



SS60

Parts Manual - 26618
Revision A

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): _____



EZ 500 Series II Melter Part Manual

Revisions

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SUPER SHOT 60 DIESEL MELTER
PN 46800

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Chapter 1 Introduction

1.0 About This Manual

This manual is supplied with each new Crafcoc 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 Crafcoc 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.

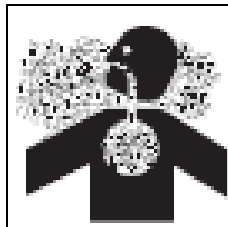
Maintain your machine regularly as stated in this manual.

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



WARNING

California Proposition 65 Warning

Engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm. Always use care to avoid breathing engine exhaust. Failure to comply could result in death or serious injury.

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 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.
- 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). 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 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., through Crafco or one of its affiliated distributors, will replace for the original purchaser free of charge any parts found upon examination by the factory at Chandler, Arizona, to be defective in material or workmanship. This warranty is for a period one year from in-service date, but excludes engine or components, tires, and battery as these items are subject to warranties issued by their manufactures.

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 one year from purchased or in-service date. If parts fail to function within the first year of purchase, 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 one 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.

Wear items are not covered under Crafco, Inc. limited warranty. A wear item is defined as but not limited to: material pumps, sealing tips, tires, etc.

Note: All engine warranties are covered through the engine manufacture. 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 anyway 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 warrant repairs and parts, please do not hesitate to call toll free 1-800-528-8242.

For Warranty:

Crafco, Inc.

25527 South Arizona Avenue, Chandler, AZ
85248

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

Fax: (480) 655-1712

For all other inquires:

Crafco, Inc.

420 North Roosevelt Avenue, 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 |
| Vat capacity | 220 Liters |
| Melt Capacity | 800 Kg. per hour |
| Heat transfer oil required | 82 Liters at 21°C |
| Tank construction | Double boiler type |
| Tank opening size | 312mm x 381mm |
| Maximum heat input | 2.17 x 10 ⁸ Joules (250,000 BTUs) |
| Burner and temperature control | Diesel-forced air thermostatic control |
| Engine Isuzu diesel | Three cylinder Model 3TNV70 – 12.5KW @2600 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 | 1,380 Kg. (2,800 Lbs.) |
| Diesel tank Capacity | 98.4 Liters (26 Gallons) |
| Hydraulic Tank Capacity | 98.4 Liters (26 Gallons) |

Chapter 5 Operating Instructions


5.0 Operating Instructions

The Crafcoc Super Shot 60 was developed to melt Crafcoc 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. Add fluid if necessary. See Fig. 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. 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 Fig. 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 | |
|  | <p>The safe operation of this machine is the operator's responsibility.</p> <p>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. Some exposed parts of the machine reach 500°F, the sealant 400°F, and the hydraulic fluid 180°F.</p> <p>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.</p> |

Chapter 5 Operating Instructions



Fig. 5-1 Hydraulic Fluid Level and Temp. Gauge

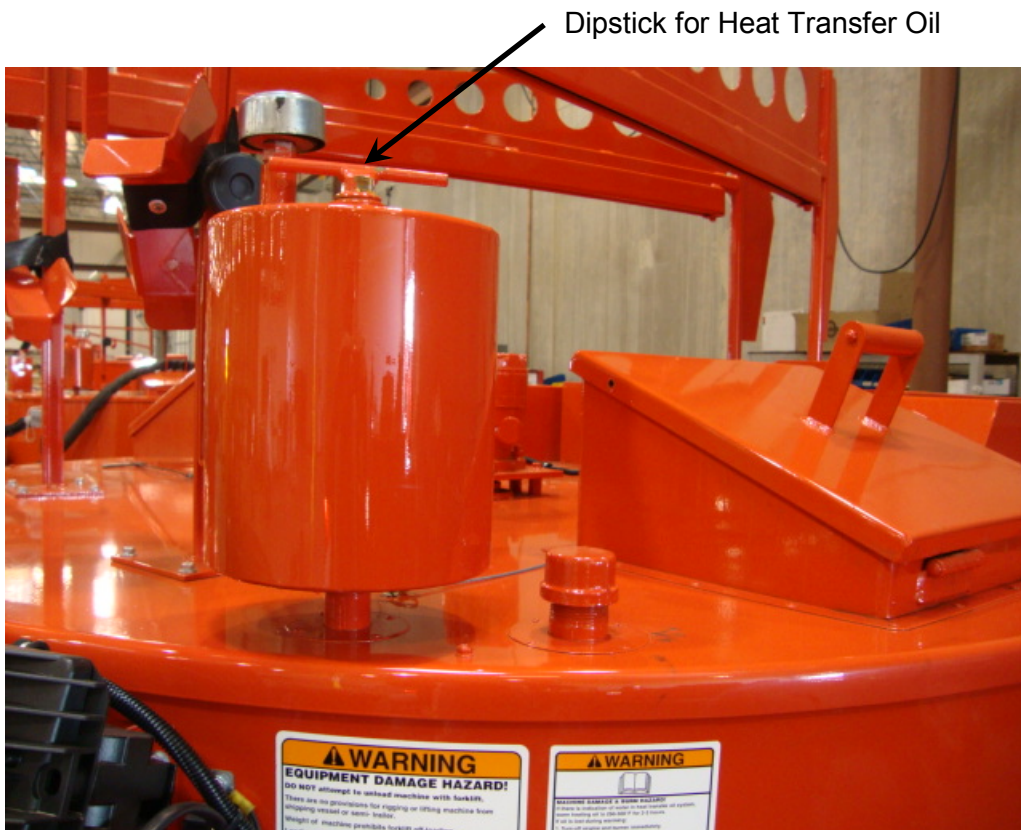


Fig. 5-2 Heat Transfer Oil Dipstick

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. |
| 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, 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. |
| | 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. 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 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 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 5-8 Dispensing the Material – Electric Hose . |
| | <p style="text-align: center;">CAUTION</p> <p>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. 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.</p> <p>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.</p> |

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

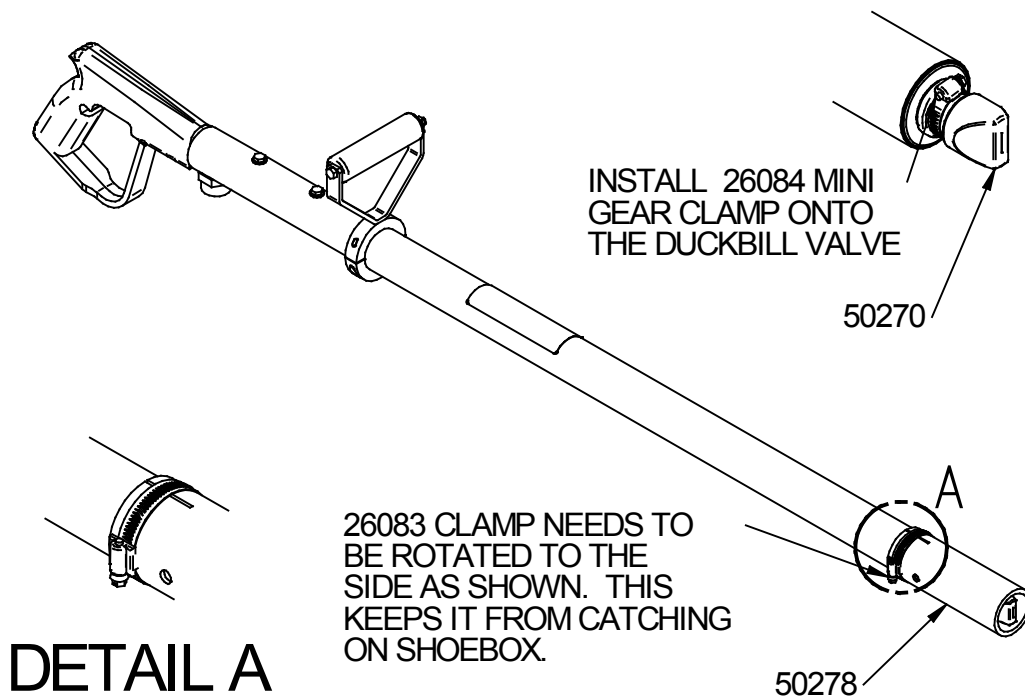
The wand has an aluminum tube to protect both the wand and the operator. The pistol grip actuator is equipped with an electric switch which, when depressed, sends a signal to actuate the pump. The wand is equipped with a trigger lock to prevent accidental pump actuation when it is not pumping material. 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 the 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 | |
| | <p>Twisting and kinking of the electric hose (used on BAX, Super Shots, and EZ Series Melters) causes the hose to fail; the electric heating wires are shorted out to the metal hose cover and the hose stops heating.</p> <p>This type of failure is not covered under the CrafcO warranty.</p> |
| 1 | Set the hose temperature at 380°F, or manufacturer recommended operating temperature. |
| 2 | Allow the hose to be turned “ON” and heating for a minimum of 30 minutes. |
| 3 | <p>Make sure the hose swivel between the hose and wand moves freely.</p> <p>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.</p> |
| 4 | Follow all machine instructions in this manual. |
| CAUTION | |
| | <p>Hose damage occurs if:</p> <ul style="list-style-type: none"> 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. 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 |
|------------------------|-------------------------------|------------------------------|------------------------------|-----------------------------|
| 1 | 3.06 | 11.58 | 55.66 | 210.70 |
| 2 | 6.12 | 23.17 | 52.6 | 199.11 |
| 3 | 9.18 | 34.75 | 49.54 | 187.53 |
| 4 | 12.24 | 46.33 | 46.48 | 175.95 |
| 5 | 15.30 | 57.92 | 43.42 | 164.36 |
| 6 | 18.36 | 69.50 | 40.36 | 152.78 |
| 7 | 21.42 | 81.08 | 37.3 | 141.20 |
| 8 | 24.48 | 92.67 | 34.24 | 129.61 |
| 9 | 27.54 | 104.25 | 31.18 | 118.03 |
| 10 | 30.60 | 115.83 | 28.12 | 106.45 |
| 11 | 33.66 | 127.42 | 25.06 | 94.86 |
| 12 | 36.72 | 139.00 | 22 | 83.28 |
| 13 | 39.78 | 150.58 | 18.94 | 71.70 |
| 14 | 42.84 | 162.17 | 15.88 | 60.11 |
| 15 | 45.90 | 173.75 | 12.82 | 48.53 |
| 16 | 48.96 | 185.33 | 9.76 | 36.95 |
| 17 | 52.02 | 196.92 | 6.7 | 25.36 |
| 18 | 55.08 | 208.50 | 3.64 | 13.78 |
| 19 | 58.14 | 220.08 | 0.58 | 2.20 |
| 19.19 | 58.72 | 222.28 | 0 | 0.00 |

Chapter 5 Operating Instructions

5.7 Dispensing the Material

Table 5-7 Dispensing the Material

| Step | Action |
|---|--|
| WARNING | |
|  | <p>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.</p> <p>Never point the wand at any part of the body or at any other person. Hot material can cause severe burns.</p> <p>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.</p> |
| 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. |

5.9 Storing the Machine

Store the machine in an area where moisture cannot enter the heating system such as 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 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 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.

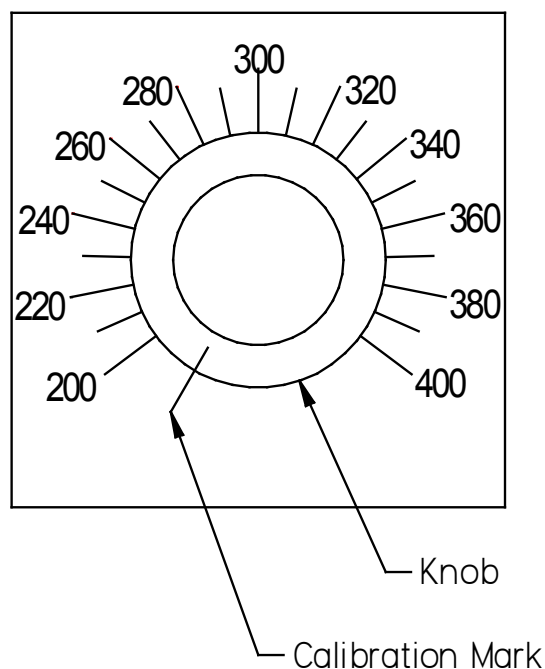
Change the oil every 500 hours of machine operation or 1 year, whichever comes first. Failure to follow this oil change interval will result in machine damage.

6.4 Material Sensor Tube

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

6.5 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 [Fig. 6.2](#))



Chapter 6 Maintenance Instructions

6.6 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 |
| | Replace burner nozzle | | | | X |
| Material Tank | Scrape out built up material in the material tank | Once a year or as needed | | | |
| Material Sensor Guard | Scrape out built up material around guard | | | | X |

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

Chapter 6 Maintenance Instructions

6.7 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.

6.8 General Maintenance Parts

Table 6-3 General Maintenance Parts

| Quantity | Description | Part No. |
|---------------------------|----------------------|---------------------------|
| 1 | Fuel Filter | 46963 |
| 1 | Oil Filter | 46964 |
| 1 | Air Filter | 46965 |
| 1 | Nozzle, Burner | 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

6.9 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, 15' | 51731 |
| 1 | Solenoid | 39602 |

6.10 Recommended Fluids and Lubricants

Table 6-5 Recommended Fluids and Lubricants

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

Chapter 6 Maintenance Instructions

6.11 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.



6.12 Typical Heat Transfer Oil Specifications

| | |
|-----------------------|--------|
| ISO | 68 |
| Flash Point, COC | 445°F |
| Viscosity @ 100°F-SUS | 325 |
| Viscosity @ 210°F-SUS | 50 |
| Viscosity Index | 95-100 |
| Pour Point | 0°F |
| Carbon residue | 1% |

Chapter 6 Maintenance Instructions

6.13 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 |
| | <p>The material in the sealant tank is extremely hot. Bodily contact with hot sealant can cause severe burns.</p> <p>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.</p> |
| 3 | Remove both guards from the motor mount to access the chain and the sprockets. |
| 4 | Rotate the agitator until the connecting link is accessible. |
| 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 |
| 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. (See Fig. 6.3 Material Pump Replacement) |
| 9 | Lift off the motor mount and set aside. |
| 10 | Remove the two (2) bolts holding the agitator shaft bearing. Note: Do not remove the bearing from the agitator shaft. |
| 11 | When the unit has cooled sufficiently, remove the six (6) bolts holding the paddles on top of the screen. |
| 12 | Remove the paddles from the tank. |
| 13 | 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. |
| 14 | Remove the six (6) bolts attaching the pump to the tank. |
| 15 | Lift the pump from the sealant tank. |
|  | WARNING |
| | <p>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.</p> |

Chapter 6 Maintenance Instructions

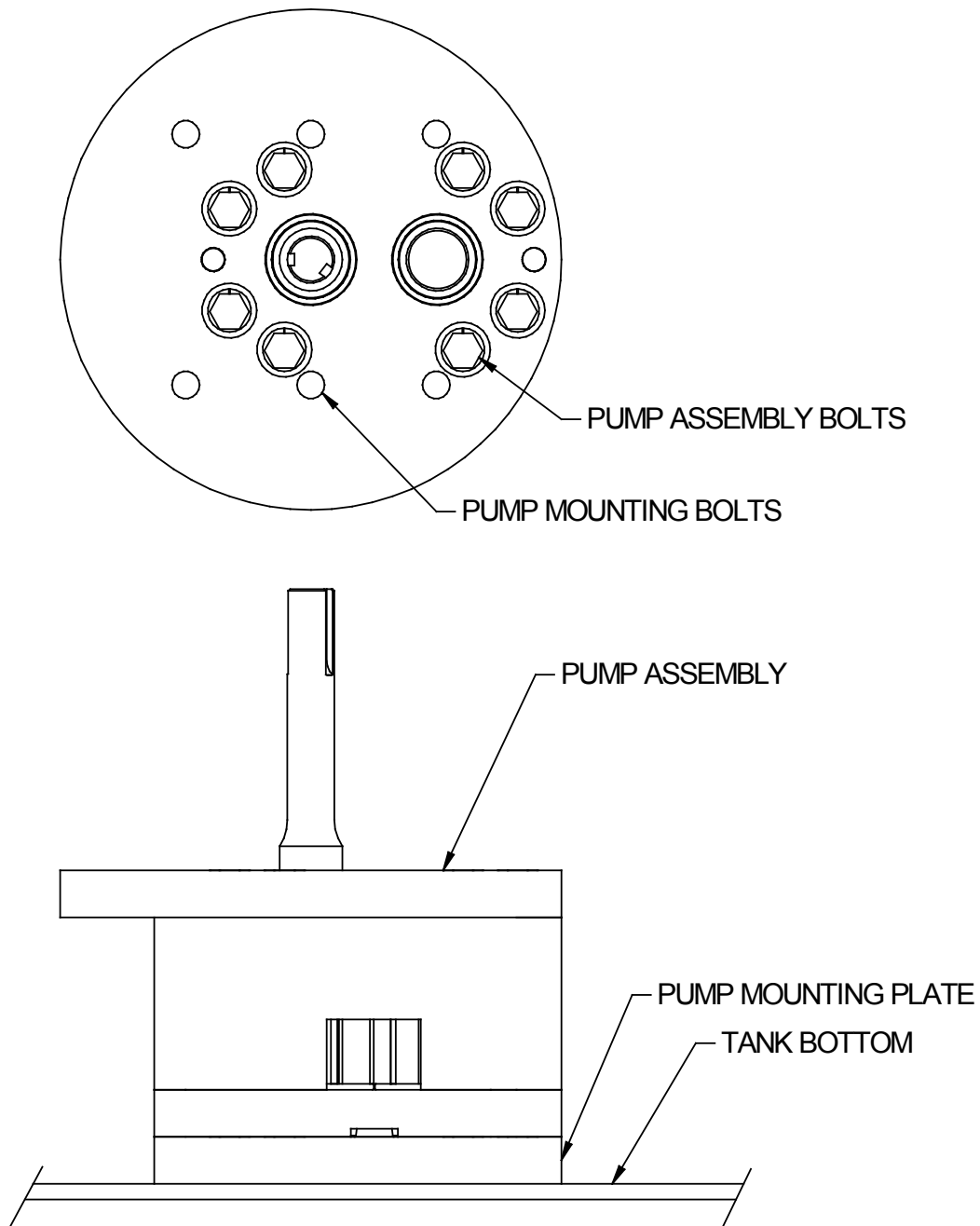


Fig. 6-2 Material Pump Replacement

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.**

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 [Fig. 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 [Fig. 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 Fig. 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.



Fig. 7-1 Standard Multimeter

Chapter 7 How to Use a Multimeter

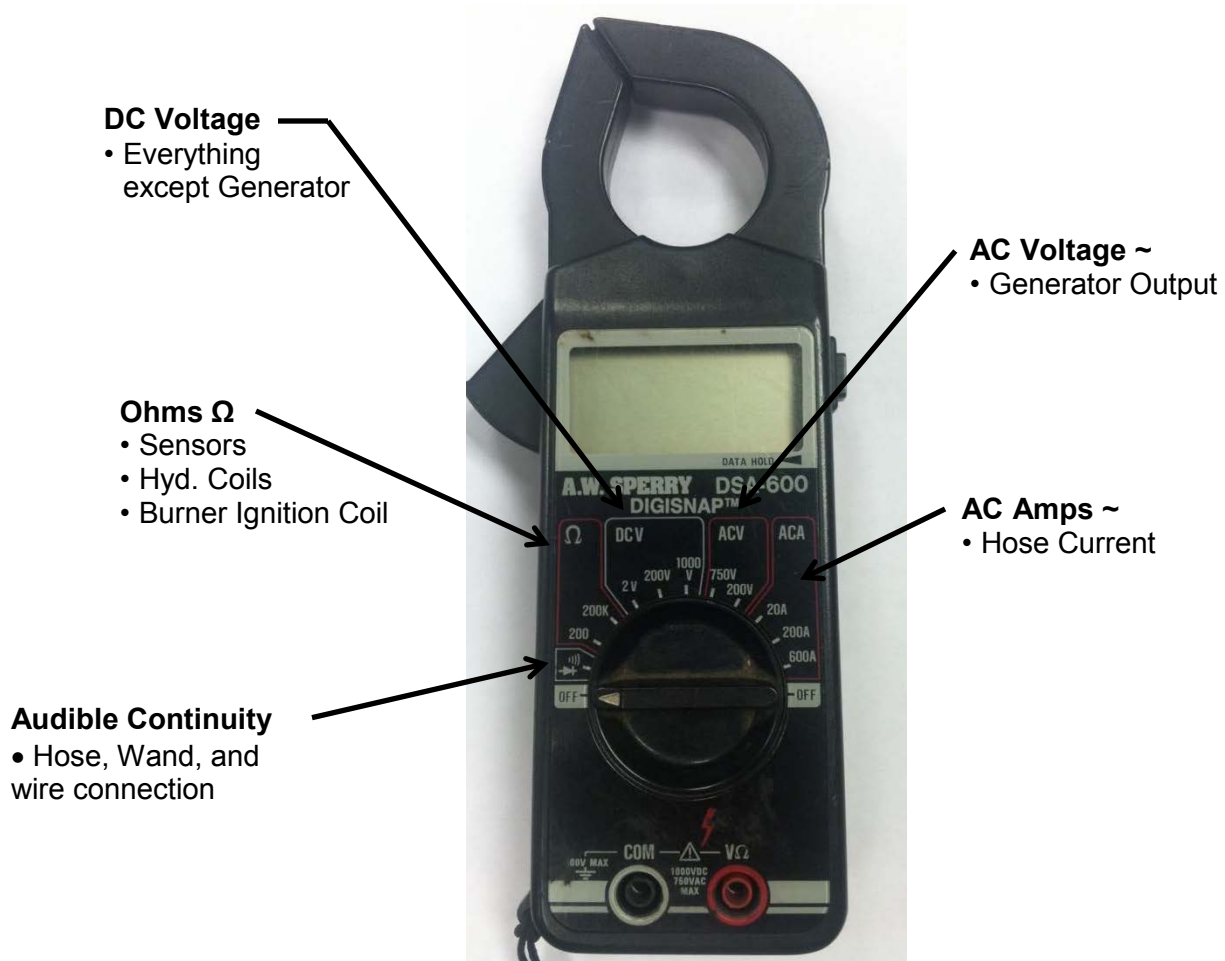


Fig. 7-2 Clamp – On Amp Meter/Multimeter

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 | <ul style="list-style-type: none"> • Yes, go to Step 2. • No, start the engine. |
| 2 | Is the "POWER" toggle switch in the "ON" position? | <ul style="list-style-type: none"> • Yes, go to Step3. • No, turn the toggle switch to the "ON" |
| 3 | Is the red "Burner" light "ON"? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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 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. | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • Yes, reset by pushing in the button that popped out. • No go to Step 7. |
| 7 | Is the fuel level low or empty? | <ul style="list-style-type: none"> • Yes, fill with #2 diesel fuel. Then bleed the burner, see Table 8-12 Bleeding the Burner • No, go to Step8 |

Chapter 8 Troubleshooting

Table 8-2 Basic Visual Troubleshooting (continued)

| Step | Possible Cause | If . . . |
|------|---|--|
| 8 | Is there smoke coming out of the exhaust stack? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • Yes, go to Table 8-13 Sealant is Heating Slowly • No, Call Crafco, Inc. and speak to a customer service technician. |

Note: Use [Fig. 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? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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 13.8 volts. | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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). | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • Yes, there should be 12Vdc at all previous steps. • No, replace battery cable. |

Chapter 8 Troubleshooting

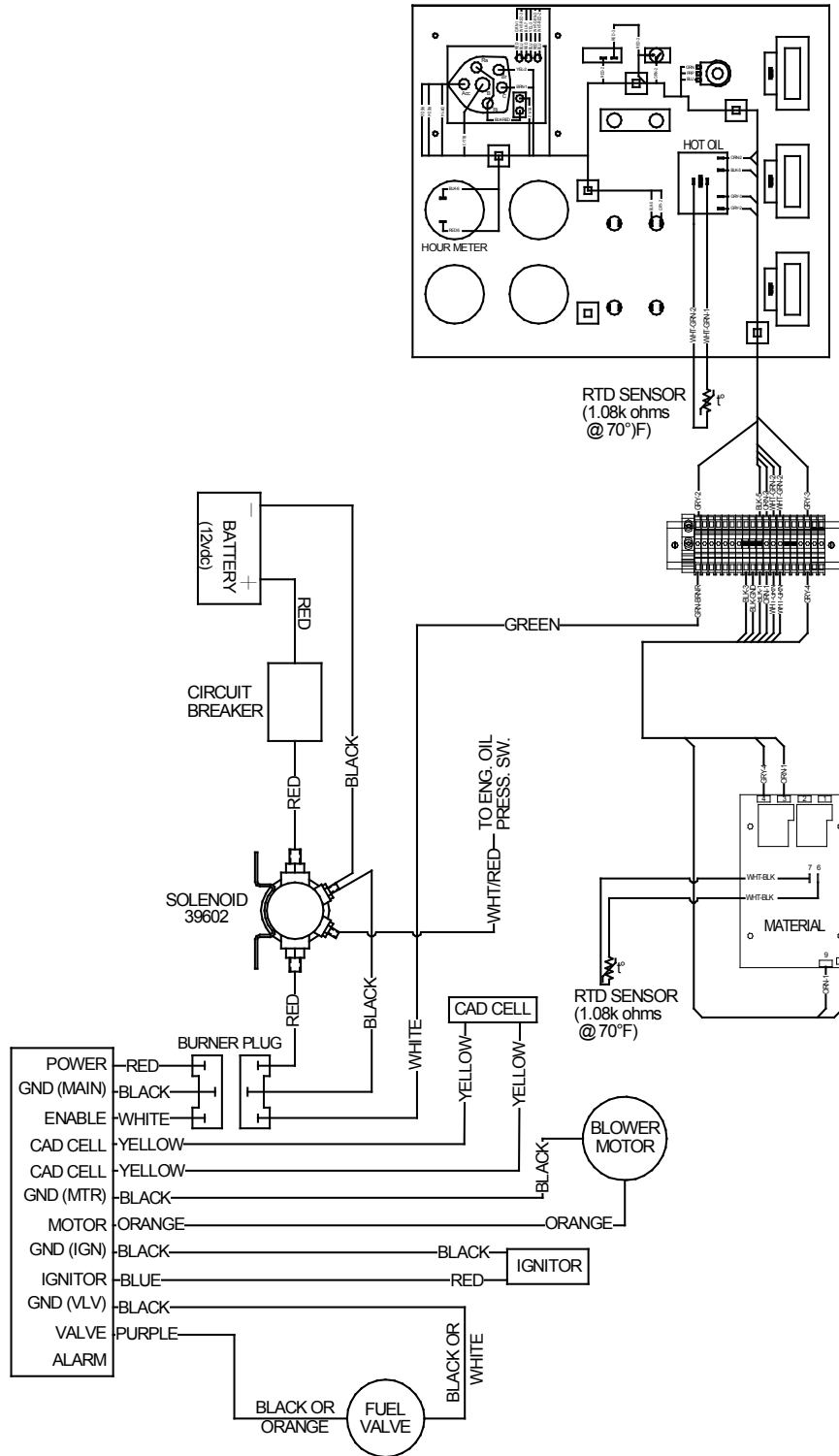


Fig. 8-1 Diesel Burner Schematic

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 Fig. 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 Fig. 8.3 Diesel Burner Air Settings |
| 3 | Refer to Fig. 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 Fig. 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.) <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • 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 2000 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: <ul style="list-style-type: none"> • 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 Fig. 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

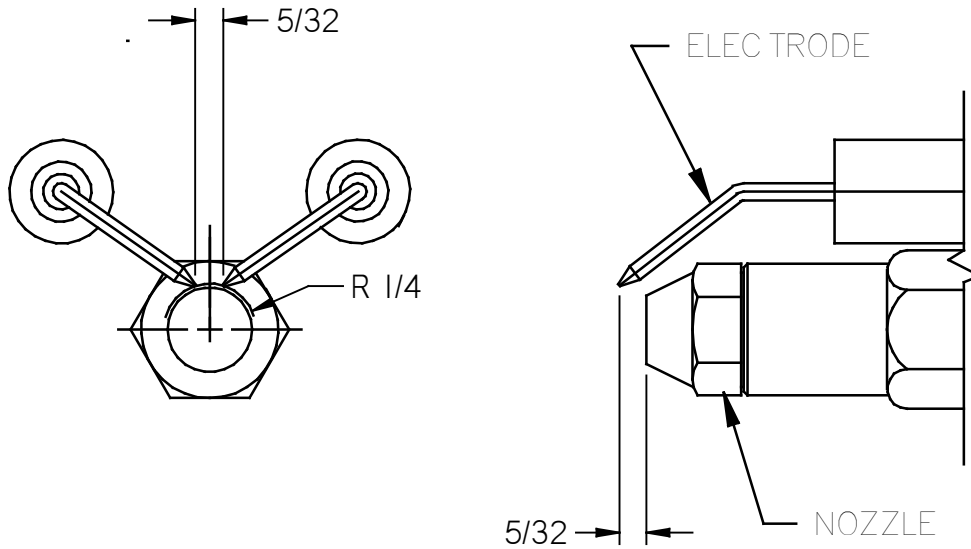


Fig. 8-2 Diesel Burner Electrode Adjustment

Air Shitter = 4
 Air Band = 0
 Fuel Pressure = 140 PSI
 Adjustment Plate = 3

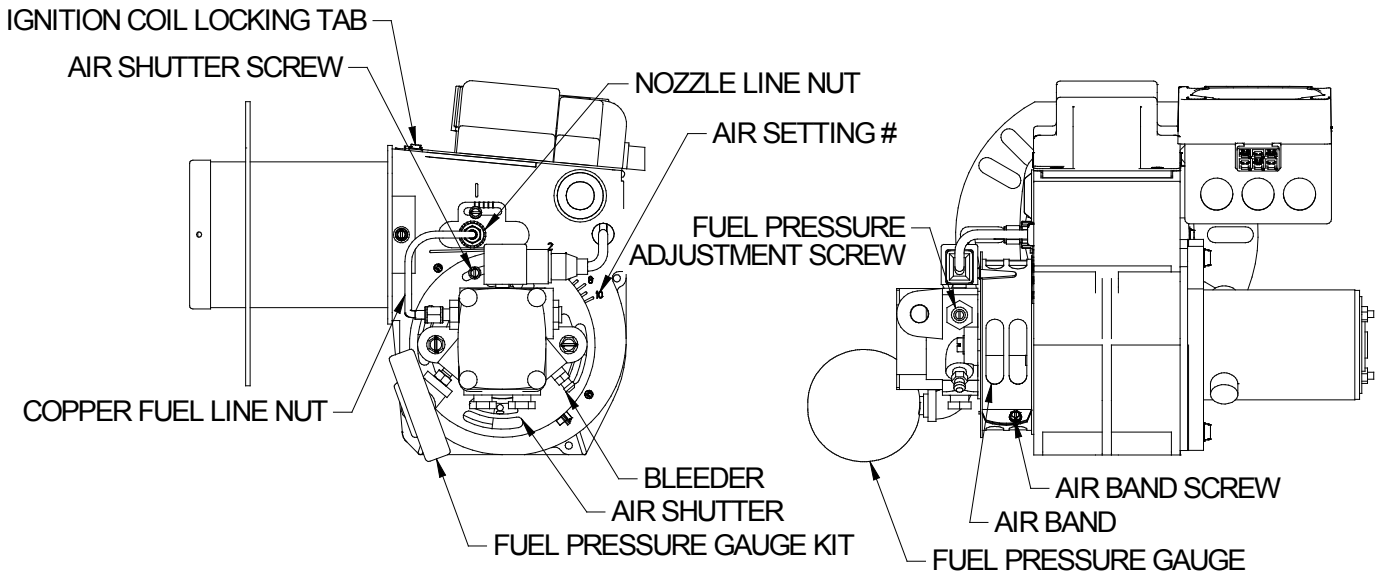


Fig. 8-3 Diesel Burner Air Settings

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. |
| 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 275°F? | <ul style="list-style-type: none"> • 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"? | <ul style="list-style-type: none"> • Yes, go to Step 4. No, go to Table 8-15 Mixer Electrical Troubleshooting |
| 3 | Is the loading door closed? | <ul style="list-style-type: none"> • Yes, go to Step 4. • No, shut the loading door. |
| 4 | Is the "Mixer" toggle switch in the "Forward" position? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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 unmelted blocks in the tank? | <ul style="list-style-type: none"> • 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 Fig. 5.1 Hydraulic Fluid Level and Temp. Gauge | <ul style="list-style-type: none"> • Yes, go to Table 8-15 Mixer Electrical Troubleshooting • No, fill oil to the center of the sight gauge. |

Chapter 8 Troubleshooting

Note: Use Fig. 8.5 Mixer Circuit 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 Fig. 8.7 Din Plug Layout). | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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 Fig. 8.5 Mixer Circuit | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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.) | <ul style="list-style-type: none"> • 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 3a. |
| 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). | <ul style="list-style-type: none"> • 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 Fig. 8.5 Mixer Circuit.) | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • Yes, replace circuit breaker • No, go to step 9. |

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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)? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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)? | <ul style="list-style-type: none"> • 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? | <ul style="list-style-type: none"> • Yes, there should be 12Vdc at all previous steps. • No, replace battery cable. |

Chapter 8 Troubleshooting



Fig. 8-4 Checking Din Plug Voltage

Chapter 8 Troubleshooting

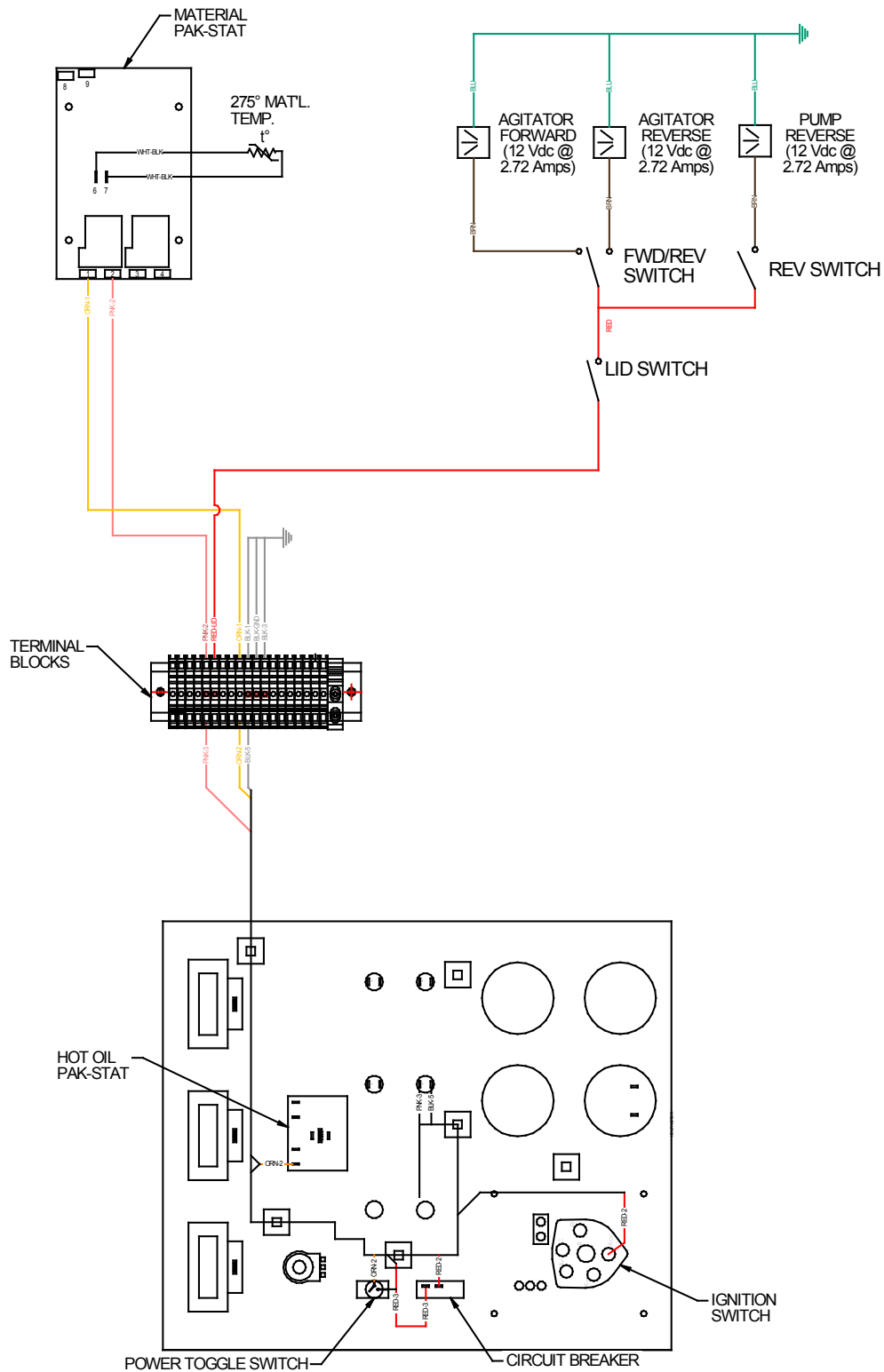


Fig. 8-5 Mixer Circuit

Chapter 8 Troubleshooting

8.2.2 Mixer Hydraulic Troubleshooting

Table 8-18 Mixer Hydraulic Troubleshooting

| Step | Possible Cause | If . . . |
|------|--|--|
| 1 | Remove the din plug, 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"? | <ul style="list-style-type: none"> • Yes, go to Step 2. • No, replace the coil. |
| 2 | Is the relief pressure set correctly? (Refer to Fig. 8.6 Hydraulic Valve Pressure Setting , for pressure settings.) | <ul style="list-style-type: none"> • 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 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. | <ul style="list-style-type: none"> • 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 Fig. 8.6 Hydraulic Valve Pressure Setting for flow rate). | <ul style="list-style-type: none"> • 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. |

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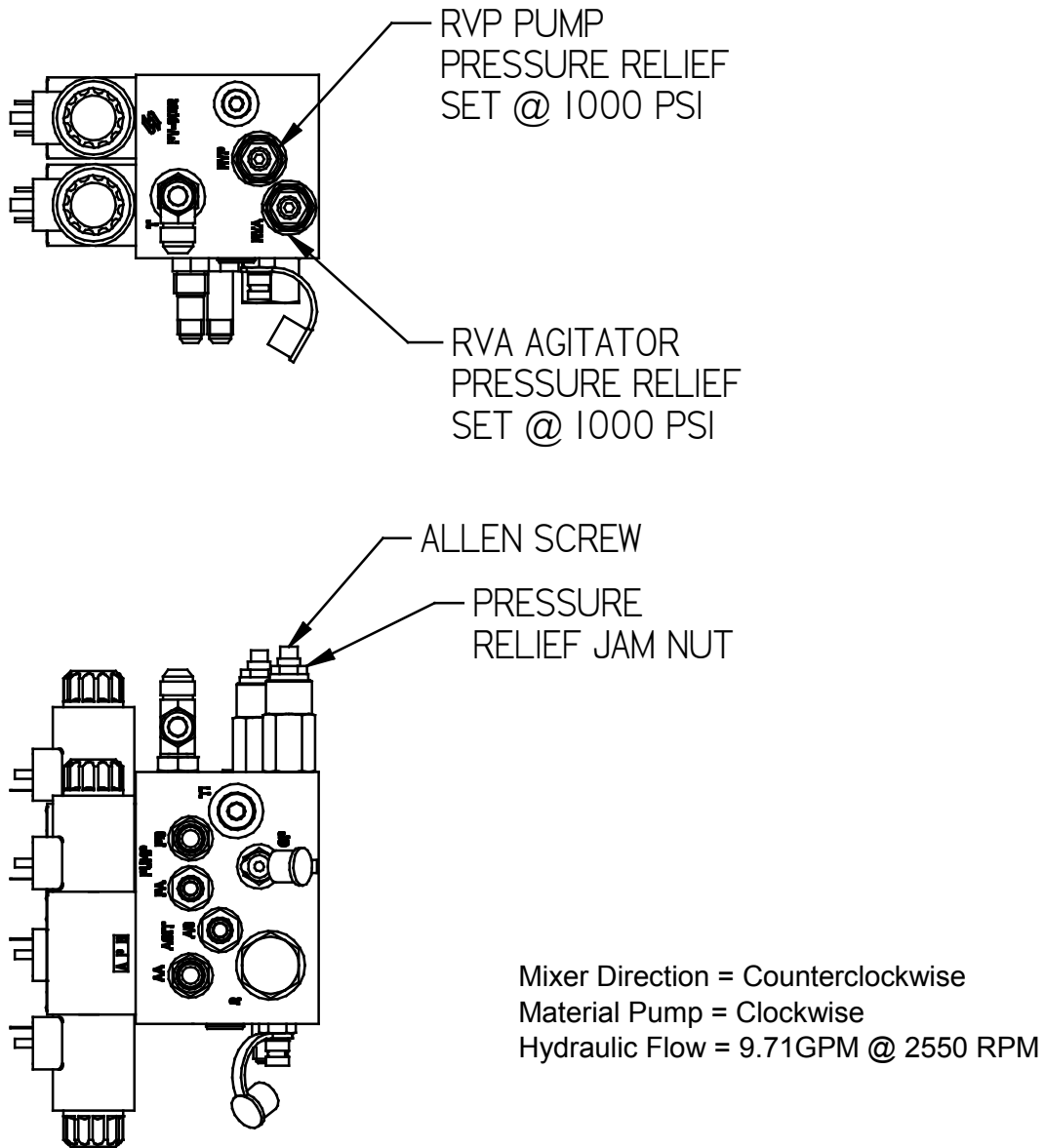


Fig. 8-6 Hydraulic Valve Pressure Setting

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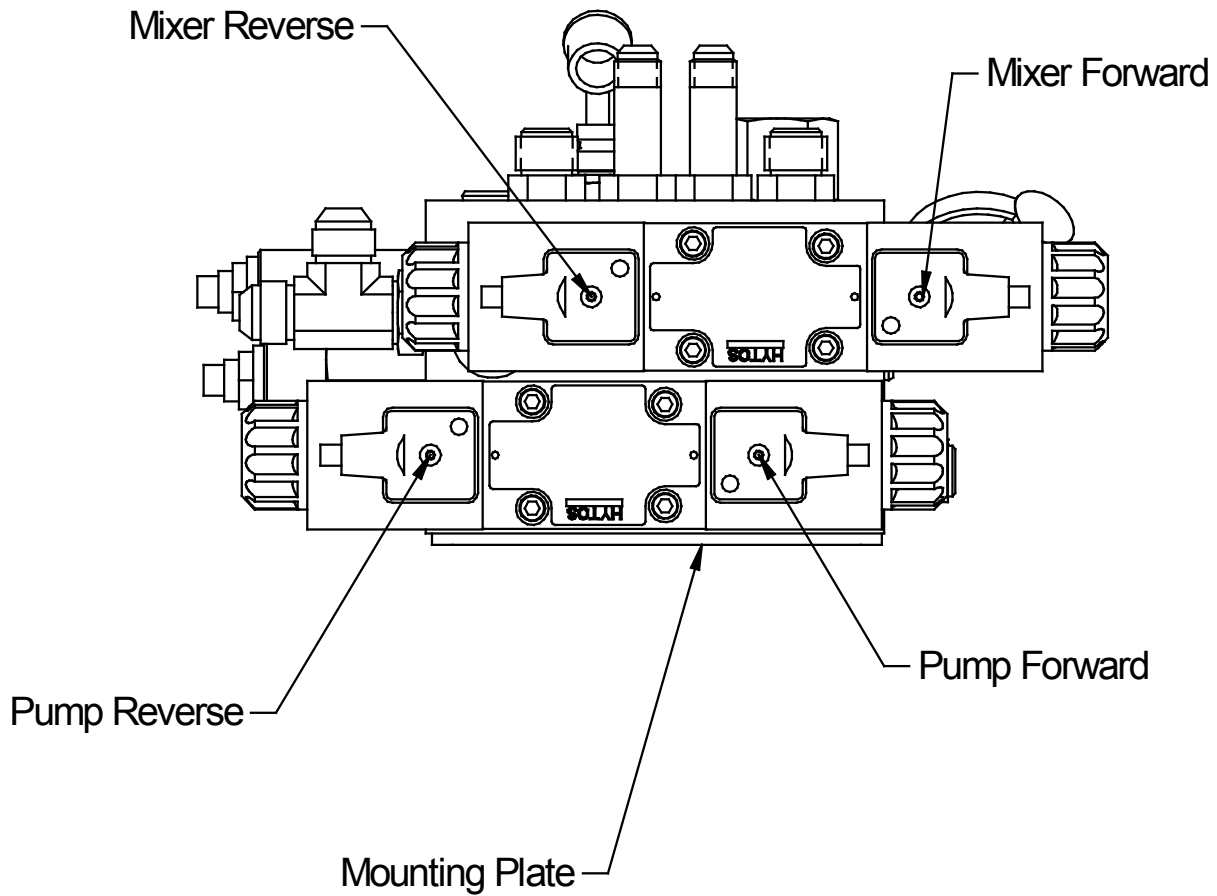


Fig. 8-7 Din Plug Layout

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 275°F? | <ul style="list-style-type: none"> • 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"? | <ul style="list-style-type: none"> • Yes, go to Table 8-20 Electrical Troubleshooting • No, allow the machine to heat material to 275°F. |
| 2a | Is the circuit breaker tripped? | <ul style="list-style-type: none"> • Yes, reset the circuit breaker by pushing in the button which has popped out. • No, go to Table 8-20 Electrical Troubleshooting |

NOTE: Use [Fig. 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)? | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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). | <ul style="list-style-type: none"> • Yes, the hose should be working properly. • No, go to Step 3. |

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Table 8-21 Electrical Troubleshooting (continued)

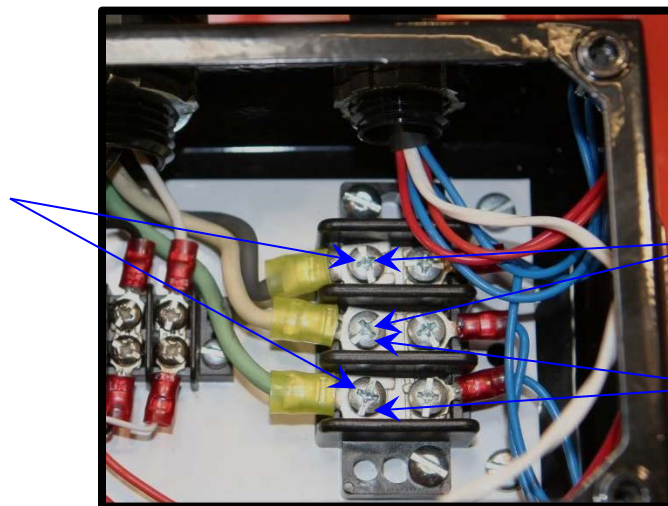
| Step | Possible Cause | If . . . |
|------|---|--|
| 3 | <p>Check for continuity in the hose from end to end. Disconnect the three blue heating element wires (blue) from the terminal block inside the junction box and disconnect the five pin plug between the hose and wand. Refer to Fig. 8.10 Junction Box Wiring.</p> <p>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.</p> | <ul style="list-style-type: none"> • 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 | <p>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 8-24 RTD Sensor Ohms vs. Temperature</p> | <ul style="list-style-type: none"> • 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 | <p>Check for continuity in the wand between “D”, “E”, and “A”.</p> <p>NOTE: Check between “D” and “E”, “D” and “A”, and “A” and “E”.</p> | <ul style="list-style-type: none"> • 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 | <p>Is there 12Vdc between wire labeled “BLU” on the terminal block and nearby ground source (black wire)?</p> | <ul style="list-style-type: none"> • Yes, check for loose or broken connections between terminal block and “BATT” terminal of generator. • No, go to Step 6. |
| 6 | <p>Is there 12Vdc between Hose PAKSTAT blue wire terminal #4 and black wire terminal #8?</p> | <ul style="list-style-type: none"> • Yes, check for loose or broken wire between terminal #4 and the terminal block. • No, go to Step 6a. |
| 6a | <p>Is there 12Vdc between Hose PAKSTAT terminal #3 Pink wire and terminal #8 black wire?</p> | <ul style="list-style-type: none"> • Yes, replace hose PAKSTAT. • No, go to Step 6b. |
| 6b | <p>Is there 12Vdc between Hose PAKSTAT pink wire terminal #1 and black wire terminal #8?</p> | <ul style="list-style-type: none"> • Yes, check for loose or broken wires between terminal #1 and terminal #3. • No, go to Step 7. |
| 7 | <p>Is there 12Vdc between pink wire labeled “PNK-2 on the Material PAKSTAT and a black wire terminal #8?</p> | <ul style="list-style-type: none"> • Yes, check for loose or broken wire between terminal #2 Material PAKSTAT and terminal #1 Hose PAKSTAT. • No go to Step 7. |
| 7a | <p>Is there 12Vdc between Orange wire labeled “Orn-1” and black wire terminal #8?</p> | <ul style="list-style-type: none"> • Yes, replace terminal block. • No, go to Step 8. |

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Table 8-22 Electrical Troubleshooting (continued)

| Step | Possible Cause | If . . . |
|------|---|---|
| 8 | Is there 12Vdc between orange wire labeled ORN-1, terminal #9 and terminal #8 ground source (black wire)? | <ul style="list-style-type: none"> • Yes, check for loose connections or broken wires between terminals #8 and #1. • No, go to step 9. |
| 9 | Is there 12Vdc at orange wire labeled ORN-1 and ORN-2 on the terminal block? | <ul style="list-style-type: none"> • 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 10. |
| 10 | Is there 12Vdc between orange wire labeled ORN-2 terminal #3 and terminal #5 black ground of hot oil PAKSTAT? | <ul style="list-style-type: none"> • Yes, check for loose connections or broken wires between terminal #3 and terminal block. • No, go to steps 7 -10a of Table 8-16 Mixer Electrical Troubleshooting (continued). |

Test #2 between black and green wires



Test #1 between black and white wires

Test #3 between white and green wires

Fig. 8-8 Junction Box Voltage Testing

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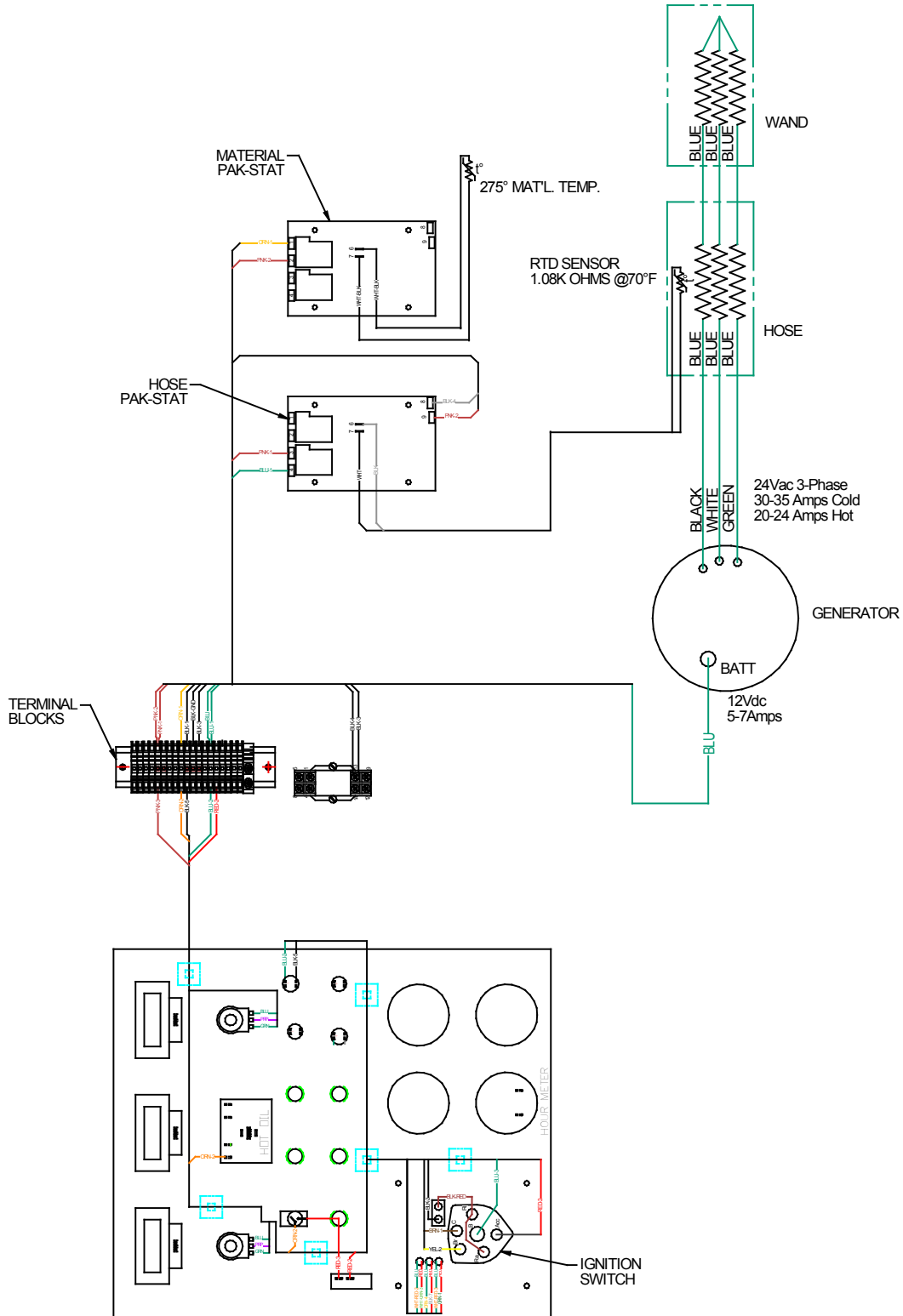


Fig. 8-9 Hose Circuit Schematic

Chapter 8 Troubleshooting

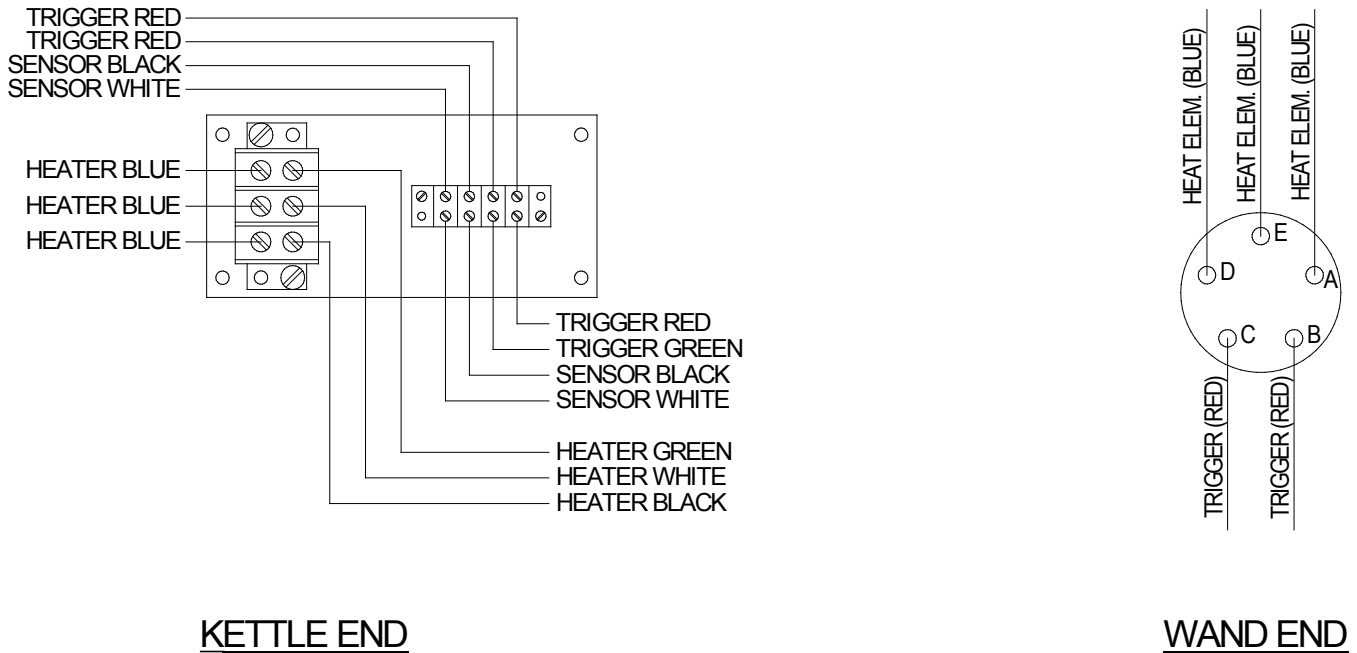


Fig. 8-10 Junction Box Wiring

Chapter 8 Troubleshooting

8.3.2 Symptom: Trigger is not Working

Table 8-23 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. | <ul style="list-style-type: none"> • Yes, go to Table 8-26 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. | <ul style="list-style-type: none"> • 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 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, 1391 Ohms = 215°F)

Table 8-24 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 8-25 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 8-26 Basic Visual Pump Troubleshooting

| Step | Possible Cause | If . . . |
|------|---|---|
| 1 | Is the Hose Temperature Display at or above 325°F? | <ul style="list-style-type: none"> • 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"? | <ul style="list-style-type: none"> • Yes, go to Step 3. • No, go to Table 8-27 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? | <ul style="list-style-type: none"> • 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 the trigger is engaged does the green light illuminate? | <ul style="list-style-type: none"> • Yes, this indicates that 12Vdc is reaching the relay coil. Go to Table 8-28 Pump Electrical Troubleshooting (continued) Step 5 to find the problem. • No, go to Table 8-27 Pump Electrical Troubleshooting, Steps 2 to find the problem. |
| 5 | Is the hydraulic fluid level near the center of the sight gauge when the machine is cold? See Fig. 5.1 Hydraulic Fluid Level and Temp. Gauge | <ul style="list-style-type: none"> • Yes, go to Table 8-27 Pump Electrical Troubleshooting. • No, fill oil to the center of the sight gauge. |

Chapter 8 Troubleshooting

NOTE: Use Fig. 8.11 Pump Circuit Schematic while troubleshooting the pump electrical system.

Table 8-27 Pump Electrical Troubleshooting

| Step | Possible Cause | If . . . |
|------|--|--|
| 1 | Is the amber light “ON” on the Din Plug when the trigger is actuated? For pump forward din plug location Refer to Fig. 8.7 Din Plug Layout | <ul style="list-style-type: none"> • Yes, then the pump should be working. If it is not working see Table 8-31 Pump Hydraulic Troubleshooting • No, go to Step 1a. |
| 1a | Unscrew the center screw of the din plug so you can pull the din plug up 1/4” in order to check voltage. Is there 12Vdc from side post to side post? | <ul style="list-style-type: none"> • Yes, the electrical system for the pump is working properly. Refer to Table 8-31 Pump Hydraulic Troubleshooting • No, go to Step 4. |
| 2 | Is there 12Vdc between red wire labeled “RED- TRIG” in junction box and nearby ground source? | <ul style="list-style-type: none"> • Yes, go to Step 2a. • No, go to Table 8-29 Pump Electrical Troubleshooting (continued) Step 10. |
| 2a | Is there 12Vdc between green wire labeled “GRN- TRIG” in junction box and nearby ground source? NOTE: Wand trigger must be actuated during this test. | <ul style="list-style-type: none"> • Yes, go to Step 3. • No, see Table 8-23 Trigger is not Working |
| 3 | Is there 12Vdc between green wire on terminal #14 of pump relay and black wire terminal #13 pump relay? NOTE: Wand trigger must be actuated during this test. | <ul style="list-style-type: none"> • Yes, go to Step 5. • No, check for loose or broken wire between relay and junction box. |
| 4 | Is there 12Vdc between the blue wire on terminal #12 of pump relay and the black wire on terminal #13 of pump relay? NOTE: Trigger must be actuated or pump switch in “ON STANDARD” position during this test. | <ul style="list-style-type: none"> • Yes, check for loose or broken wire between terminal #12 and the terminal block. • No, go to Step 4a for Electric Hose. • No, go to Step 4b for Standard Hose. |
| 4a | Is there 12Vdc on red wire terminal #8 of pump relay and black wire terminal #13? | <ul style="list-style-type: none"> • Yes, replace relay. • Go to Step 5 |
| 4b | Is there 12Vdc on red wire terminal #4 of pump relay and black wire terminal #13? NOTE: This only applies to “ON STANDARD” position of pump switch. | <ul style="list-style-type: none"> • Yes, replace relay. • No, go to Step 6. |

Chapter 8 Troubleshooting

Table 8-28 Pump Electrical Troubleshooting (continued)

| Step | Possible Cause | If . . . |
|------|--|---|
| 5 | Is there 12Vdc between red wire labeled RED-1 upper terminal block and a nearby ground source (black wire)? | <ul style="list-style-type: none"> • Yes, check for loose or broken wire between terminal block and terminal #8. • No, go to Step 6a. |
| 5a | Is there 12Vdc between red wire labeled RED-4 upper terminal block and nearby ground source (black wire)? | <ul style="list-style-type: none"> • Yes, replace terminal block. • No, go to Table 8-17 Mixer Electrical Troubleshooting (continued) steps 9-10a. |
| 6 | Is there 12Vdc between red wire labeled RED-9 on top right hand terminal of pump switch and a nearby ground source? | <ul style="list-style-type: none"> • Yes, check for loose or broken wire between pump switch and pump relay. • No, go to Step 6a. |
| 6a | Is there 12Vdc between purple wire labeled PRP-3 on center right hand terminal of pump switch and a nearby ground source (black wire)? | <ul style="list-style-type: none"> • Yes, replace pump switch. • No, go to Step 7. |
| 7 | Is there 12Vdc between purple wire labeled PRP-3 top left terminal of hose selector switch and nearby ground (black wire)? | <ul style="list-style-type: none"> • Yes, check for loose or broken wire between hose selector switch and pump switch. • No go to Step 7a. |
| 7a | Is there 12Vdc between pink wire labeled PNK-3 center left terminal of hose selector switch and nearby ground (black wire)? | <ul style="list-style-type: none"> • Yes, replace hose selector switch. • No, go to Step 8. |
| 8 | Is there 12Vdc between pink wire labeled PNK-3 upper terminal block and nearby ground (black wire)? | <ul style="list-style-type: none"> • Yes, check for loose or broken wire between terminal block and hose selector switch. • No, go to Step 8a. |
| 8a | Is there 12Vdc between pink wire labeled PNK-2 upper terminal block and nearby ground (black wire)? | <ul style="list-style-type: none"> • Yes, replace terminal block. • No, go to Table 8-16 Mixer Electrical Troubleshooting (continued) Steps 4a through 10a. |
| 9 | Is there 12Vdc between red wire labeled "RED-TRIG" upper terminal block and nearby ground source (black wire)? | <ul style="list-style-type: none"> • Yes, check for loose or broken wire between terminal block and junction box. • No, go to Step 10. |
| 10 | Is there 12Vdc between purple wire labeled "PRP-1" upper terminal block and nearby ground source (black wire)? | <ul style="list-style-type: none"> • Yes, ensure the yellow jumper in the middle of the terminal blocks connected to the "PRP-1" and "RED-TRIG" wires is push in all the way. • No, Go to Step 11 |

Chapter 8 Troubleshooting

Table 8-29 Pump Electrical Troubleshooting (continued)

| Step | Possible Cause | If . . . |
|------|--|---|
| 11 | Is there 12Vdc between purple wire on terminal #2 of hose PAKSTAT and terminal #8 black ground wire? | <ul style="list-style-type: none"> • Yes, check for loose or broken wire between PAKSTAT and terminal block. NOTE This wire has a diode that could be bad and cause an open circuit. • No, go to Step 11a. |
| 11a | Is there 12Vdc between pink wire on terminal #1 of hose PAKSTAT and terminal #8 black ground wire? | <ul style="list-style-type: none"> • Yes, replace the hose PAKSTAT. • No, go to Step 12. |
| 12 | Is there 12Vdc between pink wire labeled “PNK-1” upper terminal blocks and nearby ground source (black wire)? | <ul style="list-style-type: none"> • Yes, check for loose or broken wire between terminal blocks and hose PAKSTAT. • No, go to Step 12a |
| 12a | Is there 12Vdc between pink wire labeled “PNK-4” upper terminal blocks and nearby ground source (black wire)? | <ul style="list-style-type: none"> • Yes, replace terminal block. • No, go to Step 13. |
| 13 | Is there 12Vdc between pink wire labeled “PNK-4” lower left terminal of hose selector switch and nearby ground source (black wire)? | <ul style="list-style-type: none"> • Yes, check for loose or broken wire between hose selector switch and terminal block. • No, go to Step 13a. |
| 13a | Is there 12Vdc between pink wire labeled “PNK-3” center left terminal of hose selector switch and nearby ground source (black wire)? | <ul style="list-style-type: none"> • Yes, replace hose selector switch. • No, go to Step 14. |
| 14 | Is there 12Vdc between pink wire labeled “PNK-3 on the upper terminal block and a nearby ground source black wire? | <ul style="list-style-type: none"> • Yes, check for loose or broken wire between terminal block and hose selector switch. • No go to Step 8a. |
| 14a | Is there 12Vdc between pink wire labeled “PNK-2” on upper terminal block and nearby ground source black wire? | <ul style="list-style-type: none"> • Yes, replace terminal block. • No, go to Table 8-16 Mixer Electrical Troubleshooting (continued) Steps 4a through 9a. |

Chapter 8 Troubleshooting

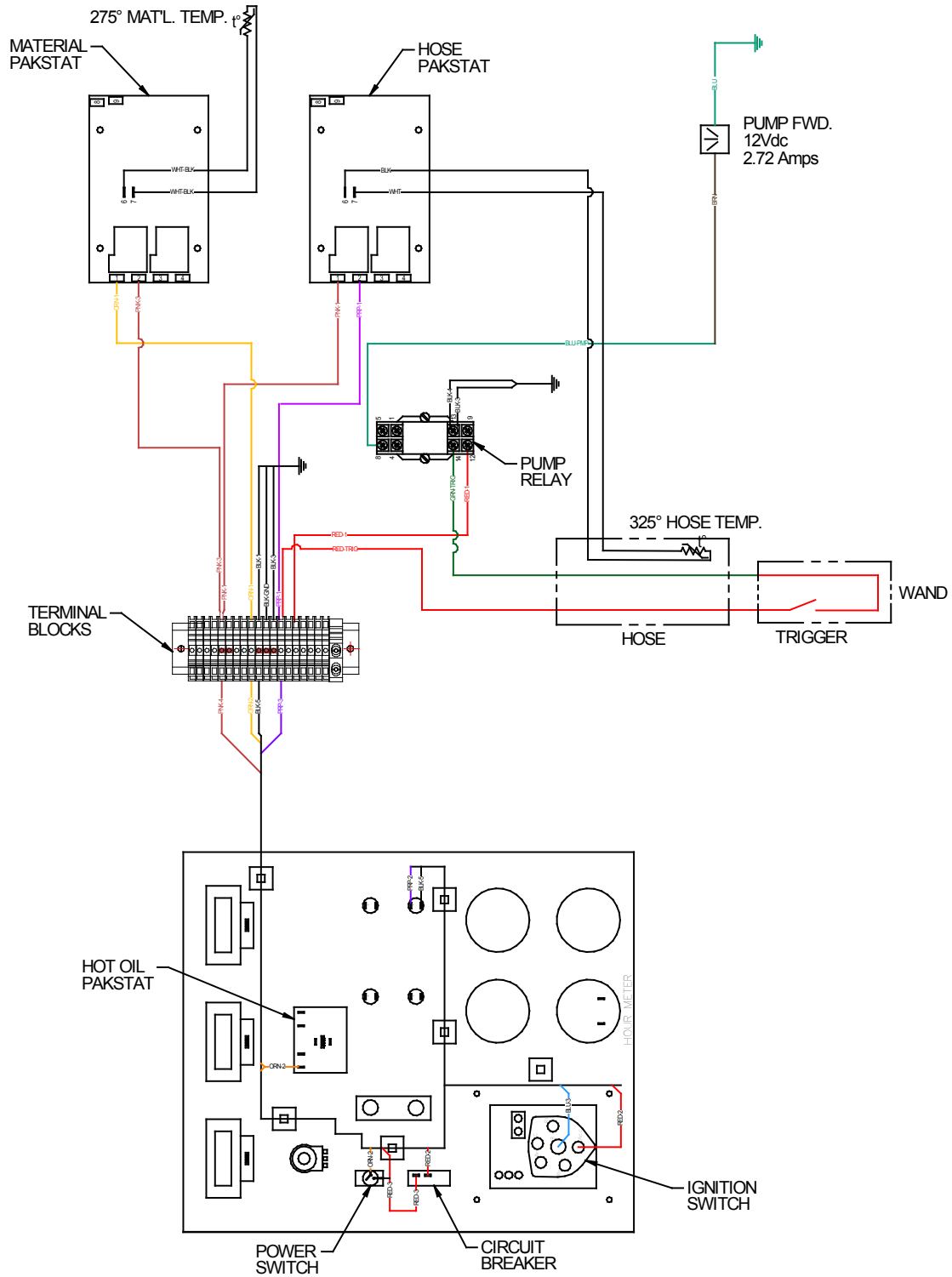


Fig. 8-11 Pump Circuit Schematic

Chapter 8 Troubleshooting

8.4.2 Pump Hydraulic Troubleshooting

Table 8-30 Pump Hydraulic Troubleshooting

| Step | Possible Cause | If... |
|------|--|--|
| 1 | Does the coil magnetize when the din plug amber light is "ON"? | <ul style="list-style-type: none"> • Yes, go to Step 2. • No, remove the din plug, 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 Fig. 8.6 Hydraulic Valve Pressure Setting). | <ul style="list-style-type: none"> • 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, 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). | <ul style="list-style-type: none"> • 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 Fig. 8.6 Hydraulic Valve Pressure Setting |

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.

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
420 N. Roosevelt Ave.
Chandler, AZ 85226-2601
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 Melter

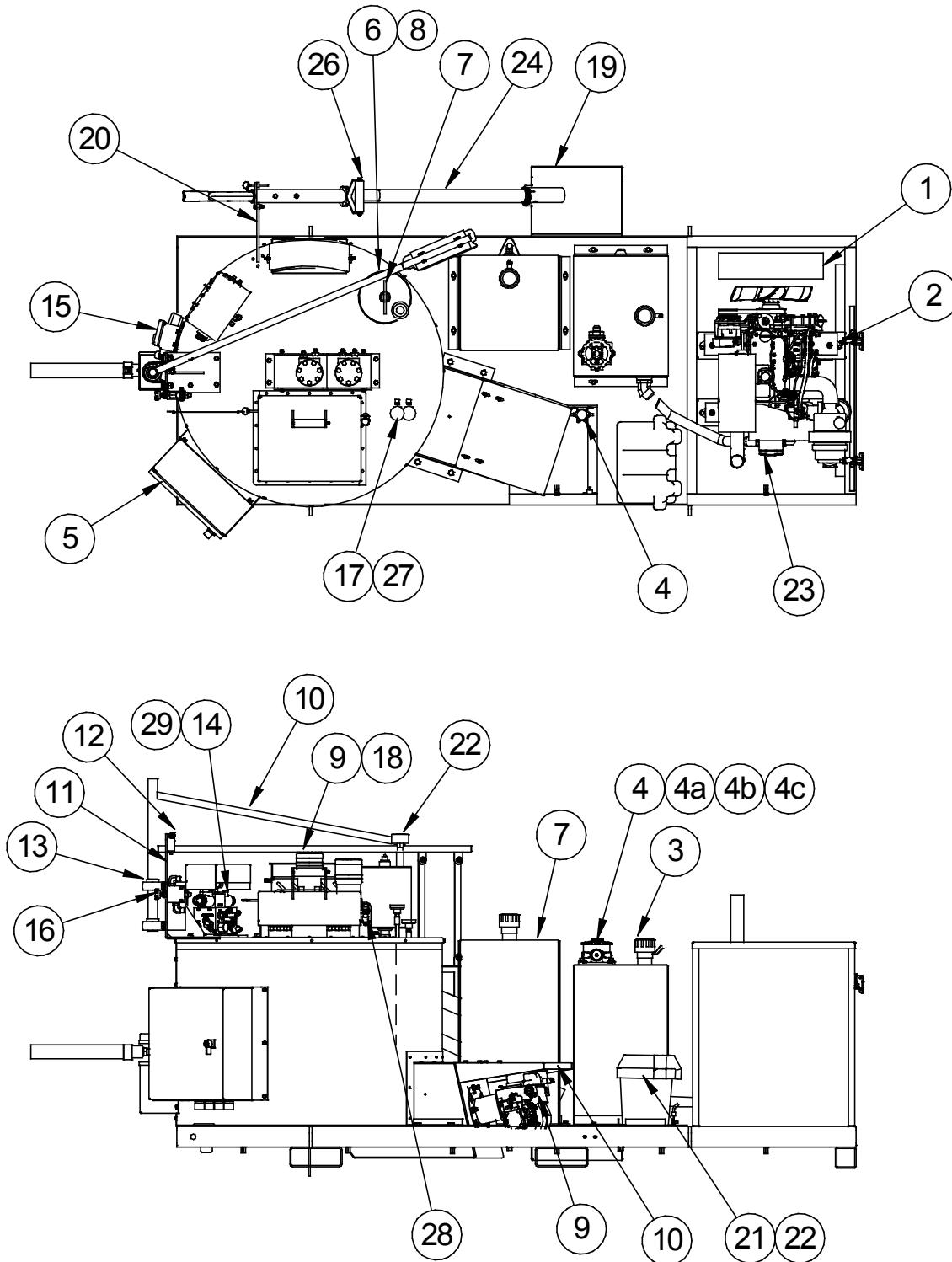


Fig. 9-1 Super Shot 60 Diesel Melter

Chapter 9 Illustrated Parts List

| FIG. | ITEM | PART NO. | DESCRIPTION | QTY. |
|----------|-------|--------------------------|-------------------------------------|------|
| Fig. 9.1 | 1 | 46840 | ENGINE ASSEMBLY – 46100EB | 1 |
| | 2 | 29399 | ISOMOUNT | 4 |
| | 3 | 46850 | HYDRAULIC TANK ASSEMBLY | 1 |
| | 4 | 45498 | HYDRAULIC FILTER ASSEMBLY | 1 |
| | 4a | 45438 | HYDRAULIC FILTER ELEMENT | 1 |
| | 4b | 45440 | O-RING, HYDRAULIC FILTER | 1 |
| | 4c | 45497 | GASKET, HYDRAULIC FILTER | 1 |
| | 5 | 45525 | CONTROL BOX ASSEMBLY – ELECTRIC | 1 |
| | 6 | 43355 | OVERFLOW TANK | 1 |
| | 7 | 43374 | DIPSTICK | 1 |
| | 8 | 26025 | AIR BREATHER | 1 |
| | 9 | 46863 | PUMP AGITATOR MOTOR ASSEMBLY | 1 |
| | 10 | 46860 | BOOM – HOSE | 1 |
| | 11 | 46851 | BASE, BOOM | 1 |
| | 12 | 46862 | LOCK, BOOM | 1 |
| | 13 | 45553 | BEARING, BOOM | 2 |
| | 14 | 45420 | HYDRAULIC CONTROL VALVE ASSEMBLY | 1 |
| | 15 | 44027 | JUNCTION BOX ASSEMBLY | 1 |
| | 16 | 46060 | REGULATOR, FLOW | 1 |
| | 17 | 43465 | SENSOR, RTD | 2 |
| | 18 | 46878 | CHAIN GUARD | 2 |
| | 19 | 46908 | DRIP PAN | 1 |
| | 20 | 46905 | SUPPORT ASSEMBLY, WAND | 1 |
| | 21 | 24000 | BATTERY | 1 |
| | 22 | 24002 | BATTERY BOX | 1 |
| | 23 | 45442 | HYDRAULIC PUMP ASSEMBLY – EC63/SC63 | 1 |
| | 24 | 51730 | WAND ASSEMBLY – ELECTRIC | 1 |
| | 25 | 51731 | HOSE, ELECTRIC – 15'(NOT SHOWN) | 1 |
| | 26 | 43768 | WAND HANDLE | 1 |
| 27 | 51065 | CORD GRIP | 3 | |
| 28 | 39608 | SWITCH, LID | 1 | |
| 29 | 46931 | BRACKET, HYDRAULIC VALVE | 1 | |

Chapter 9 Illustrated Parts List

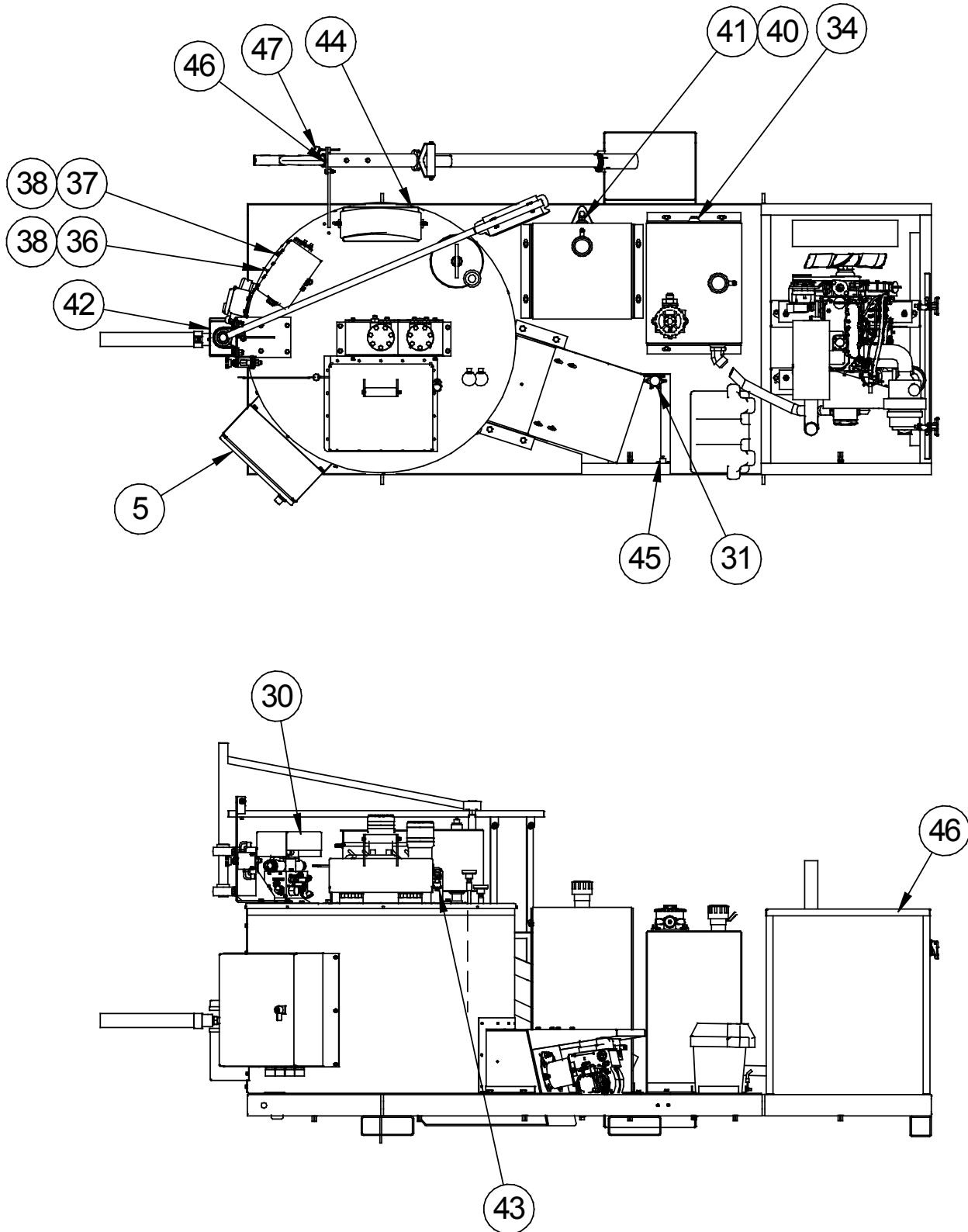


Fig. 9-2 Super Shot 60 Diesel Melter

Chapter 9 Illustrated Parts List

| FIG. | ITEM | PART NO. | DESCRIPTION | QTY. |
|----------|-------|-----------------------------------|------------------------------|------|
| Fig. 9-2 | 30 | 46864 | COVER, CONTROL VALVE | 1 |
| | 31 | 39602 | SOLENOID | 1 |
| | 32 | 43579 | FILLER/BREATHER | 2 |
| | 33 | 46855 | FUEL TANK ASSEMBLY | 1 |
| | 34 | 45415 | SIGHT GAUGE, HYDRAULIC TANK | 1 |
| | 35 | 46380 | BURNER, 14 VOLT | 1 |
| | 35 | 46909 | COVER, BURNER | 1 |
| | 36 | 32513 | TOGGLE SWITCH – PUMP REVERSE | 1 |
| | 37 | 51678 | TOGGLE SWITCH – AGITATOR | 1 |
| | 38 | 50720 | BOOT, TOGGLE SWITCH | 2 |
| | 39 | 51065 | CORD GRIP | 2 |
| | 40 | 44818 | TUBING, SIGHT GAUGE | 1 |
| | 41 | 44817 | FITTING, SIGHT GAUGE | 2 |
| | 42 | 46839 | HEAT GUARD | 1 |
| | 43 | 39608 | SWITCH, LID | 1 |
| | 44 | 46933 | GUARD, VENT | 2 |
| | 45 | 31512 | CIRCUIT BREAKER | 1 |
| | 46 | 46906 | LOCKING ARM, WAND SUPPORT | 1 |
| 47 | 26104 | 1/4" X 2" GRIP, QUICK RELEASE PIN | 2 | |

Chapter 9 Illustrated Parts List

9.3 Tank Detail

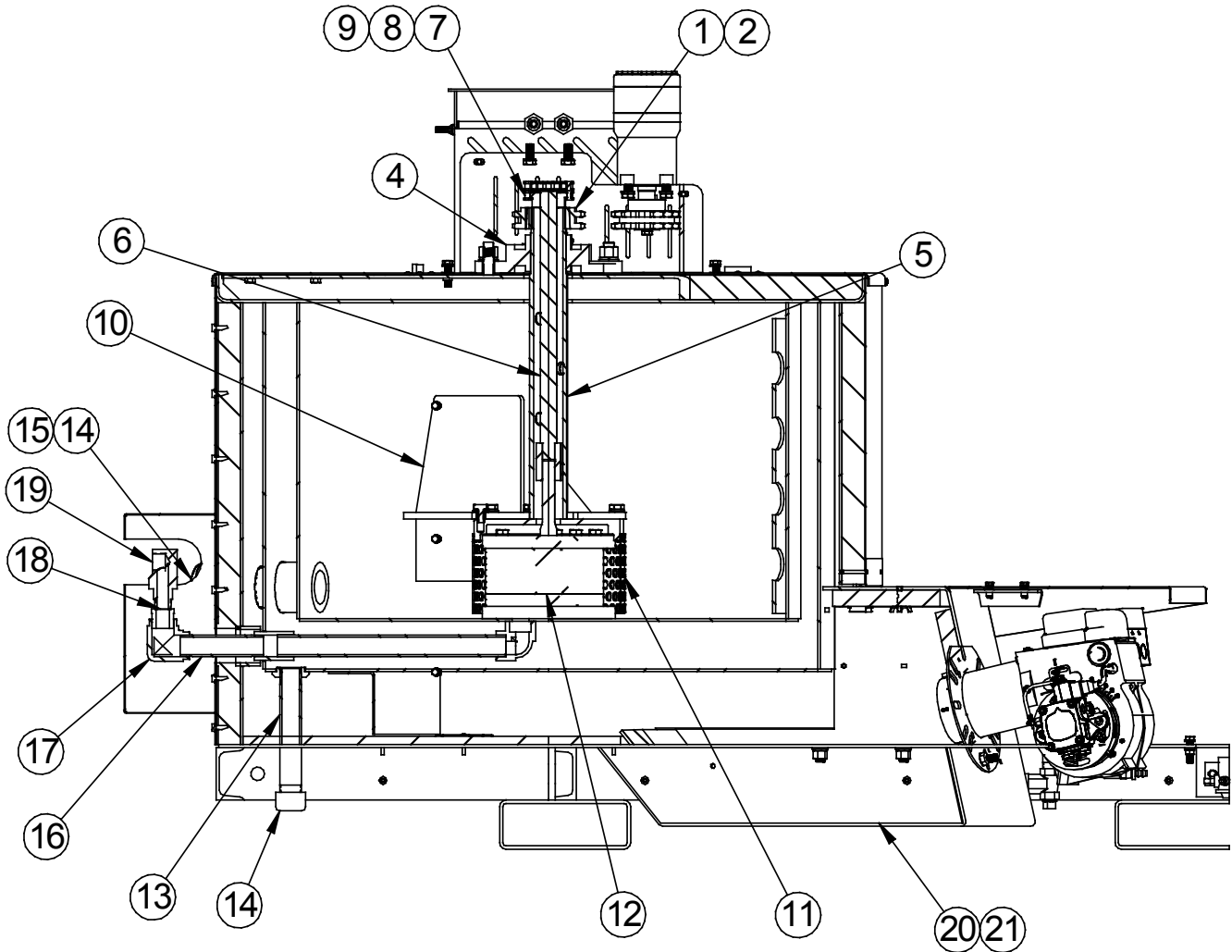


Fig. 9-3 Tank Detail

Chapter 9 Illustrated Parts List

| FIG. | ITEM | PART NO. | DESCRIPTION | QTY. |
|----------|------|----------|----------------------------|------|
| Fig. 9-3 | 1 | 44165 | SPROCKET, DRIVEN | 1 |
| | 2 | 44163 | KEY, SPROCKET | 1 |
| | 3 | 43321 | CHAIN, DRIVE | 1 |
| | 4 | 46872 | BEARING, FLANGED | 1 |
| | 5 | 46896 | SHAFT, AGITATOR | 1 |
| | 6 | 43548 | SHAFT, DRIVE – PUMP | 1 |
| | 7 | 26002 | SPROCKET | 2 |
| | 8 | 26016 | CHAIN, SPROCKET | 1 |
| | 9 | 31368 | KEY, SPROCKET | 1 |
| | 10 | 46900 | PADDLE, AGITATOR | 2 |
| | 11 | 46803 | SCREEN, PUMP | 1 |
| | 12 | 44850 | PUMP, MATERIAL | 1 |
| | 13 | 28101 | NIPPLE, 1" X 8" LG. PIPE | 1 |
| | 14 | 28270 | CAP, 1" PIPE | 1 |
| | 15 | 28060 | NIPPLE, 1" X 5" LG. PIPE | 1 |
| | 16 | 28273 | CAP, 2" PIPE | 1 |
| | 17 | 28055 | NIPPLE, 1" X 5" LG. PIPE | 1 |
| | 18 | 28210 | ELBOW, 1" PIPE | 1 |
| | 19 | 28351 | BUSHING, 1" X 3/4" REDUCER | 1 |
| | 20 | 51066 | SWIVEL, 90° | 1 |
| | 21 | 46920 | BURNER BOX | 1 |
| | 22 | 43179 | INSULATION KIT, BURNER BOX | 1 |
| | 23 | 55357 | HEAT GUARD | 1 |

Chapter 9 Illustrated Parts List

9.4 Control Box Assembly

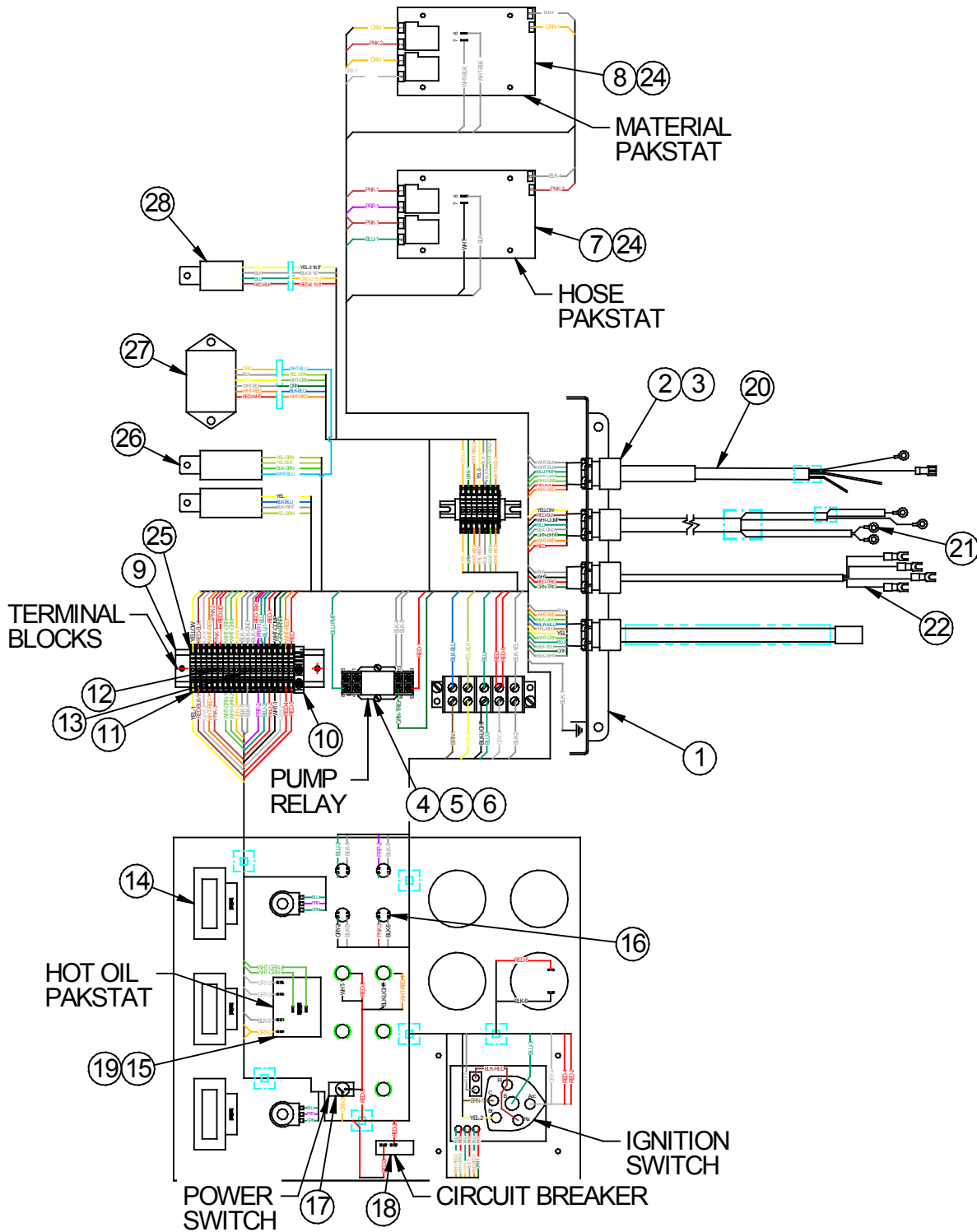


Fig. 9-4 Control Box Assembly

Chapter 9 Illustrated Parts List

| FIG. | ITEM | PART NO. | DESCRIPTION | QTY. |
|----------|------|----------|-----------------------------------|------|
| Fig. 9-4 | 1 | 45595 | ENCLOSURE (NOT SHOWN) | 1 |
| | 2 | 24021 | CORD CONNECTOR | 3 |
| | 3 | 50280 | 1/2" CONDUIT NUT | 4 |
| | 4 | 51662 | SOCKET, RELAY | 1 |
| | 5 | 51661 | RELAY | 1 |
| | 6 | 51663 | HOLD DOWN SPRING | 1 |
| | 7 | 51691 | TEMPERATURE CONTROLLER, 400°/325° | 1 |
| | 8 | 51672 | TEMPERATURE CONTROLLER, 400°/275° | 1 |
| | 9 | 51803 | MOUNTING RAIL | 1 |
| | 10 | 51802 | END BRACKET | 2 |
| | 11 | 51800 | FEED THROUGH TERMINAL | 26 |
| | 12 | 51801 | JUMPER, 2-POLE | 1 |
| | 13 | 51804 | JUMPER, 3-POLE | 1 |
| | 14 | 50251 | READOUT, DIGITAL | 3 |
| | 15 | 43391 | TEMPERATURE CONTROLLER 150°-550° | 1 |
| | 16 | 51651 | LIGHT, 12VDC | 4 |
| | 17 | 50719 | SWITCH, TOGGLE | 1 |
| | 18 | 51665 | CIRCUIT BREAKER, 15 AMP | 1 |
| | 19 | 50593 | KNOB | 3 |
| | 20 | 44983 | CABLE ASSEMBLY, SENSOR | 1 |
| | 21 | 44984 | CABLE ASSEMBLY, POWER | 1 |
| | 22 | 44985 | CABLE ASSEMBLY, TRIGGER/SENSOR | 1 |
| | 23 | 51684 | RIBBON CABLE, 36" (NOT SHOWN) | 2 |
| | 24 | 51670 | SPACER, TEMPERATURE CONTRLLER | 8 |
| | 25 | 51805 | END BRACKET | 4 |
| | 26 | 44979 | RELAY, STARTER | 2 |
| | 27 | 44980 | TIMER | 1 |
| | 28 | - | RELAY | 1 |

Chapter 9 Illustrated Parts List

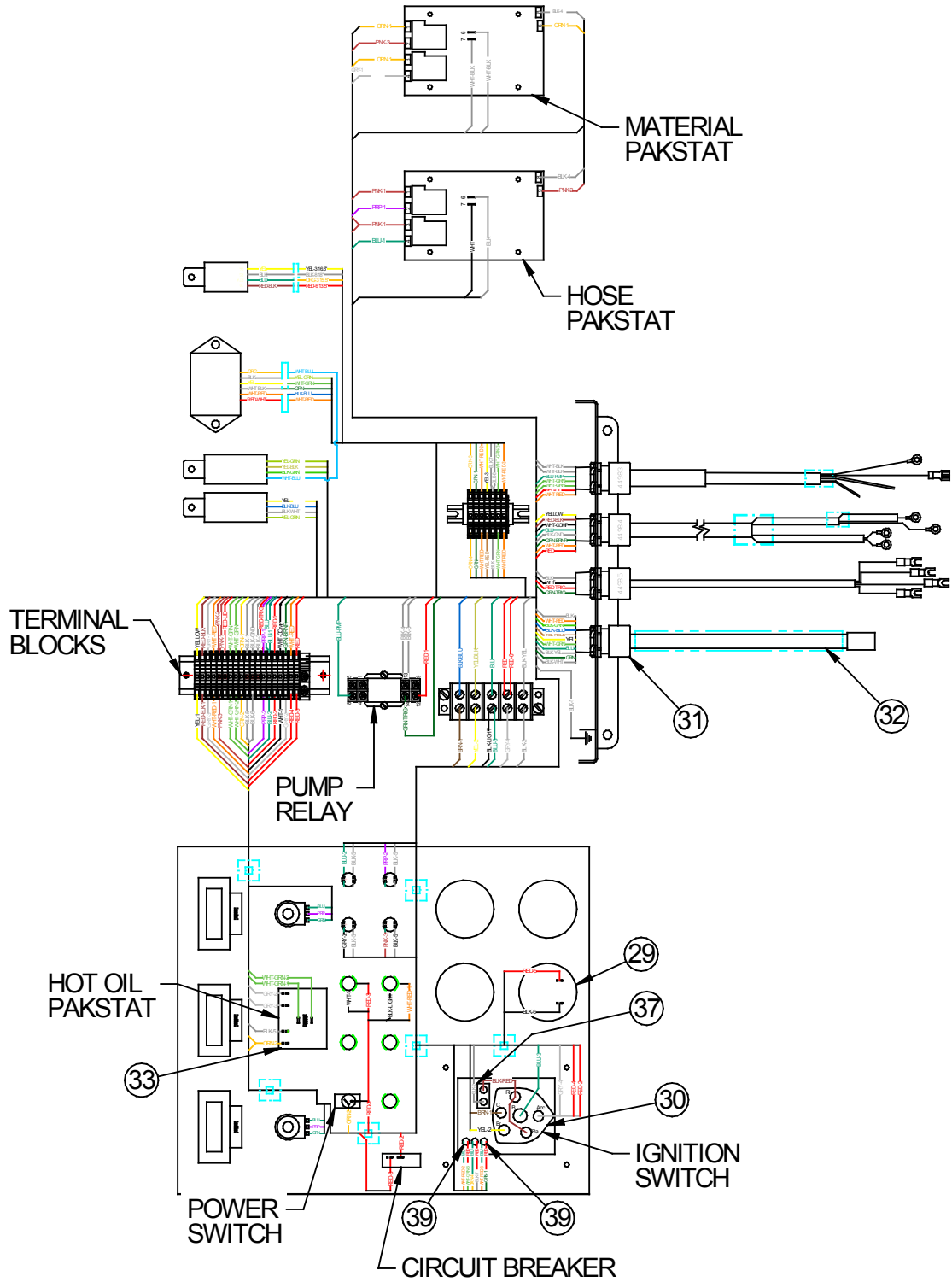


Fig. 9-5 Control Box Assembly

Chapter 9 Illustrated Parts List

| FIG. | ITEM | PART NO. | DESCRIPTION | QTY. |
|----------|------|----------|--------------------------------------|------|
| Fig. 9-5 | 29 | 24076 | HOUR METER | 1 |
| | 30 | 41994 | IGNITION SWITCH | 1 |
| | 31 | 24024 | CORD GRIP, YELLO2W | 1 |
| | 32 | 44978 | CABLE ASSEMBLY, ENGINE | 1 |
| | 33 | 51698 | RIBBON CABLE, 5" | 1 |
| | 34 | 44975 | GAUGE, WATER TEMPERATURE (Not Shown) | OPT. |
| | 35 | 44976 | GAUGE, OIL PRESSURE (Not Shown) | OPT. |
| | 36 | 44977 | GAUGE, VOLT METER (Not Shown) | OPT. |
| | 37 | 44987 | RESISTANCE CONTROL | 1 |
| | 38 | 44989 | LIGHT, AMBER (Not Shown) | 1 |
| | 39 | 44988 | LIGHT, RED | 2 |

Chapter 9 Illustrated Parts List

9.5 Engine Assembly

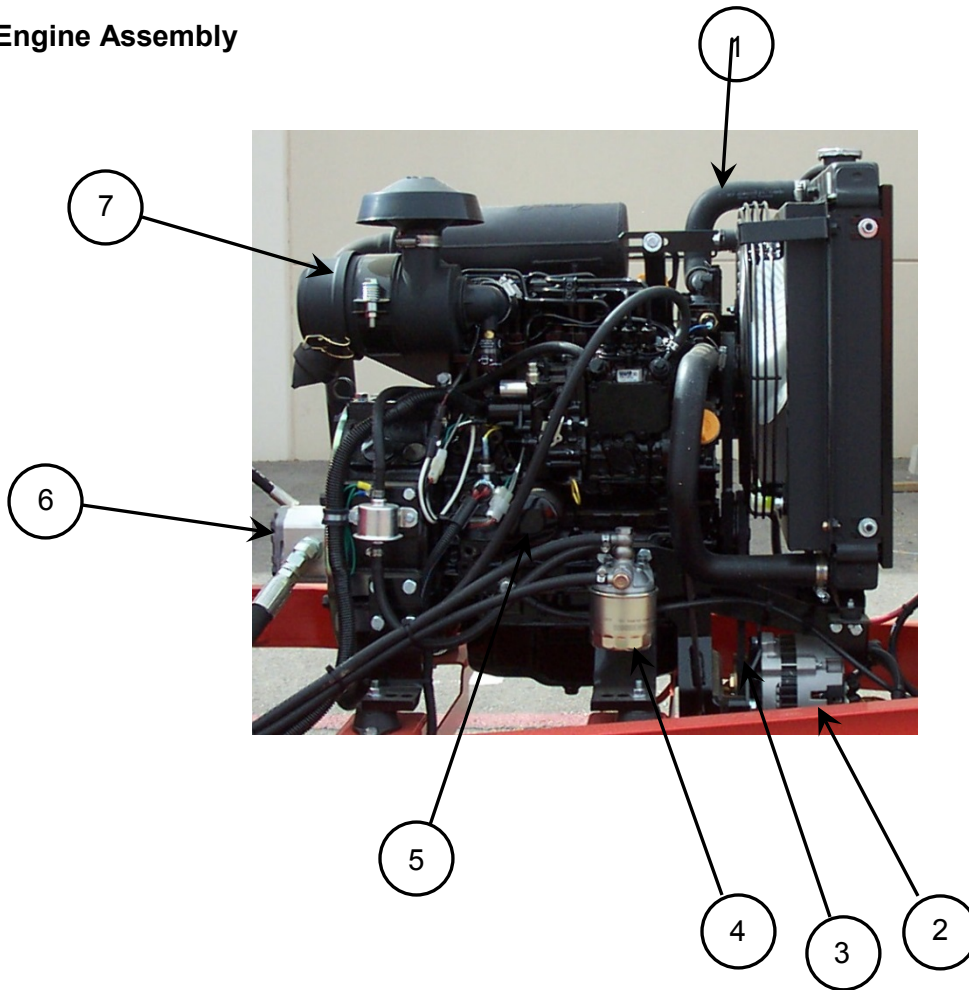


Fig. 9-6 Engine Assembly

| FIG. | ITEM | PART NO. | DESCRIPTION | QTY. |
|----------|------|----------|--------------------|------|
| Fig. 9-6 | 1 | 46840 | ENGINE , 12.5kW | 1 |
| | 2 | 43612 | GENERATOR, 24VAC | 1 |
| | 3 | 46966 | BELT, DRIVE – GEN. | 1 |
| | 4 | 46963 | FUEL FILTER | 1 |
| | 5 | 46964 | OIL FILTER | 1 |
| | 6 | 46959 | HYDRAULIC PUMP | 1 |
| | 7 | 46965 | AIR FILTER ELEMENT | 1 |

Chapter 9 Illustrated Parts List

9.6 Hydraulic Control Valve Assembly

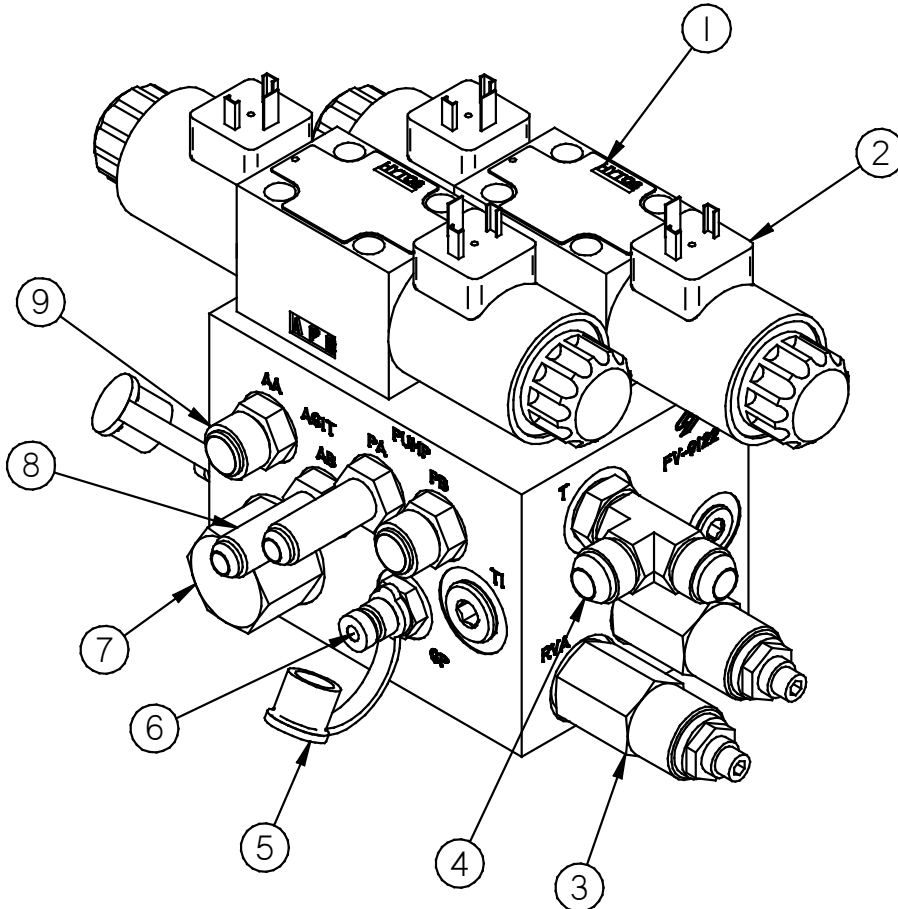


Fig. 9-7 Hydraulic Control Valve

| FIG. | ITEM | PART NO. | DESCRIPTION | QTY. |
|----------|------|----------|--|------|
| Fig. 9-7 | 1 | 45418CH | VALVE ASSEMBLY | 2 |
| | 2 | 45419CH | COIL, VALVE ASSEMBLY | 4 |
| | 3 | 45417CH | VALVE, RELIEF | 2 |
| | 4 | - | TEE, MALE #8 ORB X #8 JIC RUN | 1 |
| | 5 | 45413CH | CAP, DUST | 2 |
| | 6 | 45414CH | FITTING, TEST POINT | 2 |
| | 7 | 45416CH | FLOW CONTROL, PRIORITY | 1 |
| | 8 | - | FITTING, #6 ORB X #6 JIC LONG STRAIGHT | 2 |
| | 9 | - | FITTING, #6 ORB X #8 JIC STRAIGHT | 2 |

Chapter 9 Illustrated Parts List

9.7 Diesel Burner Assembly

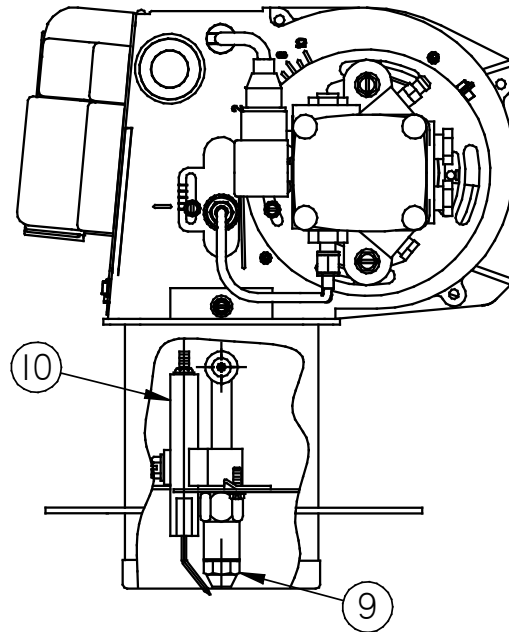
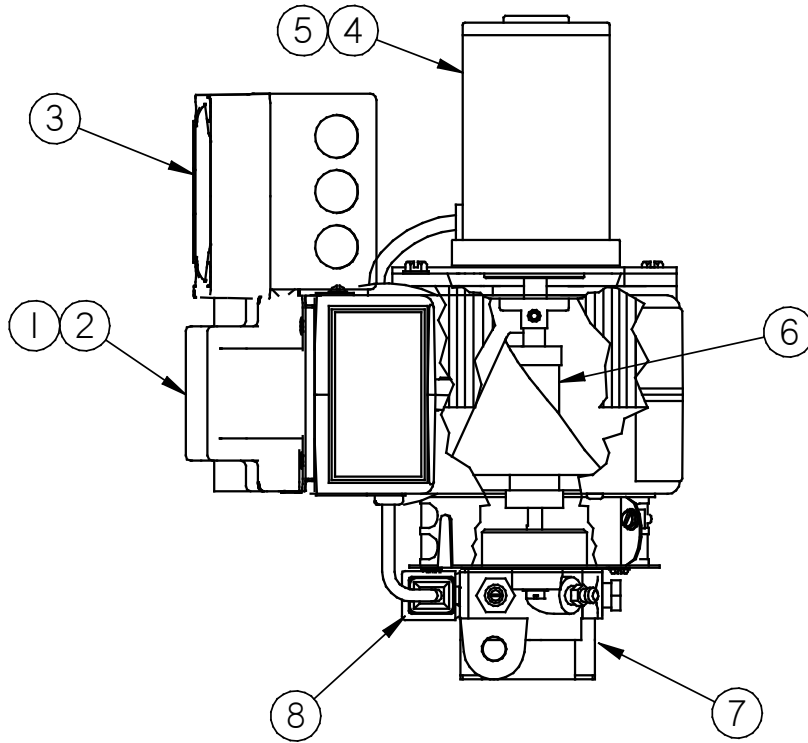


Fig. 9-8 Diesel Burner

Chapter 9 Illustrated Parts List

| FIG. | ITEM | PART NO. | DESCRIPTION | QTY. |
|----------|------|----------|---------------------------|------|
| Fig. 9-8 | 1 | 41949 | IGNITION TRANSFORMER | 1 |
| | 2 | 41890 | BLOWER MOTOR | 1 |
| | 3 | 41970 | COUPLING, FUEL PUMP | 1 |
| | 4 | 41892 | PUMP, FUEL | 1 |
| | 5 | 41888 | SOLENOID, FUEL | 1 |
| | 6 | 41993 | ELECTRODE | 1 |
| | 7 | 46912 | NOZZLE | 1 |
| | 8 | 41870 | CAD EYE (NOT SHOWN) | 1 |
| | 9 | 42335 | DC CONTROLLER (NOT SHOWN) | 1 |
| | 10 | 46951 | HEAD, BURNER (Not Shown) | 1 |

Chapter 9 Illustrated Parts List

9.8 Hydraulic Schematic

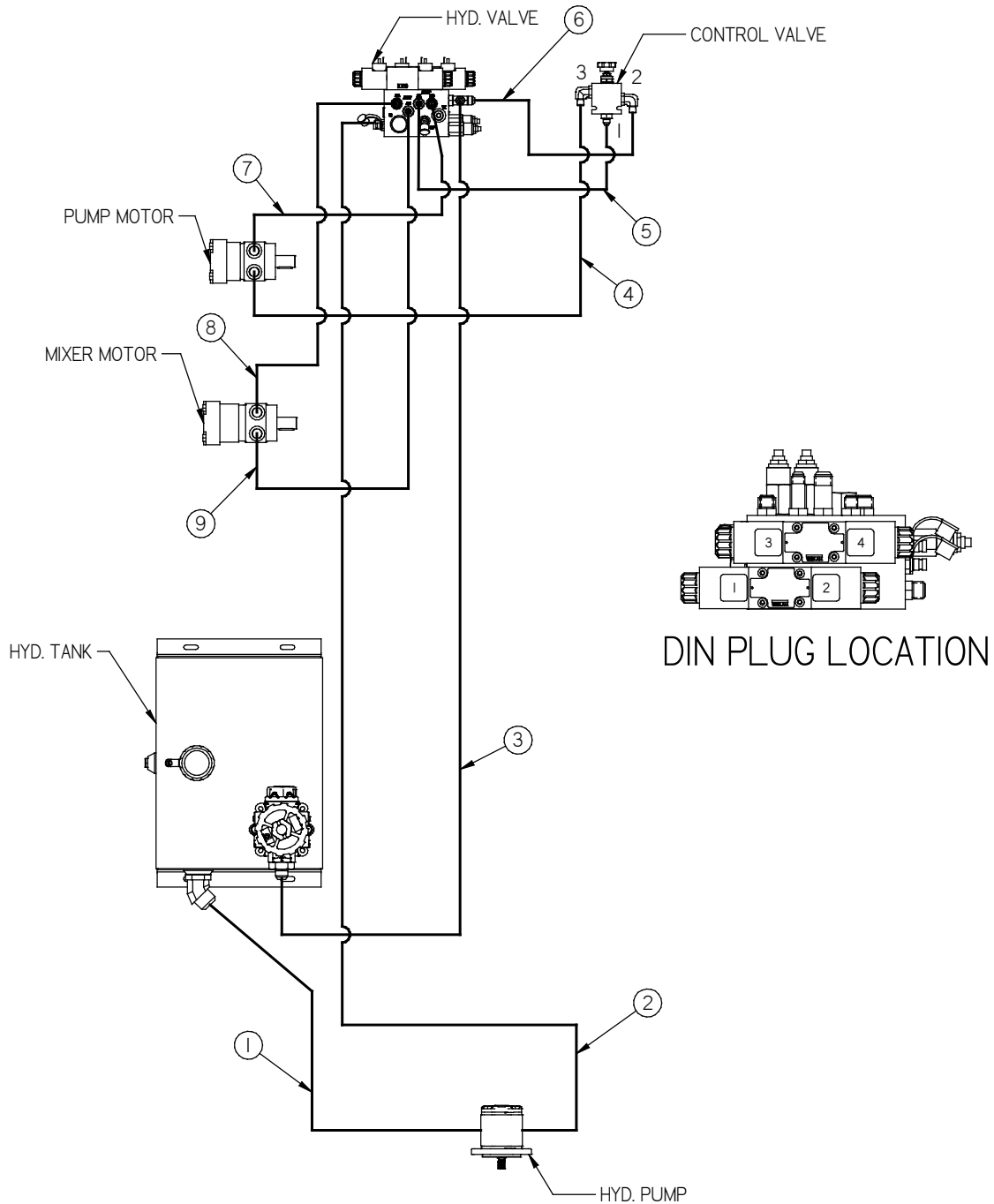


Fig. 9-9 Hydraulic Diagram

Chapter 9 Illustrated Parts List

| FIG. | ITEM | PART NO. | DESCRIPTION | QTY |
|-----------|---|---|---------------------------------|-----|
| Fig. 9-10 | 1 | HYDRAULIC RESERVOIR TO HYDRAULIC PUMP SUCTION PORT | | |
| | | 29898 | FITTING, #20 ORB X #16 JIC 45° | 1 |
| | | 12G4H 12G-16FJX 12G-12FJX 390 | HYDRAULIC HOSE | 1 |
| | | 29802 | FITTING, #12 ORB X #12 JIC 45°. | 1 |
| | 2 | HYDRAULIC PUMP TO HYDRAULIC VALVE "P" PORT | | |
| | | 29862 | FITTING, #10 ORB X #10 JIC 90°. | 1 |
| | | 8M3K 8G-10FJX 8G-10FJX90L 2800 | HYDRAULIC HOSE | 1 |
| | | 29897 | FITTING, #12 ORB X #8 JIC STR. | 1 |
| | 3 | HYDRAULIC VALVE "T" PORT TO HYDRAULIC FILTER | | |
| | | 29916 | FITTING, #12 ORB X #12 JIC 90°. | 1 |
| | | 12M3K 12G-12FJX 12G-12FJX90S 1550 | HYDRAULIC HOSE | 1 |
| | | 29929 | FITTING, #16 ORB X #12 JIC STR. | 1 |
| | 4 | FLOW CONTROL #3 PORT TO PUMP MOTOR (TOP PORT) | | |
| | | 29916 | FITTING, #8 ORB X #8 JIC 90°. | 1 |
| | | 8M3K 8G-8FJX 8G-8FJX90L 750 | HYDRAULIC HOSE | 1 |
| | | 29913 | FITTING, #10 ORB X #8 JIC STR. | 1 |
| | 5 | HYDRAULIC VALVE "PA" TO FLOW CONTROL #1 PORT | | |
| | | 29998 | FITTING, #8 ORB X #8 JIC | 1 |
| | | 8M3K 8G-8FJX 8G-8FJX 570 | HYDRAULIC HOSE | 1 |
| | | 40311 | FITTING, #6 ORB X #6 JIC STR. | 1 |
| | 6 | FLOW CONTROL VALVE #2 PORT TO HYDRAULIC VALVE "T" PORT | | |
| | | 29896 | FITTING, #8 ORB X #8 JIC 90° | 1 |
| | | 8M3K 8G-8FJX 8G-8FJX90S 800 | HYDRAULIC HOSE | 1 |
| | | 29932 | FITTING, #8 ORING RUN TEE | 1 |
| 7 | HYDRAULIC VALVE "PB" PORT TO MATERIAL PUMP MOTOR | | | |
| | 29919 | FITTING, #6 ORB X #8 JIC STR. | 1 | |
| | 8M3K 8G-8FJX 8G-8FJX90S 410 | HYDRAULIC HOSE | 1 | |
| | 29913 | FITTING, #10 ORB X #8 JIC STR. | 1 | |
| 8 | HYDRAULIC VALVE "AA" PORT TO MIXER MOTOR | | | |
| | 29919 | FITTING, #6 ORB X #8 JIC STR. | 1 | |
| | 6M3K 6G-8FJX 6G-6FJX90S 570 | HYDRAULIC HOSE | 1 | |
| | 22029 | FITTING, #10 ORB X #6 JIC STR. | 1 | |

Chapter 9 Illustrated Parts List

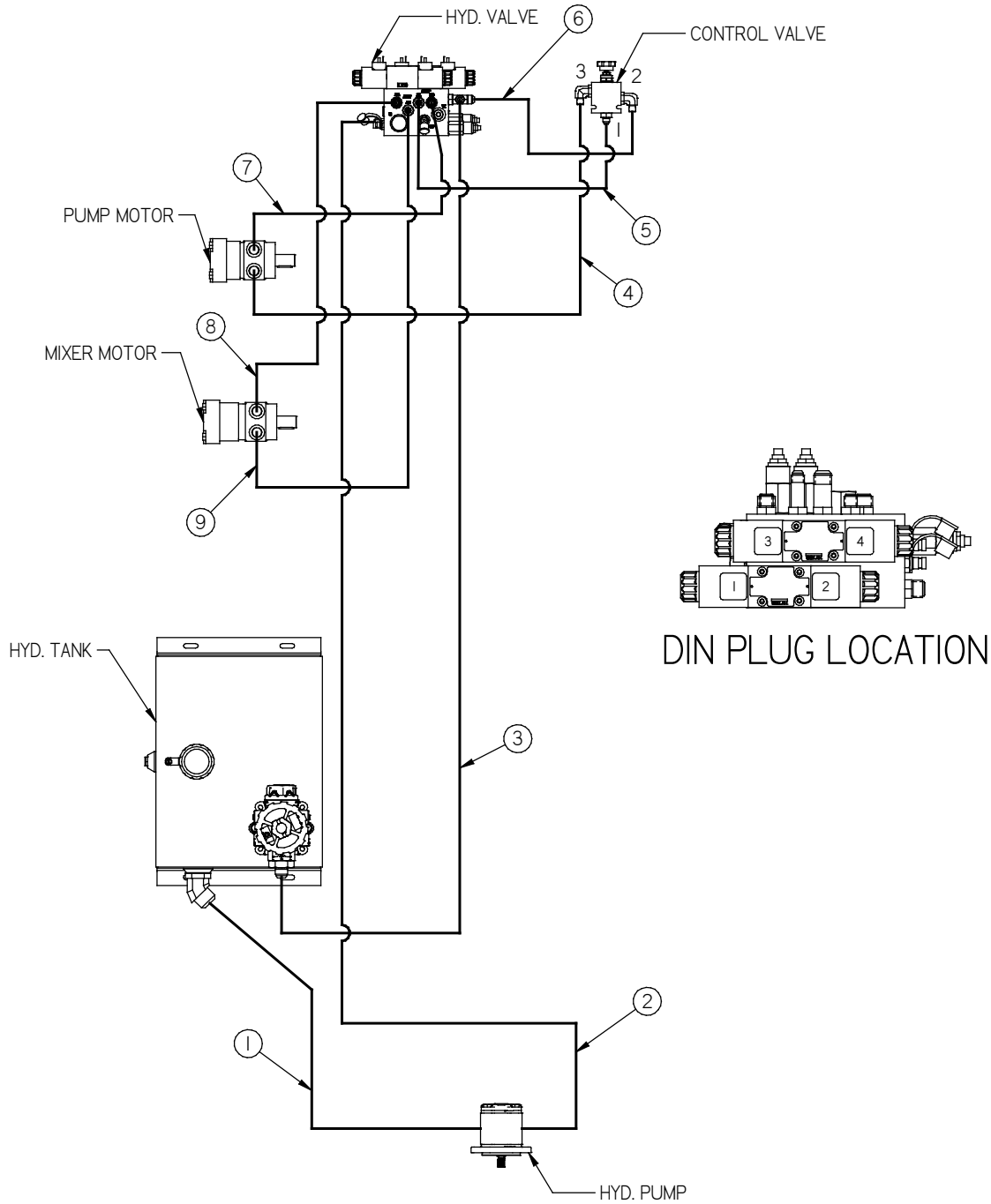


Fig. 9-10 Hydraulic Diagram

Chapter 9 Illustrated Parts List

| FIG. | ITEM | PART NO. | DESCRIPTION | QTY. |
|-----------|------|---|--------------------------------|------|
| Fig. 9-11 | 9 | MIXER MOTOR TO HYDRAULIC VALVE "AB" PORT | | |
| | | 22029 | FITTING, #10 ORB X #6 JIC STR. | 1 |
| | | 6M3K 6G-6FJX 6G-6FJX90L 590 | HYDRAULIC HOSE | 1 |
| | | 40311 | FITTING, #6 ORB X #6 JIC STR. | 1 |

Chapter 9 Illustrated Parts List

9.9 Electrical Schematic

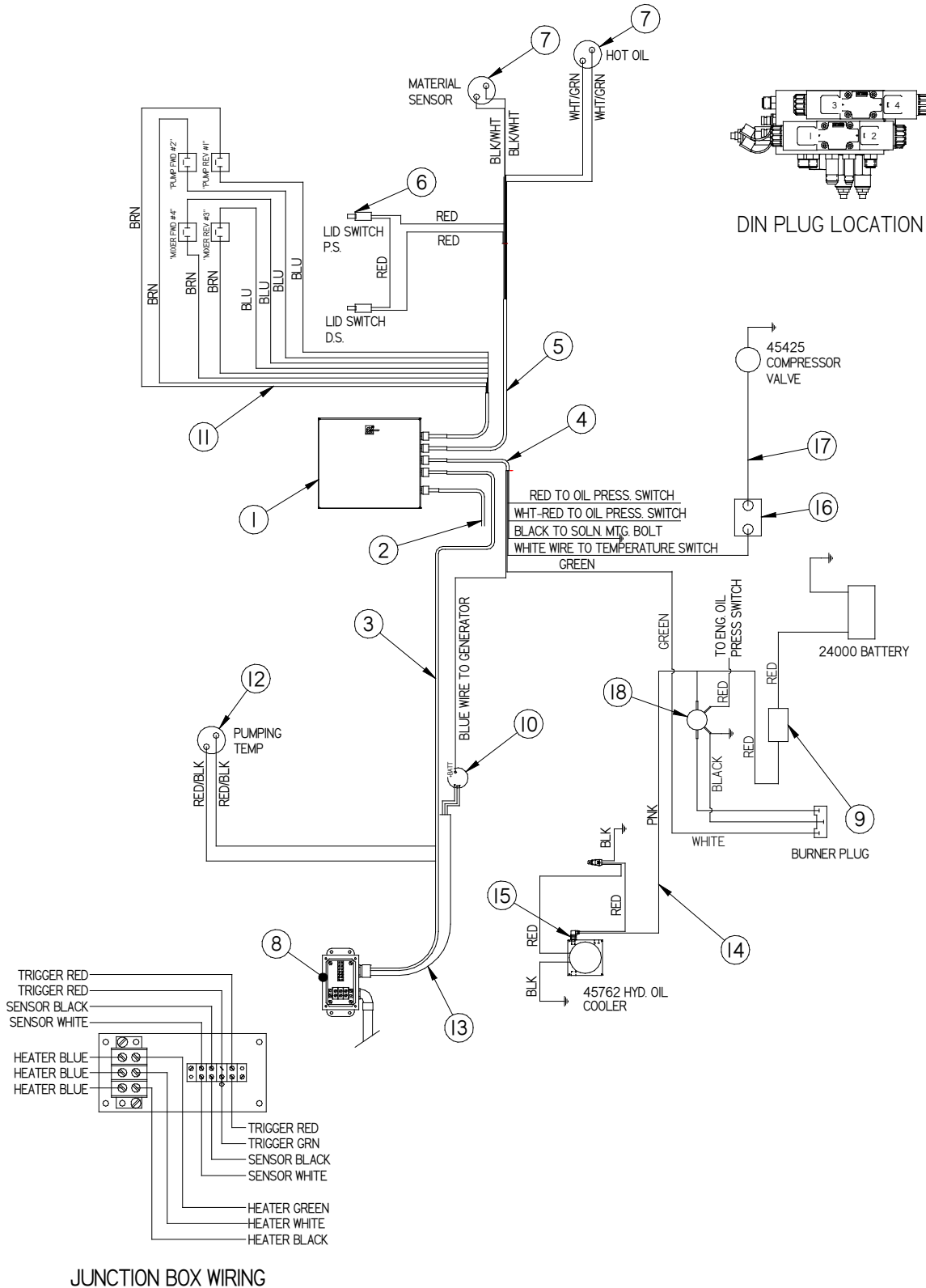


Fig. 9-11 Electrical Schematic

Chapter 9 Illustrated Parts List

| FIG. | ITEM | PART NO. | DESCRIPTION | QTY. |
|-----------|------|----------|-------------------------|------|
| Fig. 9-12 | 1 | 45525 | CONTROL BOX ASSEMBLY | 1 |
| | 2 | 44984 | WIRING HARNESS, ENGINE | 1 |
| | 3 | 44985 | CABLE ASSEMBLY, TRIGGER | 1 |
| | 4 | 44983 | CABLE ASSEMBLY, SENSOR | 1 |
| | 5 | 39608 | LID SWITCH | 1 |
| | 6 | 43465 | SENSOR, RTD | 2 |
| | 7 | 44027 | JUNCTION BOX, HOSE | 1 |
| | 8 | 31512 | CIRCUIT BREAKER | 1 |
| | 9 | 43612 | GENERATOR | 1 |
| | 10 | 43921 | CABLE ASSEMBLY, VALVE | 1 |
| | 11 | 43901 | CABLE ASSEMBLY, HOSE | 1 |
| | 12 | 39602 | SOLENOID, FRAME | 1 |

Chapter 9 Illustrated Parts List

9.10 Hot Air Lance

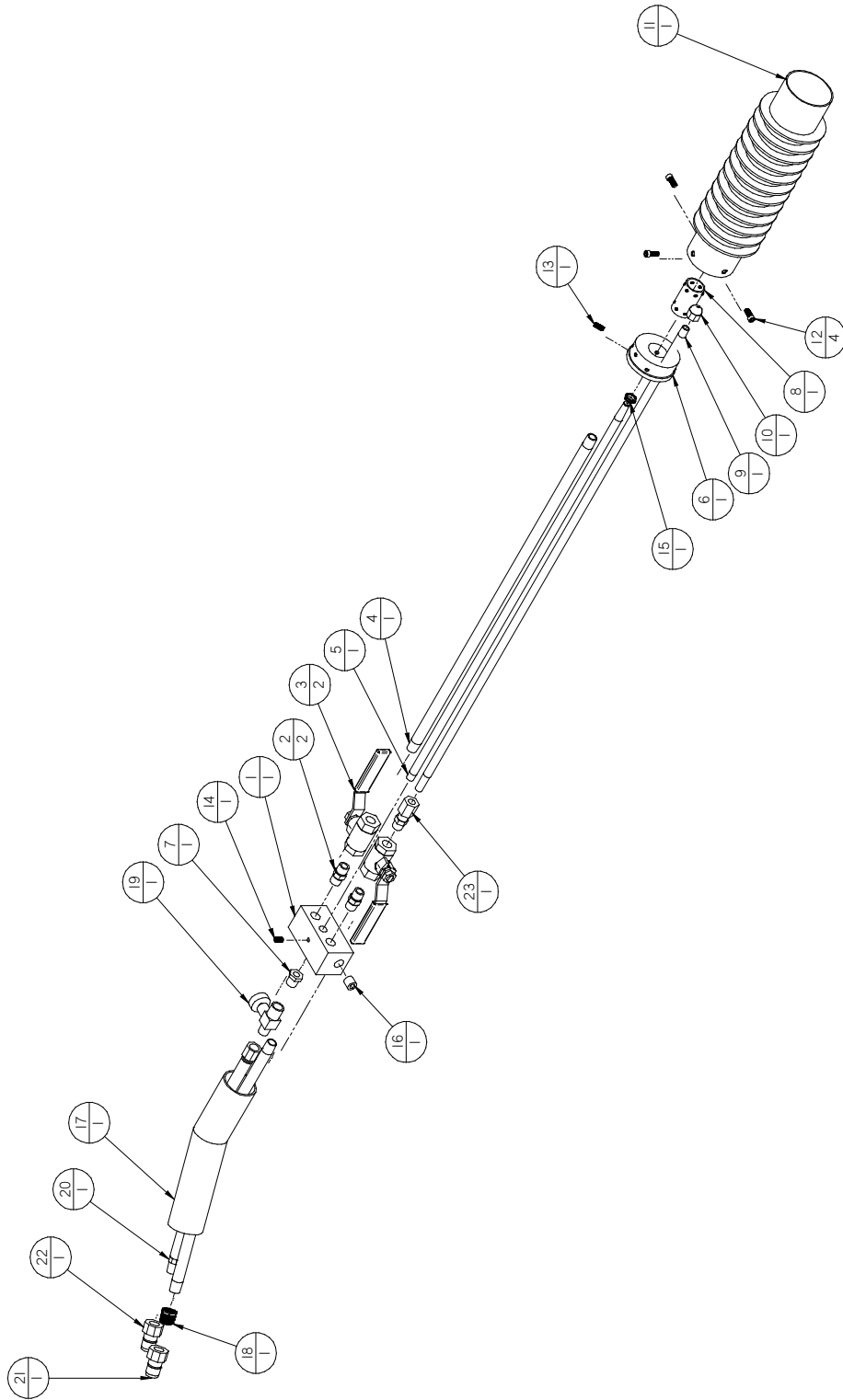


Fig. 9-12 Hot Air Lance (Option)

Chapter 9 Illustrated Parts List

| FIG. | ITEM | PART NO. | DESCRIPTION | QTY. |
|-----------|------|----------|--|------|
| Fig. 9-13 | 1 | 45651 | MIXING BLOCK | 1 |
| | 2 | 51401 | NIPPLE, 1/4 NPT HEX | 2 |
| | 3 | 29195 | VALVE, 1/4" BALL | 2 |
| | 4 | 45656 | AIR MIXER TUBE | 1 |
| | 5 | 45658 | PROPANE TUBE W/ ORFICE | 1 |
| | 6 | 45652 | BURNER BASE | 1 |
| | 7 | 28340 | BUSHING, 1/4" NPT X 1/8" NPT | 1 |
| | 8 | 45654 | PRIMARY BURNER TUBE | 1 |
| | 9 | 45657 | AIR LANCE TUBE | 1 |
| | 10 | 45668 | AIR ORFICE "A" - .125" | 1 |
| | 11 | 45653 | MAIN BURNER TUBE | 1 |
| | 12 | 45670 | SCREW, #10-32 X 1/2" ALLEN SCREW | 4 |
| | 13 | 45672 | SCREW, #10-32 X 1/2" ALLEN SET | 1 |
| | 14 | 45671 | SCREW, 1/4-20 X 3/8" ALLEN SET | 1 |
| | 15 | 45669 | NUT, 1/8-27 JAM | 1 |
| | 16 | 27990 | PLUG, 1/4" COUNTERSUNK | 1 |
| | 17 | 45655 | HANDLE ASSEMBLY | 1 |
| | 18 | 45663 | BUSHING, 3/8" NPT X 1/4" NPT REDUCER | 1 |
| | 19 | 45659 | VALVE, NEEDLE | 1 |
| | 20 | 45675 | HOSE ASSEMBLY, PROPANE | 1 |
| | 21 | 45679 | COUPLING, 1/4" FPT X M | 1 |
| | 22 | 45681 | COUPLING, 1/4" NPT X FM | 1 |
| | 23 | 45664 | FITTING, 1/4" NPT X 3/8 JIC FERRULE LOCK | 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 Sealing Foot/Protruded
27159 – 1/4" Protruding
27160 – 3/8" Protruding



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



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



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

Chapter 10 Tools and Accessories



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



Crafco Pour Pot with Wheels - 40200



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



Crafco Hand Held Pour Pot - 40201



Crafco Duckbill - 50270



Crafco Heat Lance - 31370

Chapter 10 Tools and Accessories



Crafco Heat Lance with Regulator and Attachments - 32259



Crafco Hand Torch w/ 20ft. Hose - 25012



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