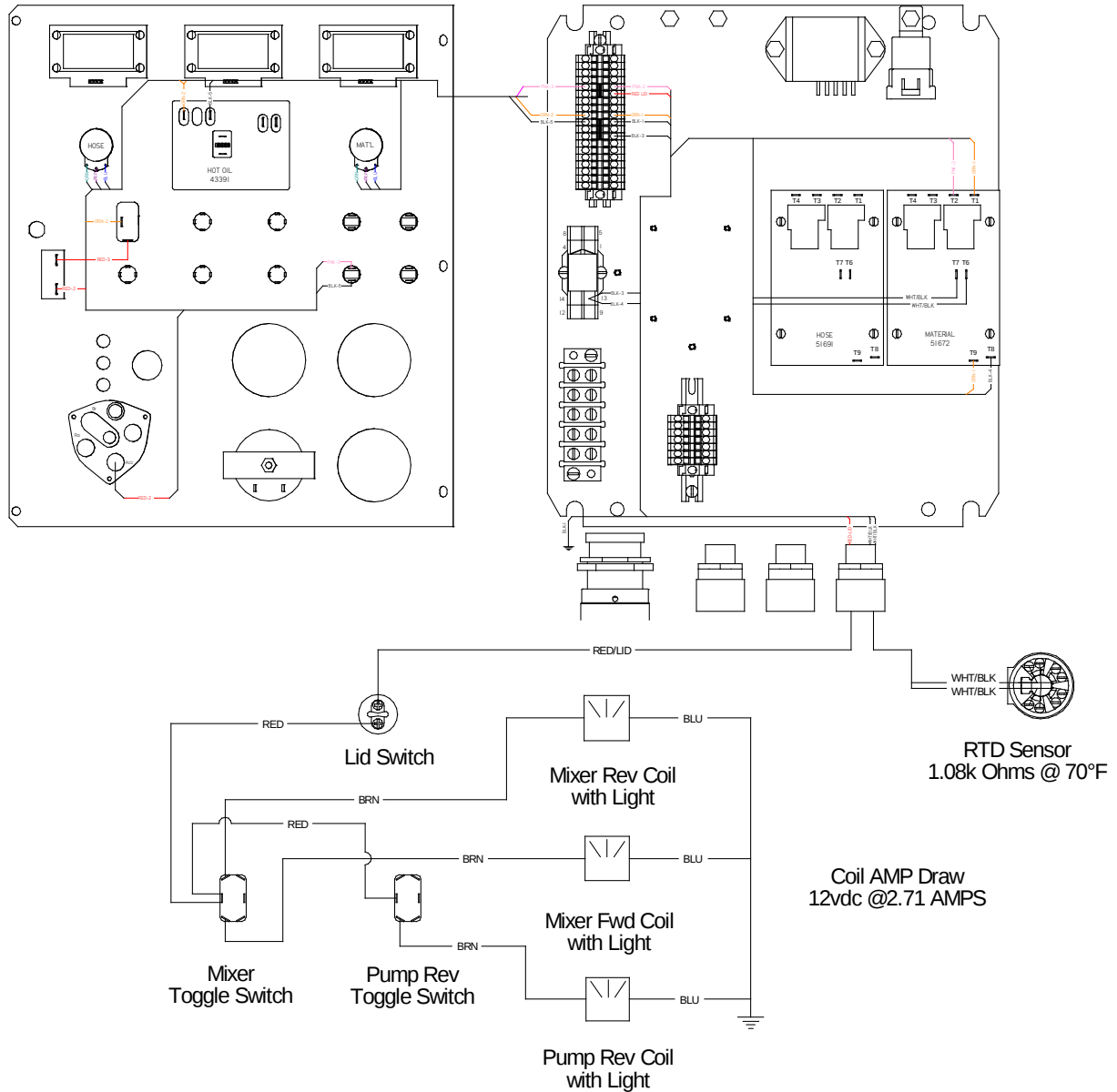


Figure 8.5 Mixer Circuit Schematic

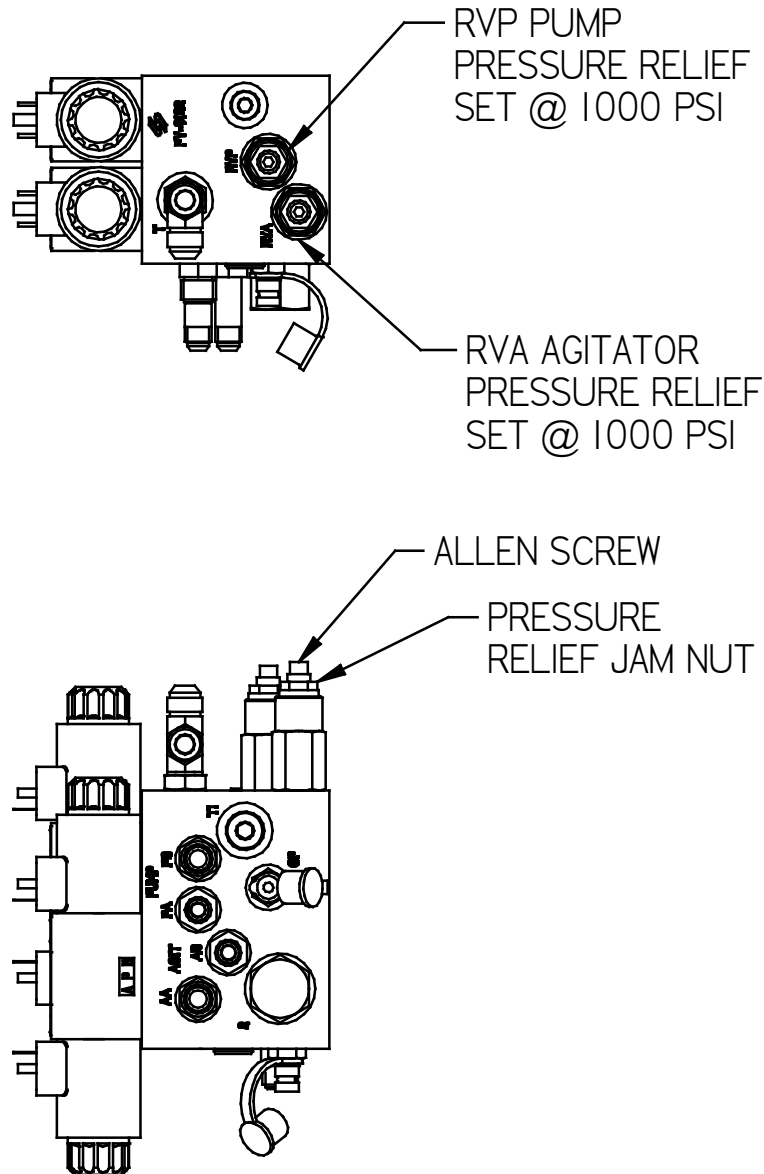
Chapter 8 Troubleshooting

8.2.2 Mixer Hydraulic Troubleshooting

Table 8-18 Mixer Hydraulic Troubleshooting

Step	Possible Cause	If . . .
1	Remove the din plug, and then remove the coil by unscrewing the nut on top of the coil. With the coil removed, re-attach the din plug and energize the coil by moving the mixer switch to Forward or Reverse, then insert a screw driver into the center of the coil. Does the coil magnetize when the din plug amber light is "ON"?	• Yes, go to Step 2. • No, replace the coil.
2	Is the relief pressure set correctly? (Refer to Figure 8.6 Hydraulic Valve Pressure Setting , for pressure settings.)	• Yes, go to Step 3. • No, first turn "OFF" the diesel engine, then remove one of the two hydraulic hoses going to the agitator hydraulic motor, cap off the fitting on the motor and use a 3,000 PSI gauge with the proper JIC fitting, attach it to the hose. Start the diesel engine, turn "ON" the main power in the control box, move the "Mixer" toggle switch to the "Forward" position and read the pressure gauge. If the pressure needs to be adjusted use the pressure relief valve labeled "RVA", loosen the jam nut and adjust the pressure with the allen screw at the end of the relief. Turn clockwise to increase pressure and counter clockwise to decrease pressure, then tighten the jam nut to lock the pressure. Next turn "OFF" the diesel engine, remove the cap and pressure gauge, then re-attach the hose.
3	Is the hydraulic flow 5.68 Liters/min (1.5 GPM) from the hydraulic valve? If you do not have a flow meter, call a local hydraulic shop to run the test for you.	• Yes, call Crafco, Inc. and speak to a customer service technician, you should have been able to find the problem. • No, replace the flow divider in the hydraulic valve.
4	Is the hydraulic flow correct from the hydraulic pump? If you do not have a flow meter, call a local hydraulic shop to run the test for you. (Refer to Figure 8.6 Hydraulic Valve Pressure Setting for flow rate).	• Yes, call Crafco, Inc. and speak to a customer service technician, you should have been able to find the problem. • No, replace the hydraulic pump.

Chapter 8 Troubleshooting



Agitation Direction = Counterclockwise
Material Pump = Clockwise
Hydraulic Flow = 9.71 GPM (36.8 LPM) @ 2,400 RPM

Figure 8.6 Hydraulic Valve Pressure Setting

Chapter 8 Troubleshooting

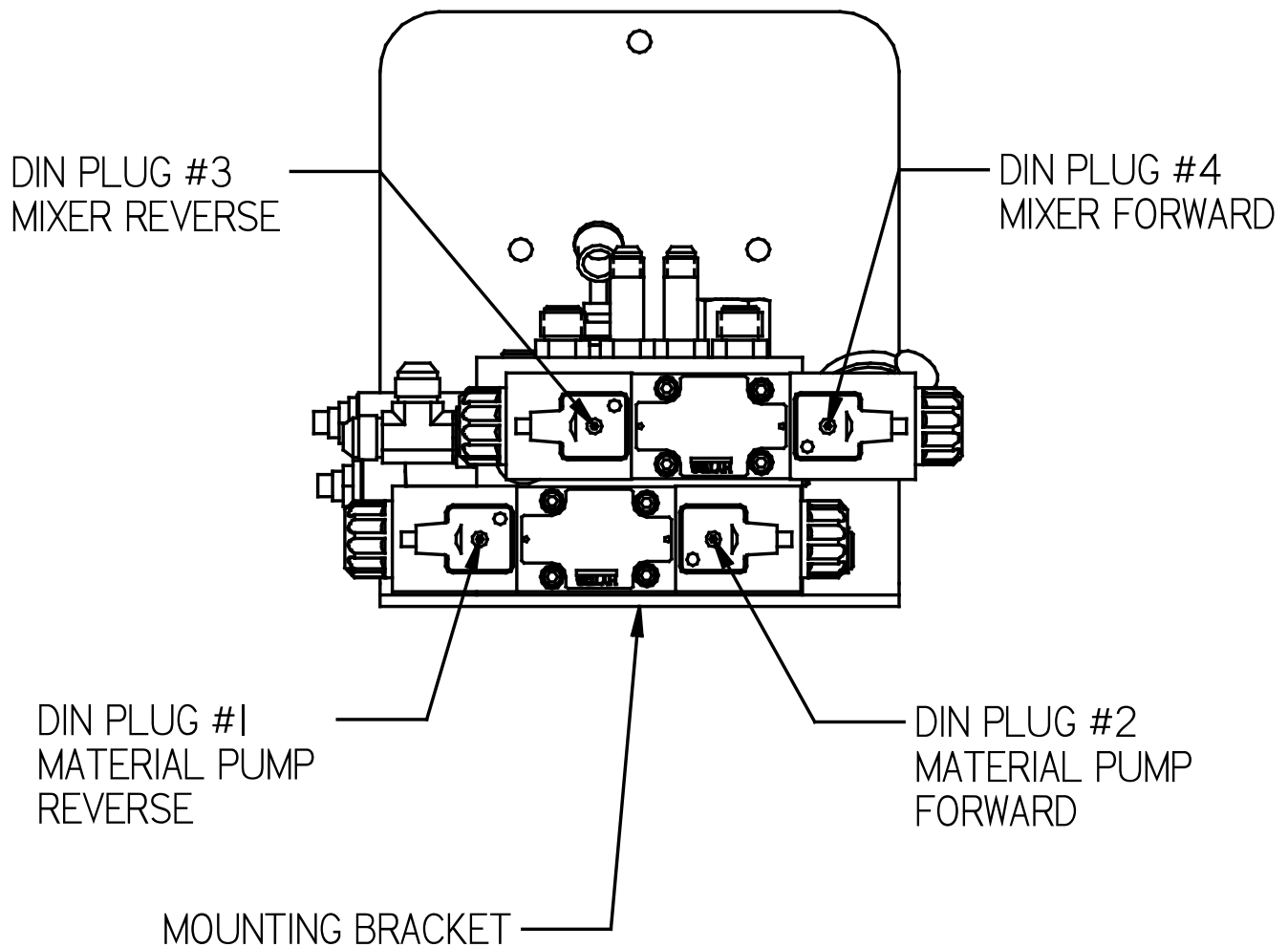


Figure 8.7 Din Plug Layout

Chapter 8 Troubleshooting

8.3 Hose Troubleshooting

8.3.1 Symptom: Hose Does Not Heat

Table 8-19 Basic Visual Hose Troubleshooting

Step	Possible Cause	If . . .
1	Is the Material Temperature Display at or above 135°C (275°F)?	• Yes, go to Step 2. • No, continue to allow the machine to heat. (Make sure the Material dial and the Hot Oil dial are set at operating temperatures.)
2	Is the red "HEATED HOSE" light "ON"?	• Yes, go to Table 8-20 Hose Electrical Troubleshooting. • No, allow the machine to heat material to 275°F (135°C).
2a	Is the circuit breaker tripped?	• Yes, reset the circuit breaker by pushing in the button which has popped out. • No, go to Table 8-20 Hose Electrical Troubleshooting.

NOTE: Use [Figure 8.9 Hose Circuit Schematic](#) while troubleshooting the hose electrical system.

Table 8-20 Hose Electrical Troubleshooting

Step	Possible Cause	If . . .
1	Is there 12Vdc between "BATT" terminal of the generator and a nearby ground source (lug on battery tray)?	• Yes, go to Step 2. • No, go to Step 6.
2	Is there 24Vac between the white, green, and black wires? NOTE: Do this test inside the junction box. Check between black and white, black and green, and green and white.	• Yes, go to Step 3. • No, stop the engine, tighten the belt, restart engine and recheck output voltage. • Still no, replace the generator.
2a	Check the three heating element wires (blue) in the junction box for 30 Amps cold or 20-22 Amps hot. NOTE: Always use a clamp-on amp meter to perform this test. Each wire should have the same amp reading (+/- 1 amp).	• Yes, the hose should be working properly. • No, go to Step 3.

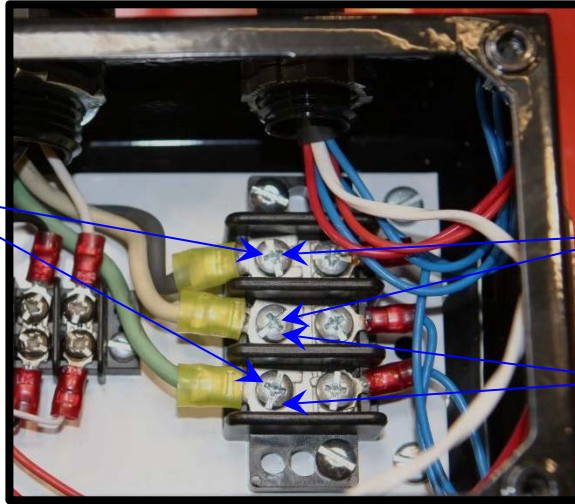
Chapter 8 Troubleshooting

Table 8-21 Hose Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
3	Check for continuity in the hose from end to end. Disconnect the three blue heating element wires (blue) from the terminal block inside the junction box and disconnect the five pin plug between the hose and wand. Refer to Figure 8.10 Junction Box Wiring . NOTE: Check each letter “D”, “E”, and “A” with the three blue wires on the other end of the hose. There should only be continuity on one wire to each letter.	• Yes, go to Step 3a. • No, either there was no continuity from one letter to the other end of the hose or there was more than one wire with continuity to a letter. This hose needs to be repaired or replaced. Contact CrafcO, Inc. to send back the hose for repair.
3a	Check the RTD sensor in the hose against the readout in the control box. Disconnect the black and white wires from the terminal block in the junction box and test for ohms. Refer to Table 8-20 Hose Electrical Troubleshooting .	• Yes, the readout matches the table, go to Step 4. • No, this hose needs to be repaired or replaced. Contact CrafcO, Inc. to send back the hose for repair.
4	Check for continuity in the wand between “D”, “E”, and “A”. NOTE: Check between “D” and “E”, “D” and “A”, and “A” and “E”.	• Yes, go to Step 5. • No, this wand needs to be repaired or replaced. Contact CrafcO, Inc. to send back the wand for repair.
5	Is there 12Vdc between wire labeled “BLU-GEN” on the upper terminal block and nearby ground source (black wire)?	• Yes, check for loose or broken connections between terminal block and the “BATT” terminal of generator. • No, go to Step 6.
6	Is there 12Vdc between Hose PAKSTAT blue wire terminal #4 and black wire terminal #8?	• Yes, check for loose or broken wire between terminal #4 and the terminal block. • No, go to Step 6a.
6a	Is there 12Vdc between Hose PAKSTAT terminal #3 Pink wire and terminal #8 black wire?	• Yes, replace hose PAKSTAT. • No, go to Step 6b.
6b	Is there 12Vdc between Hose PAKSTAT pink wire terminal #1 and black wire terminal #8?	• Yes, check for loose or broken wires between terminal #1 and terminal #3. • No, go to Step 7.
7	Is there 12Vdc between pink wire labeled “PNK-1 on the upper terminal block and a nearby ground source (black wire)?	• Yes, check for loose or broken wire between terminal block and terminal #1. • No go to Step 7a.
7a	Is there 12Vdc between pink wire labeled “PNK-3 and nearby ground source (black wire)?	• Yes, call CrafcO, Inc. and speak to a customer service technician you should have been able to find the problem. • No, replace terminal block.

Chapter 8 Troubleshooting

Test #2 between black
and green wires



Test #1 between
black and white wires

Test #3 between
white and green wires

Figure 8.8 Junction Box Voltage Test

Chapter 8 Troubleshooting

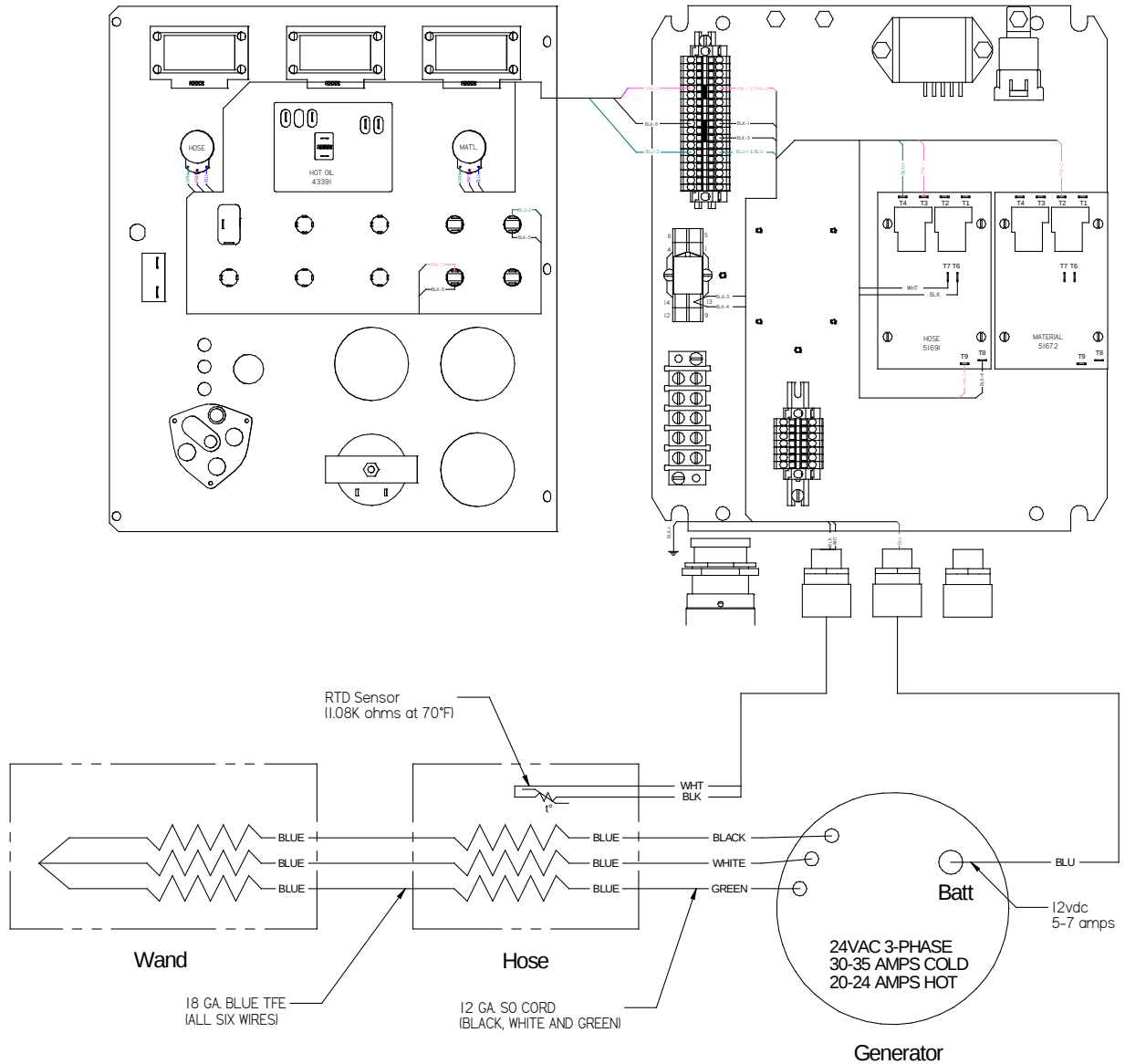
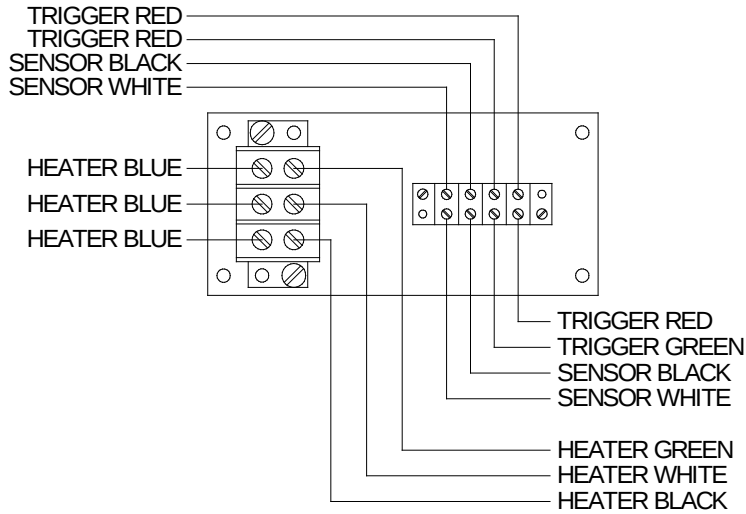
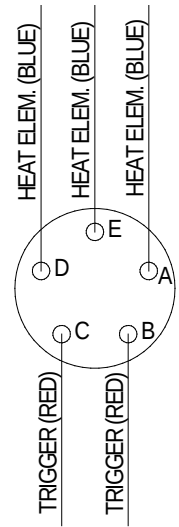


Figure 8.9 Hose Circuit Schematic

Chapter 8 Troubleshooting



KETTLE END



WAND END

Figure 8.10 Junction Box Wiring

Chapter 8 Troubleshooting

8.3.2 Symptom: Trigger is not Working

Table 8-22 Trigger is not Working

Step	Possible Cause	If . . .
1	Check continuity between two red wires coming from the hose in junction box. NOTE: These wires must be disconnected from the terminal block and the trigger depressed to perform this test.	• Yes, go to Table 8-25 Basic Visual Pump Troubleshooting. • No, go to Step 2.
2	Disconnect the electrical connector between the hose and wand, check for continuity between C and B wand side.	• Yes, this hose needs to be repaired or replaced. Contact CrafcO, Inc. to send back the hose for repair. • No, this wand needs to be repaired or replaced. Contact CrafcO, Inc. to send back the hose for repair.

Chapter 8 Troubleshooting

8.3.3 RTD Sensor Ohms vs. Temperature

Table 8-23/8-24 below shows 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 [7.3 Checking Resistance \(Ohms\)](#)) in Section [7.0 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, 1,391 Ohms = 215°F (102°C))

Table 8-23 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 8-24 RTD Sensor Ohms vs. Temperature (continued)

°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 Pump Troubleshooting

8.4.1 Symptom: Material Does Not Dispense When the Pump is Activated

Table 8-25 Basic Visual Pump Troubleshooting

Step	Possible Cause	If . . .
1	Is the Hose Temperature Display at or above 325°F (163°C)?	• Yes, go to Step 2. • No, continue to allow the hose to heat. (Make sure the Hose dial is set at proper operating temperature.)
2	Is the red "Pump" light "ON"?	• Yes, go to Step 3. • No, go to Table 8-26 Pump Electrical Troubleshooting.
3	With the wand under the lid, pull the wand trigger and look at the material pump shaft coupler. Is it spinning clockwise?	• Yes, shut down machine and look for a plug in the plumbing. • No, adjust the material flow control to increase the flow. • Still no, go to Step 4.
4	Inside the control box and under the front panel, find the relay cube for the pump. It is found near the middle, left-hand side of the box. It is a clear yellow cube with a green button facing the top of the control box. When you press this button, material should dispense from the wand, so be careful.	• Yes, this tells you that everything from the cube relay to the hydraulic manifold is working properly; your issue is inside the hose and wand. Go to Table 8-20 Hose Electrical Troubleshooting, Steps 1 through 5 to find the problem. • No, go to Step 5.
5	Is the hydraulic fluid level near the center of the sight gauge when the machine is cold? See Figure 5.1 Hydraulic Fluid Level and Temp. Gauge .	• Yes, go to Table 8-26 Pump Electrical Troubleshooting. • No, fill oil to the center of the sight gauge.

Chapter 8 Troubleshooting

NOTE: Use [Figure 8.11 Pump Circuit Schematic](#) while troubleshooting the pump electrical system.

Table 8-26 Pump Electrical Troubleshooting

Step	Possible Cause	If . . .
1	Is the Material Temperature at or above 275°F?	• Yes go to Step 2. • No, continue to allow the machine to heat.
2	Is there 12 Vdc between the Hose PAKSTAT terminal #2 purple wire and terminal #8 black ground wire? (Refer to the pump circuit schematic Figure 8.11 Pump Circuit Schematic).	• Yes, go to Step 3. • No, go to Step 2a.
2a	Is there 12 Vdc between the Hose PAKSTAT terminal #1 pink wire and terminal #8 black ground wire?	• Yes, check for a broken wire or poor wire crimp on the terminal #2 purple wire and recheck for 12 Vdc. (If still no voltage replace the Material PAKSTAT.) • No, go to Step 2b.
2b	Is there 12 Vdc between the Hose PAKSTAT terminal #9 pink wire and terminal #8 black ground wire?	• Yes, check for a broken wire or poor wire crimp on terminal #1 pink wire. (If you have 12 Vdc on terminal #9 pink then you must have 12 Vdc on terminal #1 pink wire; they are the same wire.) • No, if this is the case you would have had a hose heating issue.
3	Is there 12 Vdc between the terminal block purple wire and the terminal black ground wire?	• Yes, go to Step 4. • No, check for a broken wire or poor wire crimp between the Hose PAKSTAT terminal #2 purple wire and the terminal block purple wire.
4	Move to the junction box at the rear of the machine and open the cover. Is there 12 Vdc between the trigger red wire coming from the control box and a nearby ground source?	• Yes, go to Step 4a. • No, check for a broken wire or poor wire crimp between the junction box and the control box red wire labeled red-trig.
4a	Is there 12 Vdc between the trigger red wire going toward the hose (just above where you checked in Step 4) and a nearby ground source?	• Yes go to Step 4b. • No, check for a broken wire or poor wire crimp on the red trigger going toward the hose.

Chapter 8 Troubleshooting

Table 8-27 Pump Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
4b	Is there 12 Vdc between the trigger red wire going toward the hose and a nearby ground source? (Make sure the wand trigger is pulled during this Step.)	• Yes, go to Step 4c. • No, go to Step 5.
4c	Is there 12 Vdc between the trigger green wire coming from the control box and a nearby ground source? (Make sure the wand trigger is pulled during this Step.)	• Yes, go to Step 6. • No, check for a broken wire or poor wire crimp on the green trigger wire going to the control box.
5	Disconnect the five pin connector between the hose and wand. Refer to Figure 8.10 Junction Box Wiring . Is there continuity on the wand connector between red trigger "C" post and red trigger "B" post while the wand trigger is pulled?	• Yes, go to Step 5a. • No, call Crafco, Inc. and request an RA # so you can send your wand back for repair.
5a	Disconnect the two red trigger wires in the junction box going toward the hose. Move the wand end of the hose next to the junction box. Is there continuity on the hose connector "C" socket and only one red trigger in the junction box? (Check both red trigger wires in the junction box one at a time.)	• Yes, go to Step 5b. • No, recheck the hose connector "C" socket to the other red trigger wire in the junction box. (You want to see continuity between only one red trigger wire and the "C" socket.) • Still no continuity to both red trigger wire, then call Crafco, Inc. and request an RA# so you can send your hose back for repair.
5b	Is there continuity on the hose connector "B" socket and red trigger in the junction box?	• Yes, call Crafco, Inc. and speak to a service technician, you should have found the problem. • No, recheck the hose connector "B" socket to the other red trigger wire in the junction box. (You want to see continuity between only one red trigger wire and the "B" socket.) • Still no continuity to both red trigger wire, then call Crafco, Inc. and request an RA# so you can send your hose back for repair.

Chapter 8 Troubleshooting

Table 8-28 Pump Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
6	Move back to the control box. Is there 12 Vdc between the pump relay base #14 terminal green trigger wire and the #13 terminal black ground wire, when the trigger is pulled?	• Yes, go to Step 7. • No, check for a broken wire or loose wire at the relay base on both the green trigger wire and the two black ground wires. Also check for any damage to the green trigger wire from the junction box to the control box.
7	Is there 12 Vdc between the pump relay base #12 terminal red wire and the #13 terminal black ground wire?	• Yes, go to Step 8. • No, go to Step 7a.
7a	Is there 12 Vdc between the terminal block red black wire and the pump relay base #13 terminal black ground wire?	• Yes, check for a broken wire or loose wire at the pump relay base #12 terminal. • No, go to Step 7b.
7b	Is there 12 Vdc between the terminal block red wire (across to the left of the terminal block red black wire) and the pump relay base #13 terminal black ground wire?	• Yes, check for a loose wire in the terminal block. If you have power on one side you should have it on the other. If still the case after checking, then replace the terminal block. • No, go to Step 7c.
7c	Is there 12 Vdc between the circuit breaker bottom post red wire and the pump relay base #13 terminal black ground wire?	• Yes, check for a broken wire or loose wire at the circuit breaker and at the terminal block red wire. • No, if this is the case you would have had problems with the burner working. Call Crafco, Inc. and speak to a service technician.
8	Is there 12 Vdc between the pump relay base #8 terminal blue pump wire and the #13 terminal black ground wire?	• Yes, go to Step 9. • No, replace the pump relay cube.
9	Move to the rear of the machine. Remove the cover over the hydraulic manifold. Is the amber light "ON" when the wand trigger is pulled? (Looking down at the top of the hydraulic valve, Pump forward is the din plug lower right-hand corner, refer to Figure 8.7 Din Plug Layout).	• Yes, go to Step 9c. • No, go to Step 9a.

Chapter 8 Troubleshooting

Table 8-29 Pump Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
9a	Follow the brown wire "Forward Pump" din plug to where the insulated spade connection is to the blue pump wire coming from the control box. Are these two wires still connected?	• Yes, go to Step 9b. • No, connect these two wires.
9b	Disconnect these two wires. Is there 12 Vdc between the blue pump wire and the blue (4) wire ground connection for the din plugs?	• Yes, check for a broken wire or poor wire crimp along the brown "Forward Pump" din plug. • No, check for a broken wire or poor wire crimp along the blue pump wire.
9c	Unscrew the din plug center screw so you can pull the din plug up about 1/4", so you can check for voltage. Is there 12 Vdc from side post to side post, when the wand trigger is pulled?	• Yes, the electrical system for the agitator is working properly; go to Table 8-31 Pump Hydraulic Troubleshooting. • No, recheck the amber light, if the light comes "ON" and you do not have 12 Vdc then replace the din plug.
10	Does the hydraulic pump shaft coupler turn counter clock wise, when you hold the "Pump" toggle switch in the "Reverse" position?	• Yes, this feature is working properly. • No, go to Step 10a.
10a	Is the amber light "ON" when you hold the "Pump" toggle switch in the "Reverse" position? (Looking down at the top of the hydraulic valve, Pump reverse is the din plug lower left-hand corner, Refer to Figure 8.7 Din Plug Layout .)	• Yes, go to Step 10e. • No, go to Step 10b.
10b	Is there 12 Vdc between the "Pump" toggle switch bottom post brown wire and the blue (4) wires ground din plug, when the toggle switch is in the "Reverse" position? (Refer to Figure 8.5 Mixer Circuit Schematic .)	• Yes, go to Step 10e. • No, go to Step 10c.
10c	Is there 12 Vdc between the "Pump" toggle switch center post red wire and the blue (4) wires ground din plug?	• Yes, replace the toggle switch. • No, go to Step 10d.

Chapter 8 Troubleshooting

Table 8-30 Pump Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
10d	Is there 12 Vdc between the "Mixer" toggle switch center post red wire and the blue (4) wires ground din plug?	• Yes, check for a broken wire or poor wire crimp on the red wire between the "Mixer" toggle switch and the "Pump" toggle switch. • No, if this is the case you would have had an agitator problem. Call Crafco, Inc. and speak to a service technician.
10e	Unscrew the din plug center screw so you can pull the din plug up about 1/4", so you can check for voltage. Is there 12 Vdc from side post to side post, when the wand trigger is pulled?	• Yes, the electrical system for the agitator is working properly; go to Table 8-31 Pump Hydraulic Troubleshooting. • No, recheck the amber light, if the light comes "ON" and you do not have 12 Vdc then replace the din plug.

Chapter 8 Troubleshooting

8.4.2 Pump Hydraulic Troubleshooting

Table 8-31 Pump Hydraulic Troubleshooting

Step	Possible Cause	If...
1	Does the coil magnetize when the din plug amber light is "ON"?	• Yes, go to Step 2. • No, remove the din plug, and then remove the coil by unscrewing the nut on the end of the coil. With the coil removed, reattach the din plug and place a metal screw driver in the center of the coil to see if the coil is magnetic. If it is not, recheck the din plug is plugged into the coil and the amber light is "ON". If still not magnetic replace the coil.
2	Is the relief pressure set correctly? (Refer to Figure 8.6 Hydraulic Valve Pressure Setting).	• Yes, go to Step 3. • No, first turn "OFF" the Isuzu engine, then remove one of the two hydraulic hoses going to the pump hydraulic motor, cap off the fitting on the motor and use a 3000 PSI gauge with the proper JIC fitting, attach it to the hose. Start the Isuzu engine, turn "ON" the main power in the control box, pull the wand trigger and read the pressure gauge. If the pressure needs to be adjusted use the pressure relief valve marked "RVP", loosen the jam nut and adjust the pressure with the allen screw at the end of the relief. Turn clockwise to increase pressure and counter clockwise to decrease pressure, and then tighten the jam nut to lock pressure. Next turn "OFF" the Isuzu engine, remove the cap, pressure gauge and reattach the hose.
3	Is the hydraulic flow correct from the hydraulic pump? (Refer to Table 8-31 Pump Hydraulic Troubleshooting).	• Yes, call Crafco, Inc. and speak to a service technician. You should have been able to find the problem. • No, call a local hydraulic shop to see if they can run a hydraulic pump flow test, using the information in Figure 8.6 Hydraulic Valve Pressure Setting.

Chapter 8 Troubleshooting

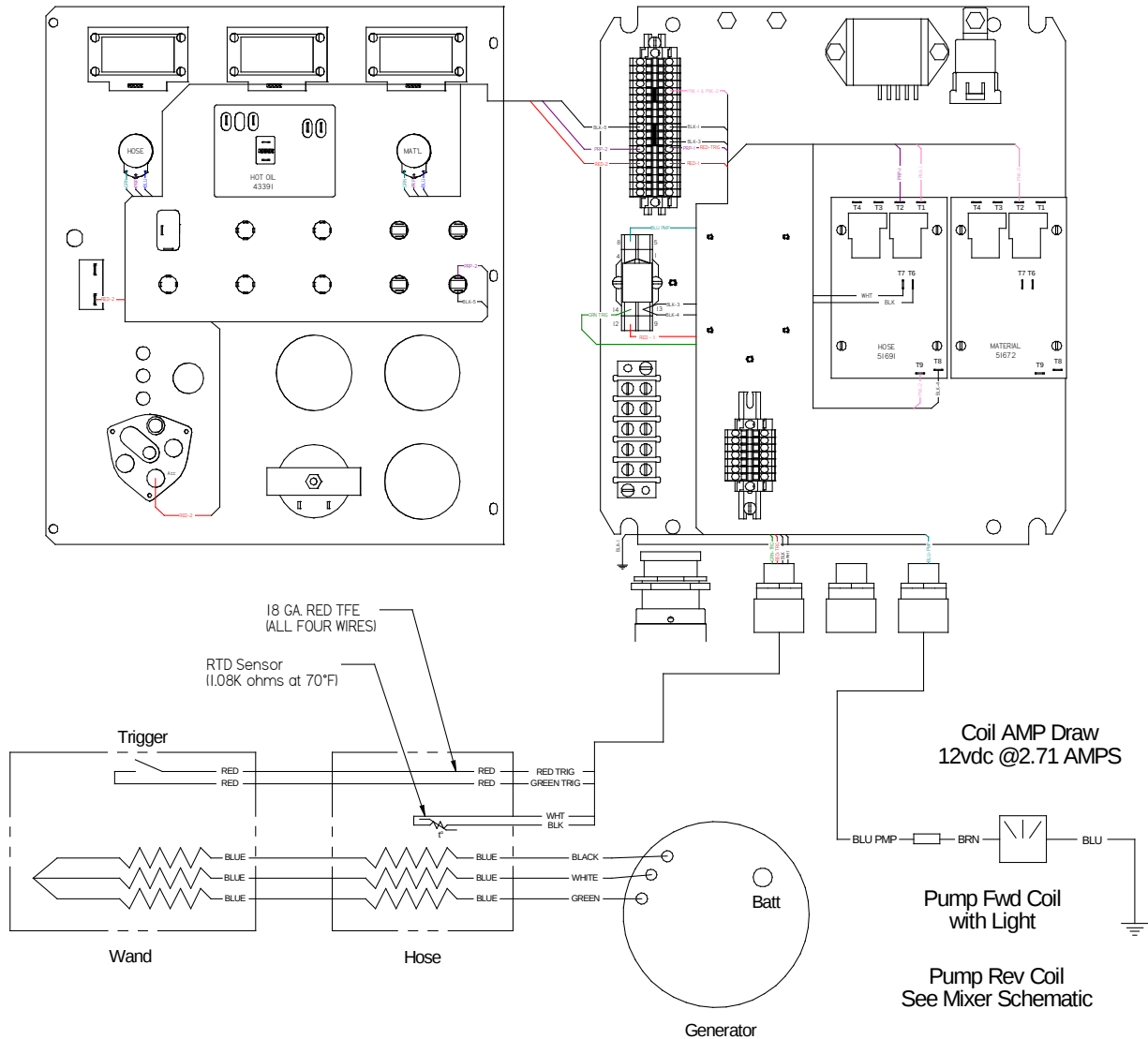


Figure 8.11 Pump Circuit Schematic

Chapter 9 Illustrated Parts List

9.0 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. The PNs for each of the Super Shot 60 Diesel Melter machine models are as follows:

- Super Shot 60 Diesel Skid Mount Melter PN 46800
- Super Shot 60 Diesel Trailer Melter PN 46950

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.

9.1 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

Visit our website at www.crafco.com

Chapter 9 Illustrated Parts List

9.2 Super Shot 60 Diesel Skid Mount Melter

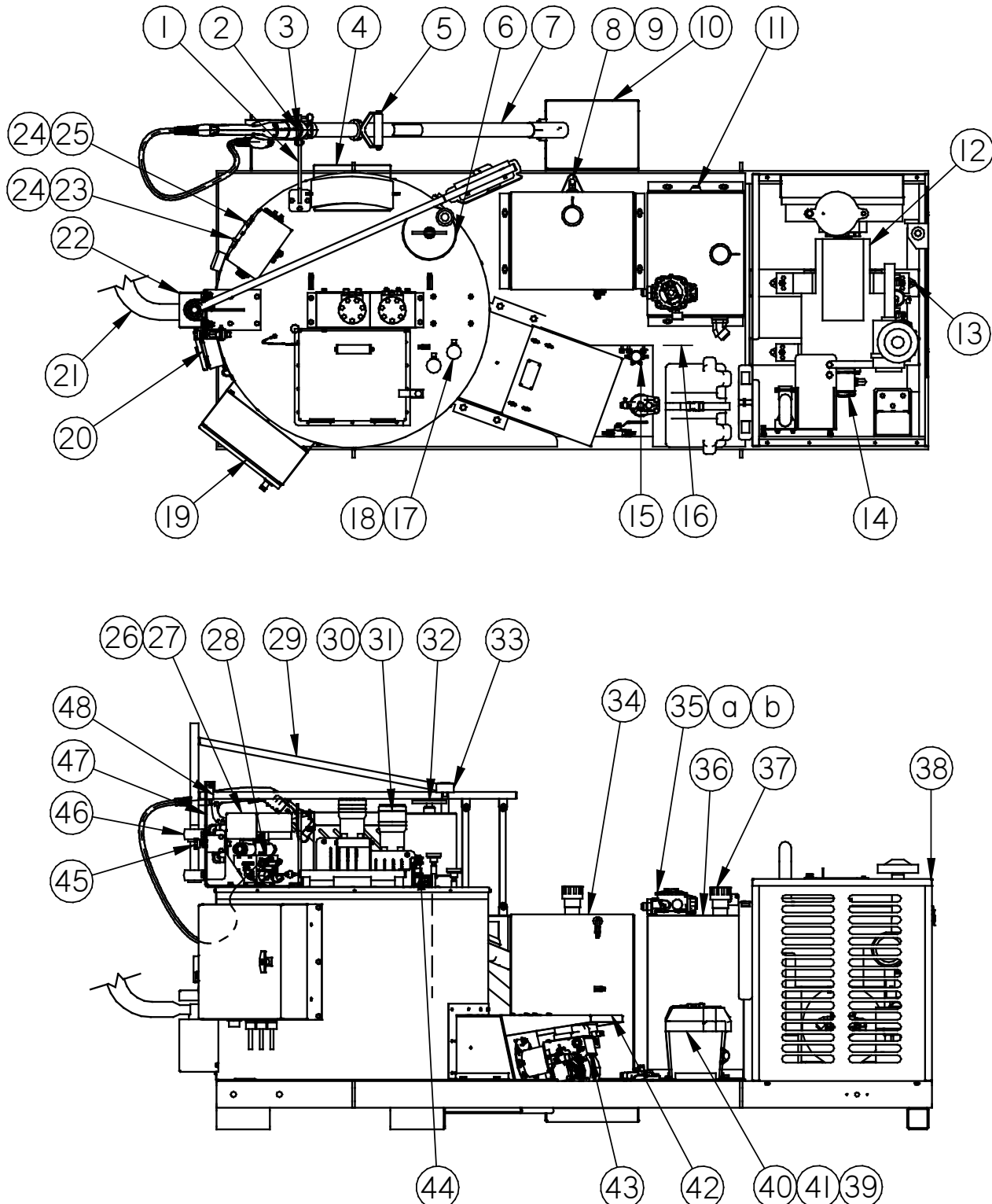


Figure 9.1 Super Shot 60 Diesel Skid Mount Melter

Chapter 9 Illustrated Parts List

Table 9-1 Super Shot 60 Diesel Skid Mount Melter: PN 46800

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.1	1	46997	SUPPORT ASSEMBLY, WAND	1
	2	26104	1/4" X 2" GRIP, QUICK RELEASE PIN	2
	3	45989	LOCKING ARM, WAND SUPPORT	1
	4	43176	VENT GUARD, LARGE	1
	5	43768	WAND HANDLE ASSY	1
	6	43355	OVERFLOW TANK	1
	7	52200	WAND ASSEMBLY – ELECTRIC	1
	8	44191-16	TUBING, SIGHT GAUGE	1
	9	44817	FITTING, SIGHT GAUGE	2
	10	46908	DRIP PAN	1
	11	45415	SIGHT GAUGE, HYDRAULIC TANK	1
	12	47106	ENGINE ASSEMBLY	1
	13	29399	ISOMOUNT	4
	14	45402	HYDRAULIC PUMP ASSEMBLY	1
	15	39602	SOLENOID	1
	16	31512	CIRCUIT BREAKER	1
	17	43465	SENSOR, RTD	2
	18	51065	CORD GRIP	2
	19	46962N	CONTROL BOX ASSEMBLY – SS60D	1
	20	44027	JUNCTION BOX ASSEMBLY	1
	21	52400	HOSE, ELECTRIC – 15'	1
	22	43821P	HEAT GUARD	1
	23	51678	TOGGLE SWITCH – AGITATOR	1
	24	50720	BOOT, TOGGLE SWITCH	2
	25	32513	TOGGLE SWITCH – PUMP REVERSE	1
	26	46931	BRACKET, HYDRAULIC VALVE	1
	27	46864	COVER, CONTROL VALVE	1
	28	45420	HYDRAULIC CONTROL VALVE ASSEMBLY	1
	29	46860N	BOOM – HOSE	1

Chapter 9 Illustrated Parts List

Table 9-2 Super Shot 60 Diesel Skid Mount Melter: PN 46800 (continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.1	30	44832	PUMP AGITATOR MOTOR ASSEMBLY	1
	31	46878	CHAIN GUARD	2
	32	43374	DIPSTICK	1
	33	26025	AIR BREATHER	1
	34	46855	FUEL TANK ASSEMBLY	1
	35	45498	HYDRAULIC FILTER ASSEMBLY	1
	35a	45438	HYDRAULIC FILTER ELEMENT	1
	35b	45440	O-RING, HYDRAULIC FILTER	1
	36	46850	HYDRAULIC TANK ASSEMBLY	1
	37	43758N	FILLER/BREATHER CAP - REPLACEMENT	2
	38	46980CH	ENGINE COVER	1
	39	24000	BATTERY	1
	40	24002	BATTERY BOX	1
	41	24037	BATTERY STRAP W/ BUCKLE	1
	42	46909	COVER, BURNER	1
	43	46380	BURNER, 14 VOLT	1
	44	39608	SWITCH, LID	1
	45	46060	REGULATOR, FLOW	1
	46	45553	BEARING, BOOM	2
	47	46866N	BASE, BOOM	1
	48	45563	LOCK, BOOM	1

Chapter 9 Illustrated Parts List

This page left blank intentionally

Chapter 9 Illustrated Parts List

9.3 Super Shot 60 Diesel Trailer Melter

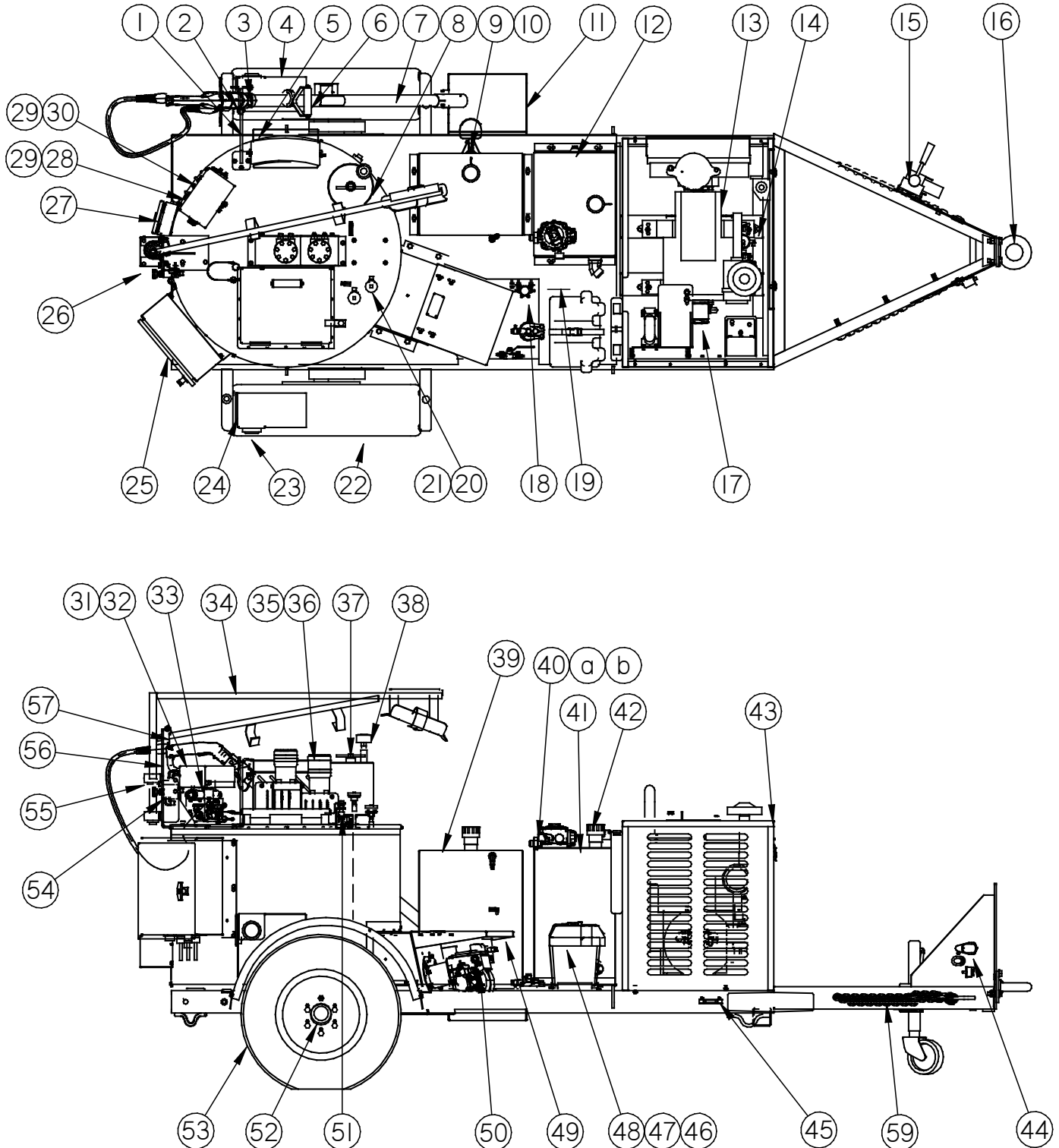


Figure 9.2 Super Shot 60 Diesel Trailer Melter

Chapter 9 Illustrated Parts List

Table 9-3 Super Shot 60 Diesel Trailer Melter: PN 46950

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.2	1	46997	SUPPORT ASSEMBLY, WAND	1
	2	45989	LOCKING ARM, WAND SUPPORT	1
	3	26104	1/4" X 2" GRIP, QUICK RELEASE PIN	2
	4	44778	DRIVER SIDE FENDER ASSEMBLY	1
	5	43176	VENT GUARD, LARGE	1
	6	43768	WAND HANDLE	1
	7	52200	WAND ASSEMBLY – ELECTRIC	1
	8	43355	OVERFLOW TANK	1
	9	44191-16	TUBING, SIGHT GAUGE	1
	10	44817	FITTING, SIGHT GAUGE	2
	11	46908	DRIP PAN	1
	12	45415	SIGHT GAUGE, HYDRAULIC TANK	1
	13	47106	ENGINE ASSEMBLY	1
	14	29399	ISOMOUNT	4
	15	40105	SWIVEL JACK	1
	16	20013	3" PINTLE (OPTIONAL)	1
	17	45402	HYDRAULIC PUMP ASSEMBLY	1
	18	39602	SOLENOID	1
	19	31512	CIRCUIT BREAKER	1
	20	43465	SENSOR, RTD	2
	21	51065	CORD GRIP	2
	22	44779	PASSENGER SIDE FENDER ASSEMBLY	1
	23	44772	2 ½" RED SIDE MARKER	2
	24	32363	4" ROUND STOP, TURN AND TAIL LAMP	2
	25	46962N	CONTROL BOX ASSEMBLY – SS60D	1
	26	43824P	HEAT GUARD	1
	27	44027	JUNCTION BOX ASSEMBLY	1
	28	51678	TOGGLE SWITCH – AGITATOR	1
	29	50720	BOOT, TOGGLE SWITCH	2

Chapter 9 Illustrated Parts List

Table 9-4 Super Shot 60 Diesel Trailer Melter: PN 46950 (continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.2	30	32513	TOGGLE SWITCH – PUMP REVERSE	1
	31	46931	BRACKET, HYDRAULIC VALVE	1
	32	46864	COVER, CONTROL VALVE	1
	33	45420	HYDRAULIC CONTROL VALVE ASSEMBLY	1
	34	45560	BOOM – HOSE	1
	35	44832	PUMP AGITATOR MOTOR ASSEMBLY	1
	36	46878	CHAIN GUARD	2
	37	43374	DIPSTICK	1
	38	26025	AIR BREATHER	1
	39	46855	FUEL TANK ASSEMBLY	1
	40	45498	HYDRAULIC FILTER ASSEMBLY	1
	40a	45438	HYDRAULIC FILTER ELEMENT	1
	40b	45440	O-RING, HYDRAULIC FILTER	1
	41	46850	HYDRAULIC TANK ASSEMBLY	1
	42	43785N	FILLER/BREATHER CAP - REPLACEMENT	2
	43	46980CH	ENGINE COVER	1
	44	23117	BREAKAWAY SWITCH	1
	45	32365	YELLOW CLEARANCE LIGHT	2
	46	24000	BATTERY	1
	47	24002	BATTERY BOX	1
	48	24037	BATTERY STRAP W/ BUCKLE	1
	49	46909	COVER, BURNER	1
	50	46380	BURNER, 14 VOLT	1
	51	39608	SWITCH, LID	1
	52	46960	TORSIONAL AXLE ASSEMBLY	1
	53	44342	TIRE AND RIM ASSEMBLY ST225/75 R15	2
	54	46060	REGULATOR, FLOW	1
	55	45553	BEARING, BOOM	2

Chapter 9 Illustrated Parts List

Table 9-5 Super Shot 60 Diesel Trailer Melter: PN 46950 (continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.2	56	45549	BASE, BOOM	1
	57	45563	LOCK, BOOM	1
	58	52400	HOSE, ELECTRIC – 15' (NOT SHOWN)	1
	59	20130	SAFETY CHAIN 48" x 3/8"	2
	60	44797	LED LICENSE PLATE LAMP (NOT SHOWN)	1
	61	26099	LICENSE PLATE BRACKET (NOT SHOWN)	1

Chapter 9 Illustrated Parts List

9.4 Tank Assembly

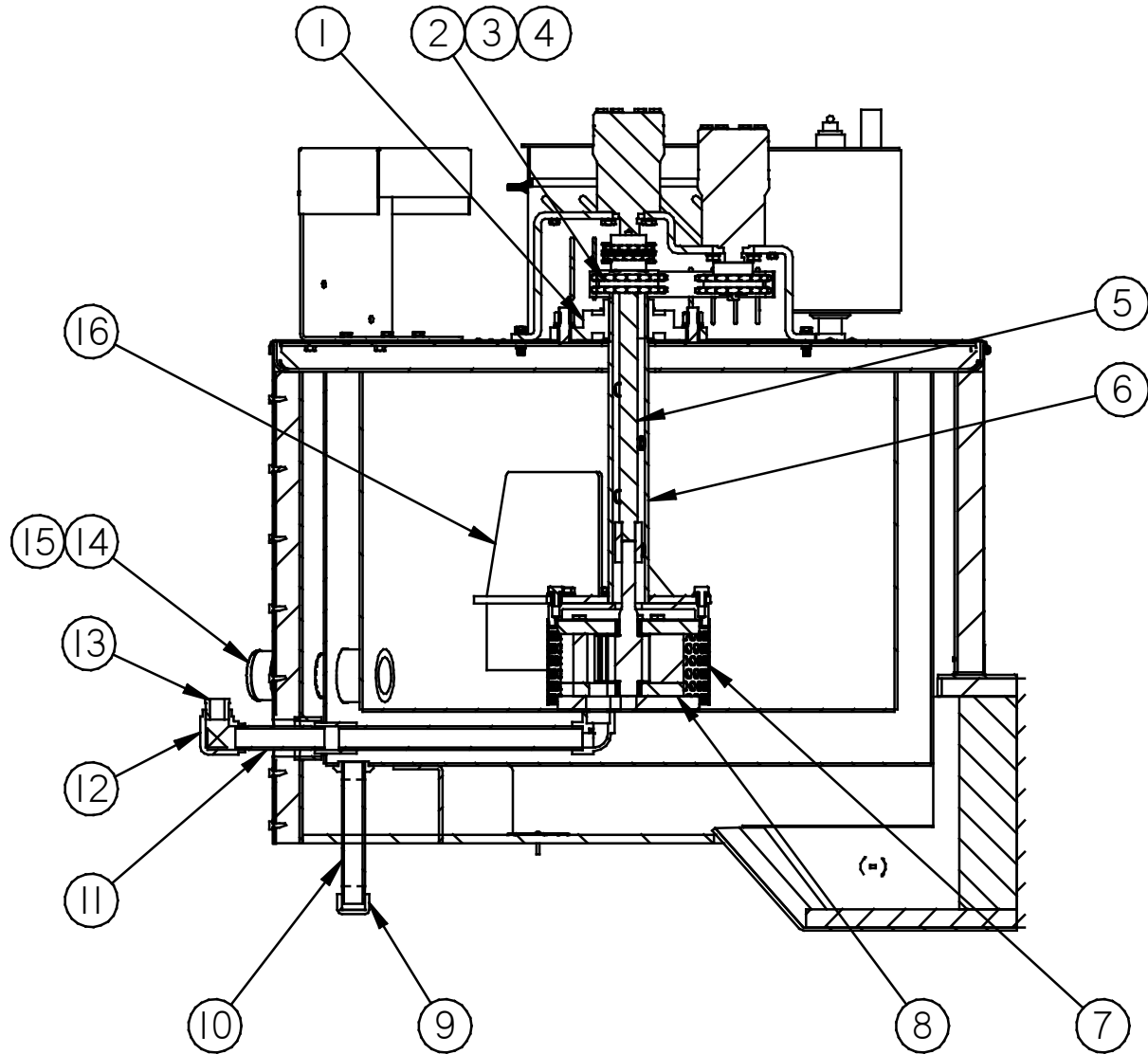


Figure 9.3 Tank Assembly

Chapter 9 Illustrated Parts List

Table 9-6 Tank Assembly

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.3	1	46872	BEARING, FLANGED	1
	2	43321	CHAIN DRIVE	1
	3	44163	KEY, SPROCKET	1
	4	44165	SPROCKET DRIVEN	1
	5	43548	SHAFT, DRIVE PUMP	1
	6	46896	SHAFT AGITATOR	1
	7	46803	SCREEN PUMP	1
	8	44850	PUMP, MATERIAL	1
	9	28270	1" PIPE CAP	1
	10	28101	1" X 8" LONG PIPE NIPPLE	1
	11	28055	1" X 5" LONG PIPE NIPPLE	1
	12	28210	1" PIPE ELBOW	1
	13	28351	1" X ¾" REDUCER BUSHING	1
	14	28060	2" X 5" LONG PIPE NIPPLE	1
	15	28273	2" PIPE CAP	1
	16	46900	PADDLE AGITATOR	2

Chapter 9 Illustrated Parts List

9.5 Control Box Assembly

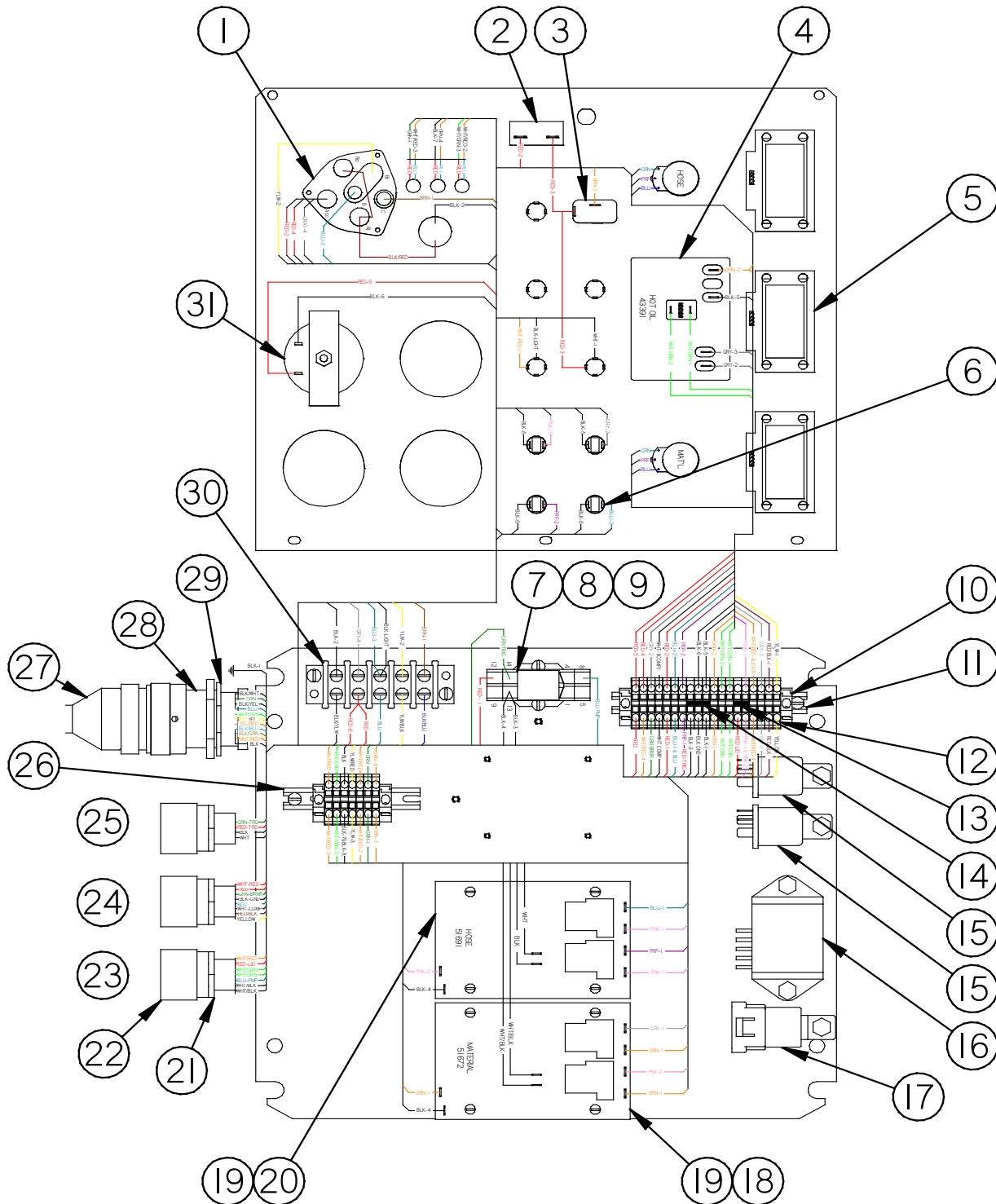


Figure 9.4 Control Box Assembly

Chapter 9 Illustrated Parts List

Table 9-7 Control Box Assembly: PN 46962N

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.4	1	41994	IGNITION SWITCH WITH OUT TUMBLER	1
	2	51665	CIRCUIT BREAKER, 15 AMP	1
	3	50719	TOGGLE SWITCH	1
	4	43391	TEMPERATURE CONTROLLER, 150°F – 550°F	1
	5	50251	DIGITAL READOUT	3
	6	51651	LIGHT, 12VDC	4
	7	51662	SOCKET RELAY	1
	8	51661	RELAY	1
	9	51663	HOLD DOWN SPRING	1
	10	51802	END BRACKET, TENSION CLAMP	1
	11	51803	MOUNTING RAIL, TENSION CLAMP	1
	12	51800	FEED THROUGH TERMINAL	26
	13	51801	2-POLE JUMPER	1
	14	51804	3-POLE JUMPER	1
	15	44979	RELAY STARTER	2
	16	44980	TIMER	1
	17	51673	RELAY, NORMALLY CLOSED	1
	18	51672	TEMPERATURE CONTROLLER 400°F / 275°F	1
	19	51670	SPACER, CONTROLLER	8
	20	51691	TEMPERATURE CONTROLLER 400°F / 325°F	1
	21	50280	½" CONDUIT NUT	3
	22	24021	CORD GRIP CONNECTOR ½"	3
	23	44983	CABLE ASSEMBLY, SENSOR (NOT SHOWN)	1
	24	44984	CABLE ASSEMBLY, POWER (NOT SHOWN)	1
	25	44985	CABLE, TRIGGER/SENSOR (NOT SHOWN)	1
	26	44993	MOUNTING RAIL	1
	27	44978	WIRING HARNESS, ENGINE (NOT SHOWN)	1
	28	45950	SOCKET CONNECTOR	1
	29	45954	PANEL NUT	1
	30	44994	TERMINAL BLOCK	1

Chapter 9 Illustrated Parts List

Table 9-8 Control Box Assembly: PN 46962N (continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.4	31	24076	HOUR METER	1
	32	47203	ENCLOSURE, CONTROL BOX	1
	33	50593	KNOB, TEMP CONTROL (NOT SHOWN)	3
	34	51684	RIBBON CABLE, 36" (NOT SHOWN)	2
	35	51698	RIBBON CABLE, 5" (NOT SHOWN)	1

Chapter 9 Illustrated Parts List

This page left blank intentionally

Chapter 9 Illustrated Parts List

9.6 Engine Assembly

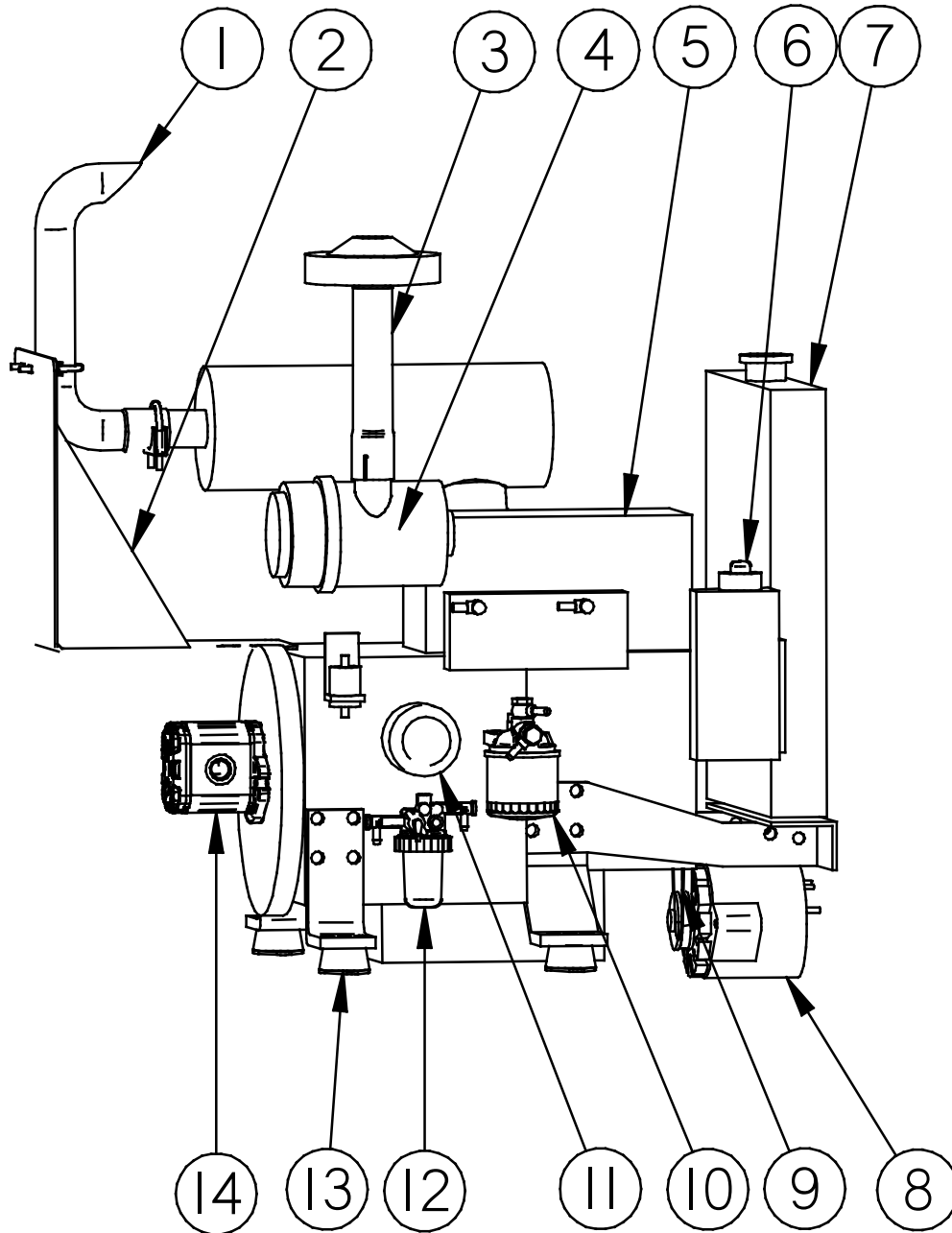


Figure 9.5 Engine Assembly

Chapter 9 Illustrated Parts List

Table 9-9 Engine Assembly

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.5	1	46974N	EXHAUST PIPE, SS60D	1
	2	46987N	BRACKET ASSY, EXHAUST PIPE	1
	3	47148N	INTAKE TUBE, SS60D	1
	4	45391	AIR FILTER ELEMENT	1
	5	47106	ENGINE, 19 HP 3CJ1	1
	6	47155N	RADIATOR OVERFLOW BOTTLE KIT	1
	7	45443N	RADIATOR KIT (RADIATOR, SHROUD, FINGER GUARD, CAP)	1
	8	43612	GENERATOR. 24VAC	1
	9	45748	DRIVE BELT, GENERATOR	1
	10	41867	FUEL FILTER ELEMENT	1
	11	45389	OIL FILTER	1
	12	47150	WATER SEPARATOR	1
	13	29399	ISOMOUNT, 3/8-16 THDS	4
	14	45402	HYDRAULIC PUMP	1

Chapter 9 Illustrated Parts List

9.7 Hydraulic Control Valve Assembly

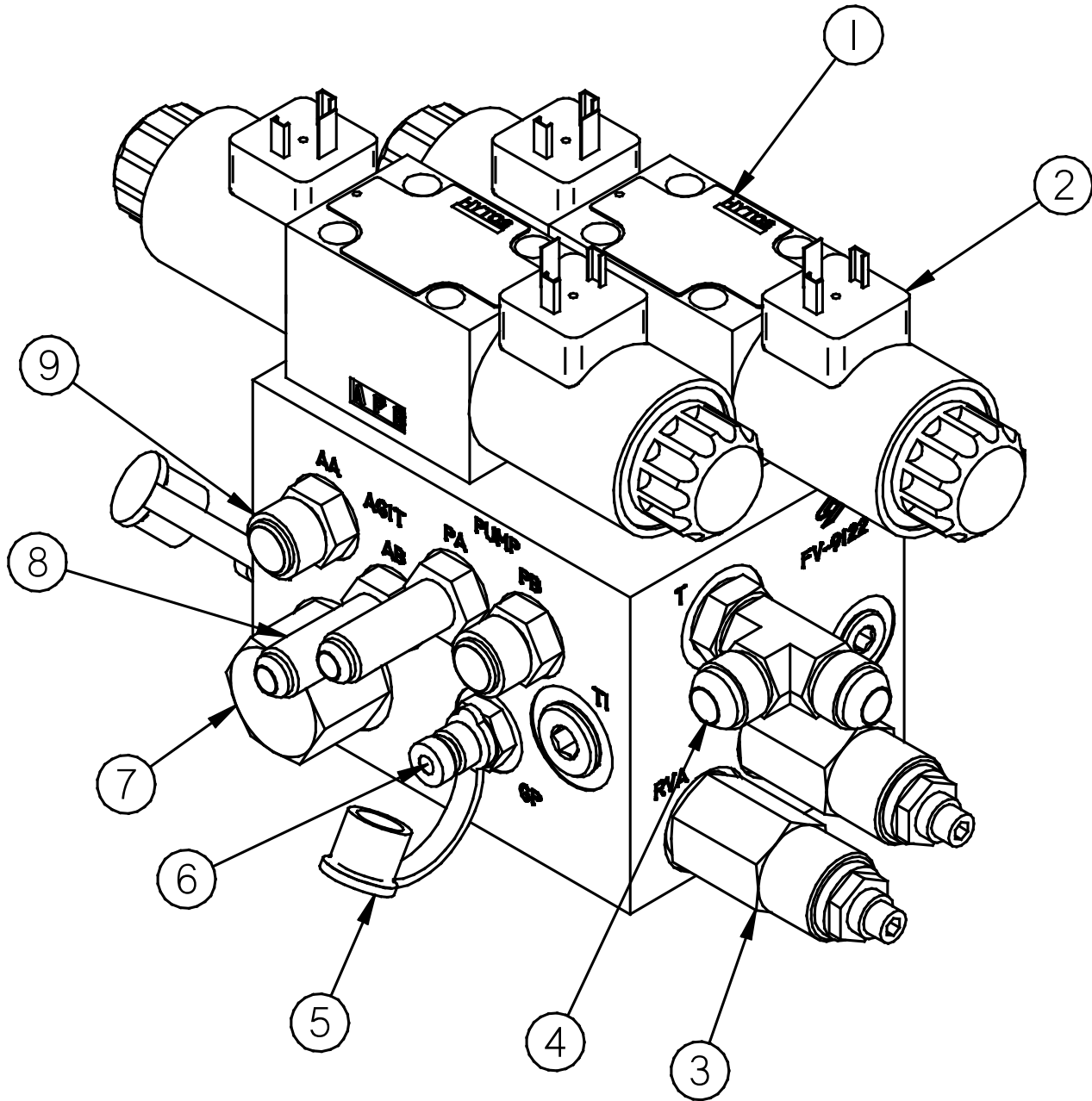


Figure 9.6 Hydraulic Control Valve Assembly: PN 45420

Chapter 9 Illustrated Parts List

Table 9-10 Hydraulic Control Valve Assembly: PN 45420

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.6	1	45418	VALVE, DIRECTIONAL	2
	2	45419	COIL, DIRECTIONAL VALVE	4
	3	45417	VALVE RELIEF	2
	4	29897	FITTING, #8 ORB X #8 MALE JIC STR	1
	5	45413	DUST CAP	2
	6	45414	FITTING, TEST PORT	2
	7	45416	FLOW CONTROL, PRIORITY	1
	8	40308	FITTING, #6 ORB X #6 MALE JIC STR	2
	9	29919	FITTING, #6 ORB X #8 MALE JIC STR	2

9.8 Material Flow Control Assembly: PN 46060

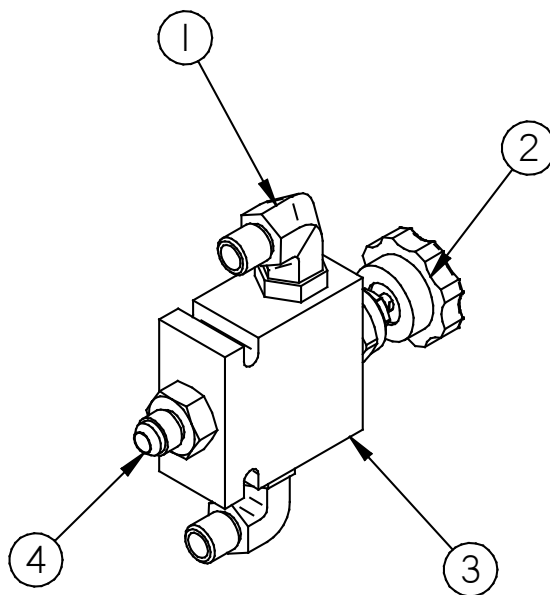


Figure 9.7 Material Flow Control Assembly: PN 46060

Table 9-11 Material Flow Control Assembly: PN 46060

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.7	1	29869	3/8" TUBE X 1/2" O-RING ELBOW	2
	2	46077	KNOB ONLY	1
	3	46060	HYDRAULIC FLOW CONTROL (NO FITTINGS)	1
	4	29998	3/8" TUBE X 1/2" O-RING ADAPTOR	1

Chapter 9 Illustrated Parts List

9.9 Pump/Mixer Motor Assembly: PN 44832

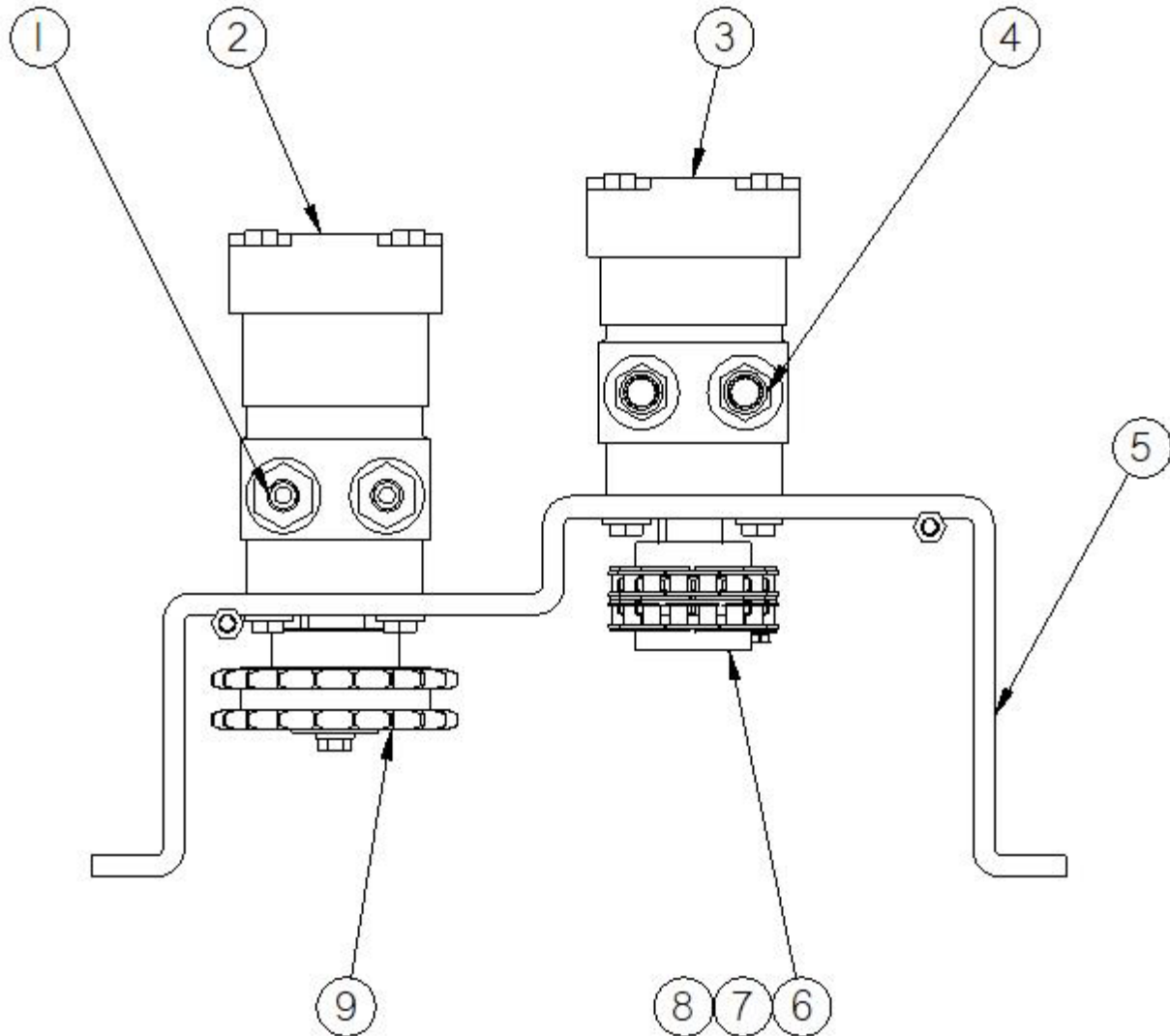


Figure 9.8 Pump/Mixer Motor Assembly: PN 44832

Chapter 9 Illustrated Parts List

Table 9-12 Pump/Mixer Motor Assembly: PN 44832

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.8	1	22029	3/8" TUBE X 5/8" O-RING ADAPTOR	2
	2	22027	HYDRAULIC MOTOR, MIXER	1
	3	44809	HYDRAULIC MOTOR, PUMP	1
	4	29913	1/2" TUBE X 5/8" O-RING ADAPTOR	2
	5	43345	MOUNTING BRACKET MOTORS	1
	6	26002	SPROCKET CHAIN COUPLING	2
	7	26016	CHAIN COUPLING	1
	8	26030	CONNECTING LINK CHAIN	1
	9	43323	SPROCKET MIXER DRIVE	1

Chapter 9 Illustrated Parts List

9.10 Diesel Burner Assembly: PN 46380

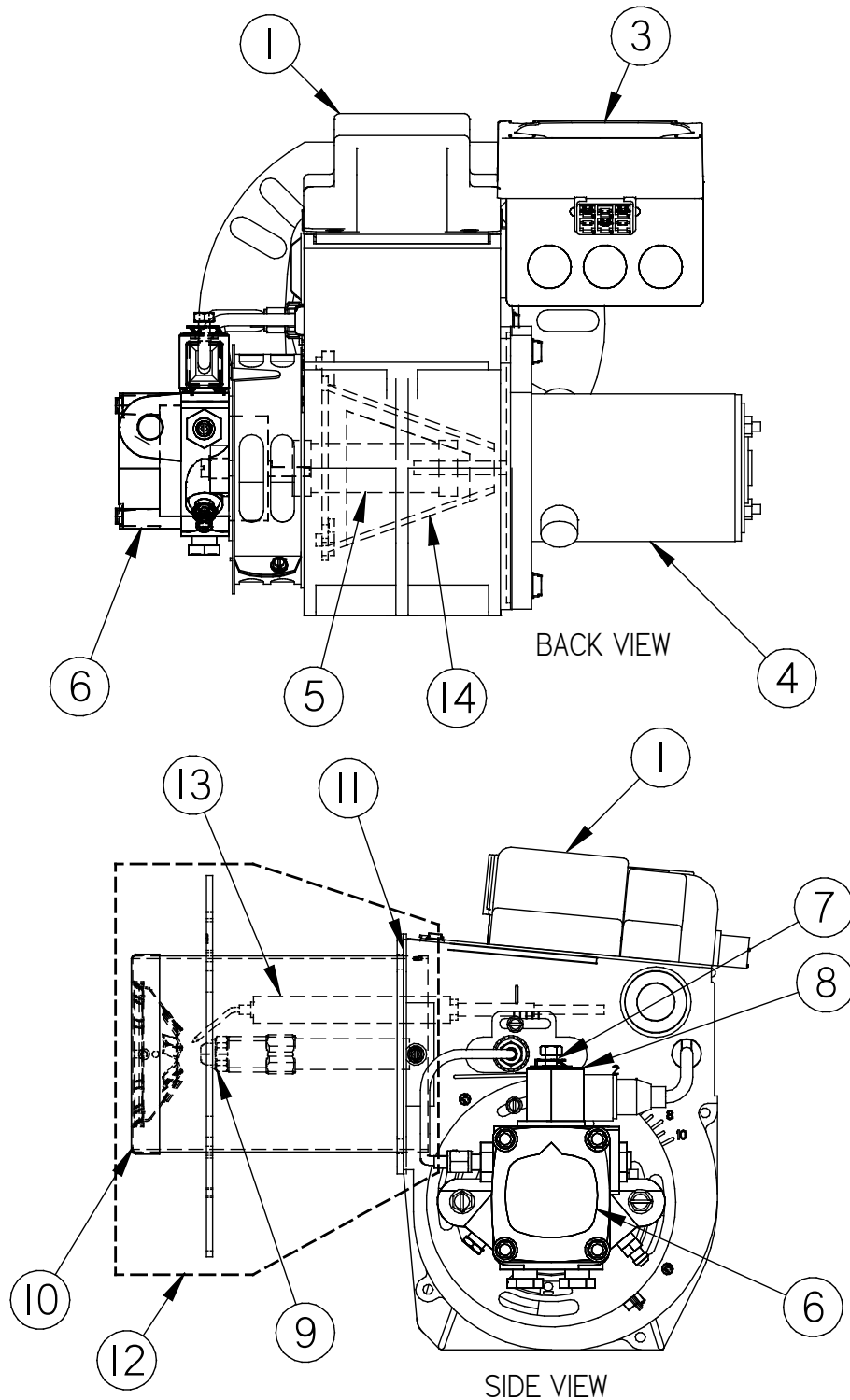


Figure 9.9 Diesel Burner Assembly: PN 46380

Chapter 9 Illustrated Parts List

Table 9-13 Diesel Burner Assembly: PN 46380

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.9	1	41949	IGNITION TRANSFORMER	1
	2	41870	CAD EYE (NOT SHOWN)	1
	3	42335	DC CONTROLLER	1
	4	41890	BLOWER MOTOR	1
	5	41970	COUPLING, FUEL PUMP	1
	6	41892	PUMP, FUEL	1
	7	41932	VALVE STEM, FUEL SOLENOID	1
	8	41933	COIL, FUEL SOLENOID	1
	9	46912	NOZZLE 1.25X80A	1
	10	41953N	STD HEAD, F22, BURNER	1
	11	41964N	GASKET, AIR TUBE TO HOUSING	1
	12	46381N	AIR TUBE W/ HEAD & ELECTRODE MOUNT	1
	13	41993	ELECTRODE ASSY (COMES WITH 2)	1
	14	41966N	AIR GUIDE, BURNER	1
	NS	41867	FRAME MOUNTED FUEL FILTER ELEMENT	1

Chapter 9 Illustrated Parts List

9.11 Wand Assembly

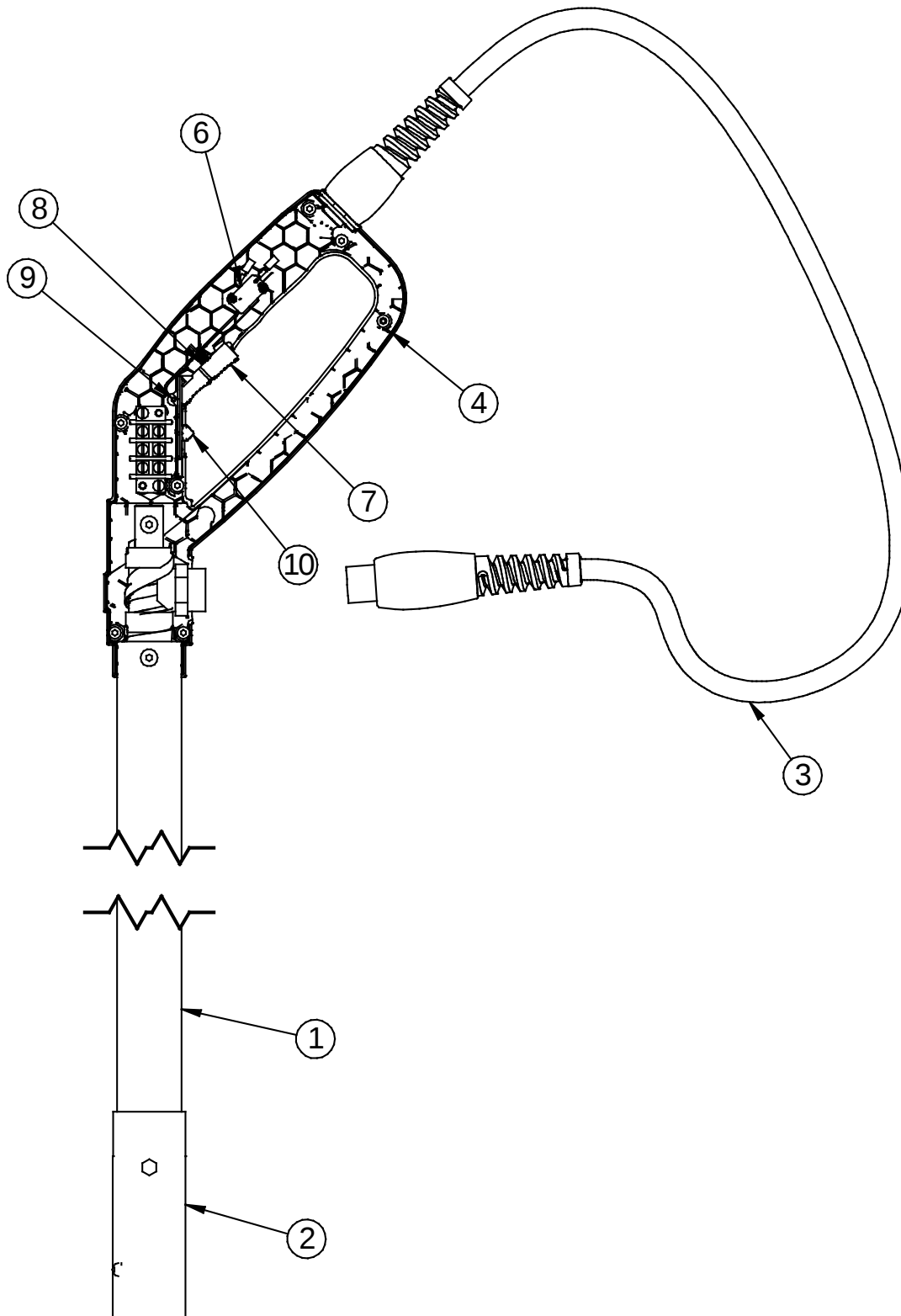


Figure 9.10 Wand Assembly: PN 52200

Chapter 9 Illustrated Parts List

Table 9-14 Wand Assembly

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.10	1	52204	COVER, WAND	1
	2	50278	TIP GUARD, LONG CLAMP ON	1
	3	52206	CORD ASSEMBLY	1
	4	52201RN	HANDLE, WAND – RIGHT (W/INSERTS)	1
	5	52201LN	HANDLE, WAND – LEFT (NOT SHOWN)	1
	6	52208	SWITCH, WAND	1
	7	52202N	ACTUATOR, TRIGGER	1
	8	52207	SPRING, ACTUATOR	1
	9	52209	PIN, ACTUATOR	1
	10	52203N	LOCK, TRIGGER	1
	11	51656	TERMINAL STRIP	1

Chapter 9 Illustrated Parts List

9.12 Engine Cover

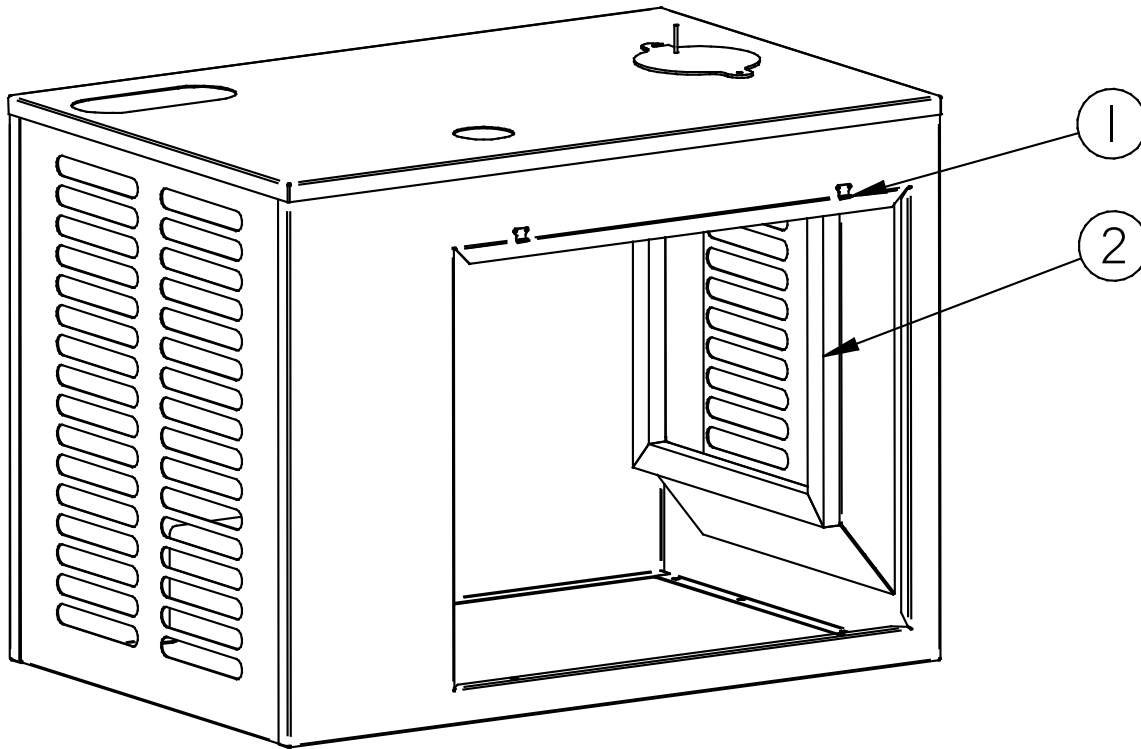


Figure 9.11 Engine Cover

Table 9-15 Engine Cover

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.11	1	46977N	LATCH ASSEMBLY	2
	2	46996N	FOAM RADIATOR SEAL (SELF ADHESIVE)	4

Chapter 9 Illustrated Parts List

9.13 Fuel System Schematic

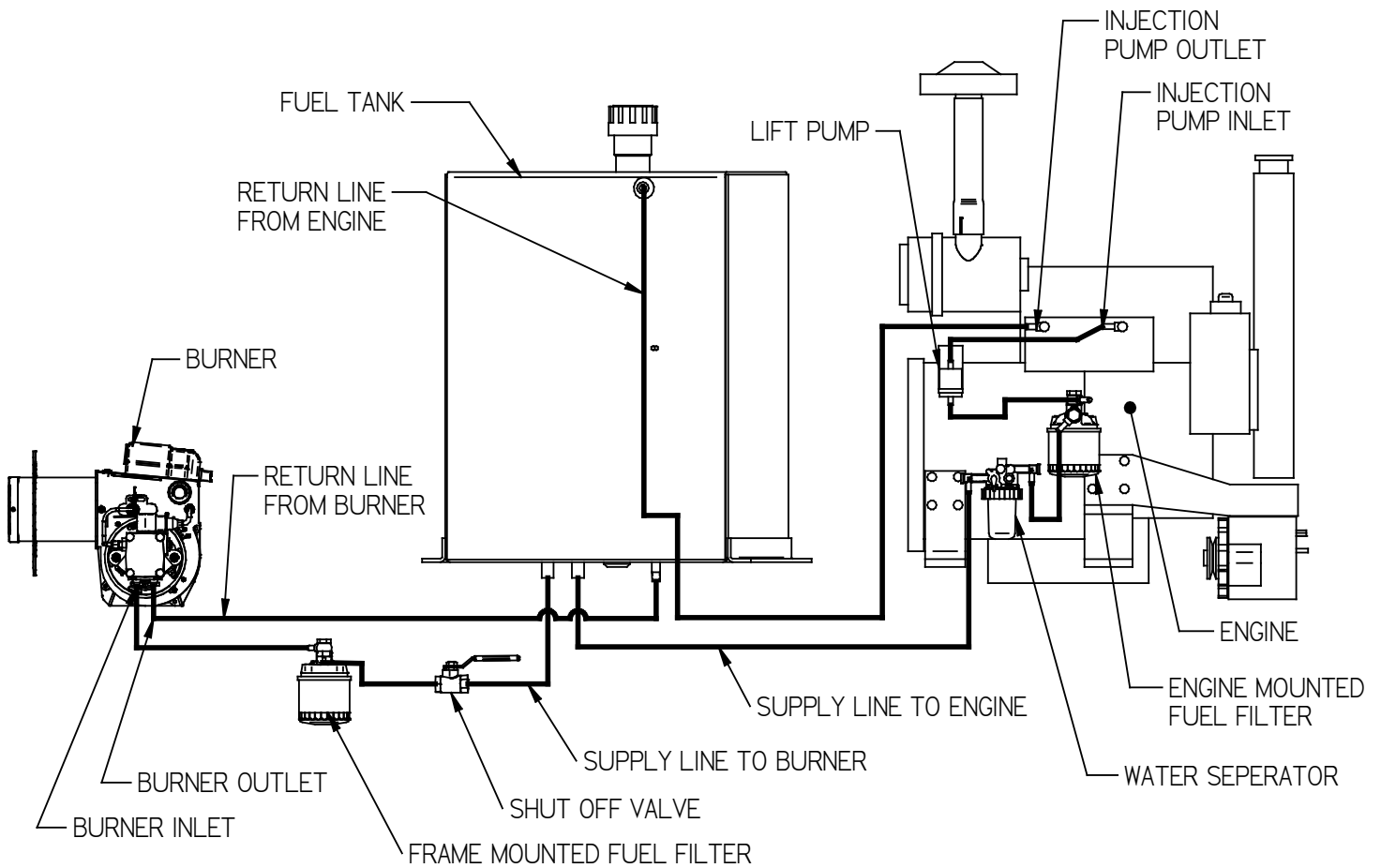


Figure 9.12 Fuel System Schematic

Chapter 9 Illustrated Parts List

9.14 Hydraulic Schematic PN 46959

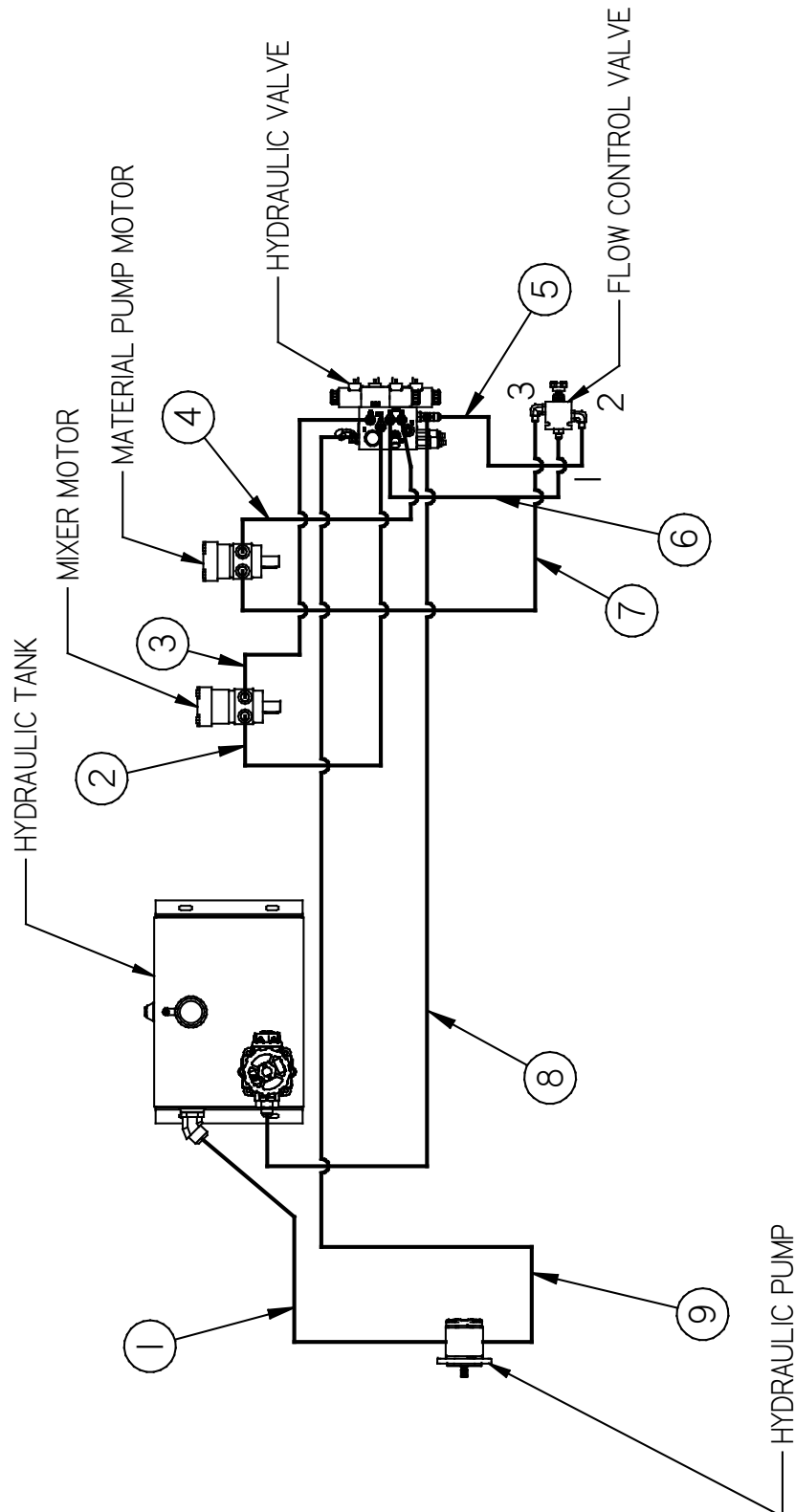


Figure 9.13 Hydraulic Schematic: PN 46959

Chapter 9 Illustrated Parts List

Table 9-16 Hydraulic Schematic: PN 46959

FIG.	ITEM	PART NO.	DESCRIPTION	QTY
Figure 9.13	1	HYDRAULIC RESERVOIR TO HYDRAULIC PUMP SUCTION PORT		
		29898	FITTING, #20 ORB X #16 JIC 45°	REF
		12G4H 12G-16FJX 12G-12FJX 16	HYDRAULIC HOSE	1
		29802	FITTING, #12 ORB X #12 JIC 45°	REF
	2	MIXER MOTOR TO HYDRAULIC VALVE “AB” PORT		
		22029	FITTING, #10 ORB X #6 JIC	REF
		6M3K 6G-6FJX 6G-6FJX90L 24	HYDRAULIC HOSE	1
		40311	FITTING, #6 ORB X #6 JIC	REF
	3	HYDRAULIC VALVE “AA” PORT TO MIXER MOTOR		
		29919	FITTING, #6 ORB X #8 JIC	REF
		6M3K 6G-8FJX 6G-6FJX90S 23	HYDRAULIC HOSE	1
		22029	FITTING, #10 ORB X #6 JIC	REF
	4	HYDRAULIC VALVE “PB” PORT TO MATERIAL PUMP MOTOR		
		29919	FITTING, #6 ORB X #8 JIC	REF
		8M3K 8G-8FJX 8G-8FJX90S 16	HYDRAULIC HOSE	1
		29913	FITTING, #10 ORB X #8 JIC	REF
	5	FLOW CONTROL VALVE “2” TO HYDRAULIC VALVE “T” PORT		
		29896	FITTING, #8 ORB X #8 JIC ELBOW	REF
		8M3K 8G-8FJX 8G-8FJX90S 32	HYDRAULIC HOSE	1
		29932	FITTING, #8 ORB X #8 JIC RUN TEE	REF
	6	FLOW CONTROL VALVE “1” TO HYDRAULIC VALVE “PA” PORT		
		29998	FITTING, #8 ORB X #8 JIC	REF
		8M3K 8G-8FJX 8G-6FJX 23	HYDRAULIC HOSE	1
		40311	FITTING, #6 ORB X #6 JIC	REF

Chapter 9 Illustrated Parts List

Table 9-17 Hydraulic Schematic: PN 46959 (continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY
Figure 9.13	7	FLOW CONTROL VALVE “3” TO MATERIAL PUMP MOTOR		
		29896	FITTING, #8 ORB X #8 JIC ELBOW	REF
		8M3K 8G-8FJX 8G-8FJX90L 29	HYDRAULIC HOSE	1
		29913	FITTING, #10 ORB X #8 JIC	REF
	8	HYDRAULIC VALVE “T” PORT TO HYDRAULIC FILTER RETURN		
		29932	FITTING, #8 ORB X #8 JIC RUN TEE	REF
		8M3K 8G-8FJX 8G-12FJX 58	HYDRAULIC HOSE	1
		29929	FITTING, #16 ORB X #12 JIC	REF
	9	HYDRAULIC PUMP PRESSURE PORT TO HYDRAULIC VALVE “P” PORT		
		29862	FITTING, #10 ORB X #10 JIC	REF
		8M3K 8G-10FJX 8G-8FJX90L 81	HYDRAULIC HOSE	1
		29897	FITTING, #8 ORB X #8 JIC	REF

Chapter 9 Illustrated Parts List

This page left blank intentionally

Chapter 9 Illustrated Parts List

9.15 Electrical Schematic

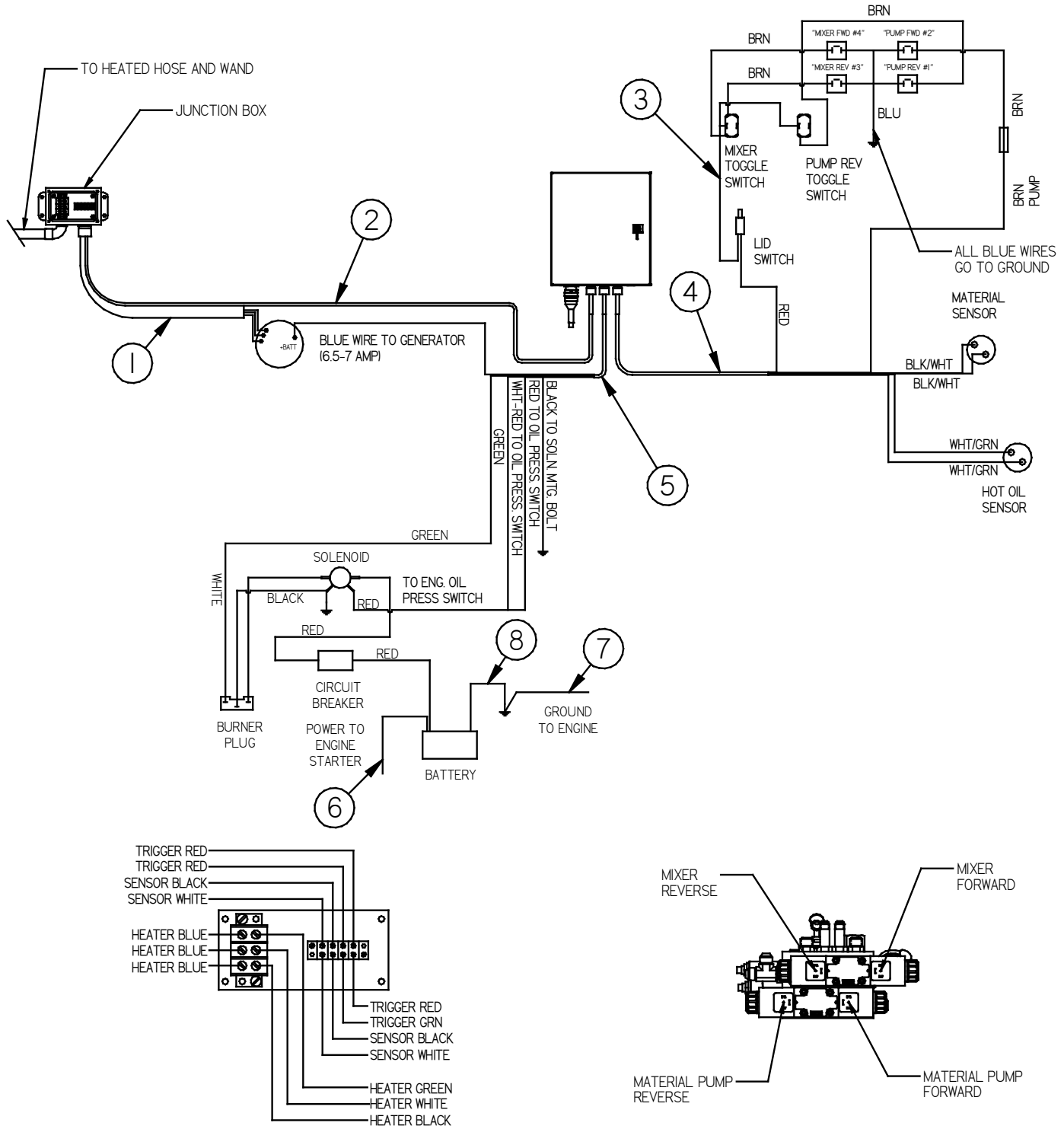


Figure 9.14 Electrical Schematic

Chapter 9 Illustrated Parts List

Table 9-18 Electrical Schematic

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Figure 9.14	1	43901	CABLE ASSEMBLY, HOSE	1
	2	44985	CABLE ASSEMBLY, TRIGGER/SENSOR	1
	3	43921	CABLE ASSEMBLY, HYDRAULIC VALVE	1
	4	44983	CABLE ASSEMBLY, SENSOR	1
	5	44984	CABLE ASSEMBLY, POWER	1
	6	24015	BATTERY CABLE, POSITIVE TO ENGINE	1
	7	27174	BATTERY CABLE, ENGINE TO GROUND LUG	1
	8	24010	BATTERY CABLE, NEGATIVE TO GROUND LUG	1

Chapter 10 Tools and Accessories

10.0 Tools and Accessories



Crafcro Applicator Disk
27162 – 3" Disk Assembly
27163 – 4" Disk Assembly
27164 – 6" Disk Assembly



Crafcro Swivel Disk Applicator
27120 – 3" Swivel Applicator
27130 – 4" Swivel Applicator



Crafcro Sealing Foot/Flush
27154 – 1/4" Flush
27155 – 3/8" Flush



Crafcro Sealing Foot/Protruded
27159 – 1/4" Protruding
27160 – 3/8" Protruding



Crafcro Joint Sealing Tip
27146 – 1/4" Sealing Tip
27147 – 3/8" Sealing Tip



Crafcro Round Sealing Tip
27170 – 3/8" Sealing Tip
27171 – 1/2" Sealing Tip

Chapter 10 Tools and Accessories



**Crafc Heavy Duty Squeegee with
Aluminum Handle - 27199**
27195 – Replacement Blade



Crafc Pour Pot with Wheels - 40200



Super Shot Drip Stopper
Use with 50270 Duckbill
27114 – Tip Adapter
27115 – Shroud, Tip Adapter



Crafc Hand Held Pour Pot - 40201

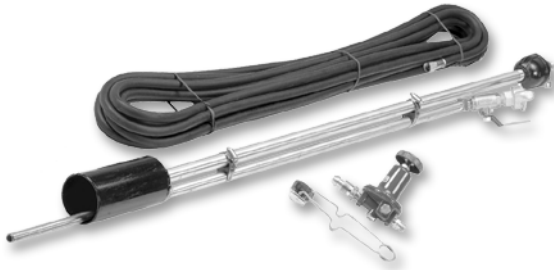


Crafc Duckbill - 50270



Crafc Heat Lance - 31370

Chapter 10 Tools and Accessories



**Crafcro Heat Lance with Regulator
and Attachments - 32259**



Crafcro Hand Torch w/ 20ft. Hose - 25012



©2018 Crafco, Inc.