



SUPER SHOT 250 DIESEL MELTER ALL MODELS

Parts Manual - 26632
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): _____



Super Shot 250 Diesel Melter Part Manual

Revisions

Revision	Date
Initial Release	2/04/2019
Changed control box and engine to direct engine controls; updated hydraulic pressures; updated parts list for 44100, fuel line schematic for 44100 and electrical schematic for 44100; updated warranty to two years; added Prop 65 warning; and added the warning not to tow with your burner on.	7/17/2019



**Super Shot 250 Diesel Melter
PN 44100**



**Super Shot 250 Diesel Melter with Compressor 100 CFM
PN 47900N**

Table of Contents

1.0 About This Manual	1-1
1.1 How to use this manual:	1-1
2.0 Safety Precautions	2-1
2.1 General Safety.....	2-1
2.2 Personal Safety	2-1
2.3 Equipment or Operational Safety	2-1
2.4 California Proposition 65.....	2-2
2.4.1 All Crafco, Inc. Equipment	2-2
2.4.2 All Crafco, Inc. Equipment with a diesel engine	2-2
2.5 Towing or Driving for Transporting with Burner On	2-2
2.6 Safety Symbols and Notices	2-3
3.0 Limited Warranty	3-1
3.1 Warranty Claim Instructions.....	3-2
4.0 Machine Specifications.....	4-1
5.0 Operating Instructions	5-1
5.1 Preparing the Machine for Start Up.....	5-1
5.2 Machine Start Up for 44100	5-3
5.3 Machine Start Up for 47900N	5-5
5.4 Altitude Compensation System 44100	5-7
5.5 Air Compressor: PN 47900N	5-7
5.6 About the Heated Hose, Wand, Valve, and Tip Guard	5-8
5.7 Operating the Electric Hose.....	5-9
5.8 Dispensing the Material	5-10
5.9 About the Active Screen Pump Protection	5-10
5.10 Loading Material into the Sealant Tank.....	5-11
5.10.1 Material Tank Depth Chart.....	5-12
5.11 Shutting Down and Cleaning Out the Machine (44100)	5-13
5.12 Shutting Down and Cleaning Out the Machine (47900N).....	5-14
5.13 Storing the Electric Hose for Transport	5-15
5.14 Overnight Heater Use	5-16
5.15 Mounting a Skid Machine	5-17
5.16 Shot Timer Option	5-18
5.17 Storing the Machine.....	5-18
6.0 Maintenance Instructions	6-1

Table of Contents

6.1 Engine.....	6-1
6.2 Air Compressor	6-1
6.3 Hydraulic System	6-1
6.4 Heat Transfer Oil.....	6-1
6.5 Wheel Bearing.....	6-1
6.6 Material Sensor Tube	6-1
6.7 Cleaning Material Tank and Sensor Area	6-2
6.8 Lug Nuts.....	6-2
6.9 Brakes.....	6-2
6.10 Tongue Jack.....	6-2
6.11 Temperature Control Calibration	6-3
6.12 Cleaning the Melter	6-3
6.13 Maintenance Chart	6-4
6.14 Service Instructions.....	6-5
6.15 General Maintenance Parts.....	6-5
6.16 Recommended Spare Parts	6-6
6.17 Recommended Fluids and Lubricants	6-6
6.18 Applicable Brands of Heat Transfer Oil.....	6-7
6.19 Typical Heat Transfer Oil Specifications	6-7
6.20 Material Pump Replacement	6-8
6.21 Wand Repair Instructions	6-20
6.21.1 Cable Replacement.....	6-20
6.21.2 Switch Replacement.....	6-20
6.21.3 Terminal Block Replacement.....	6-20
6.21.4 Wand Handle Replacement.....	6-21
6.22 Burner Fuel Filter Replacement.....	6-24
7.0 How to Use a Multimeter	7-1
7.1 Checking DC Voltage with a Multimeter	7-1
7.2 Checking AC Voltage with Multimeter.....	7-1
7.3 Checking Resistance (Ohms).....	7-1
7.3.1 How to Check Wire Continuity	7-1
7.3.2 How to Check RTD Sensor.....	7-1
7.4 Checking Amperage.....	7-2
8.0 Troubleshooting (44100)	8-1
8.1 Diesel Burner Troubleshooting	8-1

Table of Contents

8.1.1	Symptoms: Burner will Not Ignite	8-1
8.1.2	Burner Electrical Troubleshooting	8-2
8.1.3	Excessive Smoke Coming Out of Exhaust Stack	8-6
8.1.4	Burner Lights but Shuts Down After 15 Seconds	8-6
8.1.5	Testing DC Controller	8-7
8.1.6	Burner Fuel Solenoid Testing	8-7
8.1.7	Burner Ignition Coil Testing.....	8-8
8.1.8	Bleeding the Burner	8-8
8.1.9	Sealant is Heating Slowly	8-10
8.2	Mixer Troubleshooting	8-11
8.2.1	Symptom: Mixer Does Not Rotate.....	8-11
8.2.2	Mixer Electrical Troubleshooting	8-12
8.2.3	Mixer Hydraulic Troubleshooting.....	8-16
8.3	Hose Troubleshooting.....	8-19
8.3.1	Symptom: Hose Does Not Heat	8-19
8.3.2	Hose Electrical Troubleshooting	8-19
8.3.3	Symptom: Trigger is not Working.....	8-24
8.3.4	RTD Sensor Ohms vs. Temperature.....	8-25
8.4	Pump Troubleshooting.....	8-27
8.4.1	Symptom: Material Does Not Dispense When the Pump is Activated	8-27
8.4.2	Pump Electrical Troubleshooting	8-28
8.4.3	Pump Hydraulic Troubleshooting	8-34
9.0	Troubleshooting (47900N).....	9-1
9.1	Diesel Burner Troubleshooting	9-1
9.1.1	Symptom: Burner will Not Ignite.....	9-1
9.1.2	Burner Electrical Troubleshooting	9-3
9.1.3	Excessive Smoke Coming Out of Exhaust Stack	9-8
9.1.4	Burner Lights but Shuts Down After 15 Seconds	9-8
9.1.5	Testing DC Controller	9-9
9.1.6	Burner Fuel Solenoid Testing	9-9
9.1.7	Burner Ignition Coil Testing.....	9-10
9.1.8	Bleeding the Burner	9-10
9.1.9	Sealant is Heating Slowly	9-12
9.2	Mixer Troubleshooting	9-13
9.2.1	Symptom: Mixer Does Not Rotate.....	9-13

Table of Contents

9.2.2 Mixer Electrical Troubleshooting.....	9-14
9.2.3 Mixer Hydraulic Troubleshooting	9-19
9.3 Hose Troubleshooting	9-22
9.3.1 Symptom: Hose Does Not Heat.....	9-22
9.3.2 Hose Electrical Troubleshooting	9-22
9.3.3 Symptom: Trigger is not Working.....	9-27
9.3.4 RTD Sensor Ohms vs. Temperature	9-28
9.4 Pump Troubleshooting	9-30
9.4.1 Symptom: Material Does Not Dispense When the Pump is Activated.....	9-30
9.4.2 Pump Electrical Troubleshooting	9-31
9.4.3 Pump Hydraulic Troubleshooting.....	9-37
9.5 Engine Diagnostic Trouble Codes (DTC).....	9-38
9.5.1 How to use the Diagnostic Trouble Code Table.....	9-38
9.5.2 Engine DTC Table (47900N)	9-38
10.0 About the Illustrated Parts List	10-1
10.1 Ordering CrafcO Parts.....	10-1
10.2 Super Shot 250 Diesel Melter Assembly 44100.....	10-2
10.3 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N.....	10-8
10.4 Tank Assembly, All Models	10-14
10.5 Control Box Assembly, 44100	10-16
10.6 Control Box Assembly, 47900N.....	10-18
10.7 Engine Assembly: PN 44100	10-22
10.8 Engine Assembly: PN 47900N	10-24
10.9 Engine Assembly: PN 47900N Air Filter Side	10-26
10.10 Hydraulic Control Valve Assembly: PN 45420 All Models.....	10-28
10.11 Material Flow Control Assembly: PN 46060 All Models	10-30
10.12 Pump/Mixer Motor Assembly: PN 44832 All Models	10-32
10.13 Diesel Burner Assembly: PN 46380 All Models	10-34
10.14 Hydraulic Diagram: PN 26690 (44100)	10-36
10.15 Hydraulic Diagram: PN 26659N (47900N)	10-40
10.16 Diesel Fuel Line Schematic – 44100	10-46
10.17 Diesel Fuel Line Schematic – 47900N.....	10-50
10.18 Electrical Schematic: PN 44100	10-52
10.19 Electrical Schematic: PN 47900N.....	10-54
10.20 Air Compressor Assembly: PN 47480N (47900N)	10-56



Super Shot 250 Diesel Melter Part Manual

Table of Contents

10.21 Hydraulic Compressor Valve Assembly: PN 45425 (47900N).....	10-58
10.22 High Output Air Lance Assembly	10-60
10.23 Wand Assembly PN 52200.....	10-62
10.24 Optional Engine Cover for 44100.....	10-64
10.25 Optional Engine Cover for 47900N	10-66
10.26 Hot Air Lance (Option)	10-68
11.0 Tools and Accessories	11-1

List of Figures

Fig. 5-1 Hydraulic Fluid Level and Temp. Gauge	5-2
Fig. 5-2 Heat Transfer Oil Dip Stick.....	5-2
Fig. 6-1 Lug bolt Tightening Sequence	6-2
Fig. 6-2 Temperature Control Calibration.....	6-3
Fig. 6-3 Agitator and Pump Shaft Alignment	6-8
Fig. 6-4 Removal of Motor Mount Assembly	6-9
Fig. 6-5 Supporting the Agitator Away from the Material Pump	6-10
Fig. 6-6 Unbolting the Material Pump.....	6-11
Fig. 6-7 Cleaning of the Pump Mounting Plate	6-12
Fig. 6-8 Pump Drive Shaft Dry Fit to Material Pump.....	6-13
Fig. 6-9 New Material Pump Mounting	6-14
Fig. 6-10 Agitator Shaft and Paddles Mounting	6-15
Fig. 6-11 Pump Shaft Placement	6-16
Fig. 6-12 Pump Shaft to Hydraulic Pump Motor Placement	6-17
Fig. 6-13 Agitator Connecting Link.....	6-18
Fig. 6-14 Agitator Chain Tightening Steps.....	6-19
Fig.6-15 Switch Wire Location	6-21
Fig.6-16 Wire Routing.....	6-21
Fig.6-17 Terminal Block Wiring	6-22
Fig.6-18 Actuator Spring Location.....	6-22
Fig.6-19 Actuator / Trigger Assembly	6-23
Fig. 7-1 Standard Multimeter.....	7-2
Fig. 7-2 Clamp – On Amp Meter/Multimeter.....	7-3
Fig. 8-1 Diesel Burner Schematic	8-5
Fig. 8-2 Diesel Burner Electrode Adjustment	8-9
Fig. 8-3 Diesel Burner Air Settings.....	8-9
Fig. 8-4 Checking Din Plug Voltage	8-14
Fig. 8-5 Mixer Schematic	8-15
Fig. 8-6 Hydraulic Valve Pressure Setting.....	8-17
Fig. 8-7 Din Plug Layout	8-18
Fig. 8-8 Junction Box Voltage Testing.....	8-21

List of Figures

Fig. 8-9 Hose Circuit Schematic.....	8-22
Fig. 8-10 Junction Box Wiring	8-23
Fig. 8-11 Pump Schematic.....	8-33
Fig. 9-1 Diesel Burner Schematic.....	9-7
Fig. 9-2 Diesel Burner Electrode Adjustment.....	9-11
Fig. 9-3 Diesel Burner Air Settings	9-11
Fig. 9-4 Checking Din Plug Voltage.....	9-17
Fig. 9-5 Mixer Schematic	9-18
Fig. 9-6 Hydraulic Valve Pressure Setting	9-20
Fig. 9-7 Din Plug Layout.....	9-21
Fig. 9-8 Junction Box Voltage Testing.....	9-24
Fig. 9-9 Hose Circuit Schematic.....	9-25
Fig. 9-10 Junction Box Wiring	9-26
Fig. 9-11 Pump Schematic.....	9-36
Fig. 9-12 Engine Control Display DTC	9-38
Fig. 10-1 Super Shot 250 Diesel Melter: PN 44100.....	10-2
Fig. 10-2 Super Shot 250 Diesel Melter: PN 44100 (continued)	10-4
Fig. 10-3 Super Shot 250 Diesel Melter: PN 44100 (continued)	10-6
Fig. 10-4 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N	10-8
Fig. 10-5 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N (continued).....	10-10
Fig. 10-6 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N (continued).....	10-12
Fig. 10-7 Tank Assembly, All Models	10-14
Fig. 10-8 Control Box Assembly: 44100	10-16
Fig. 10-9 Control Box Assembly: 47900N.....	10-18
Fig. 10-10 Control Box Assembly : 47900N (continued).....	10-20
Fig. 10-11 Engine Assembly: 44100.....	10-22
Fig.10-12 Engine Assembly – 47900N	10-24
Fig. 10-13 Engine Assembly: 47900N Air Filter Side.....	10-26
Fig. 10-14 Hydraulic Control Valve Assembly: PN 45420 All Models.....	10-28
Fig. 10-15 Material Flow Control Assembly: PN 46060 All Models	10-30
Fig. 10-16 Pump/Mixer Motor Assembly: PN 44832 All Models.....	10-32

List of Figures

Fig. 10-17 Diesel Burner Assembly: PN 46380 All Models	10-34
Fig. 10-18 Hydraulic Diagram: PN 26690 (44100).....	10-36
Fig. 10-19 Hydraulic Diagram: PN 26690 (44100) continued	10-38
Fig. 10-20 Hydraulic Diagram: PN 26659N (47900N)	10-40
Fig. 10-21 Hydraulic Diagram: PN 26659N (47900N) continued	10-42
Fig. 10-22 Hydraulic Diagram: PN 26659N (47900N) continued	10-44
Fig. 10-23 Diesel Fuel Line Schematic – 44100	10-46
Fig. 10-24 Diesel Fuel Line Schematic – 44100 continued.....	10-48
Fig. 10-25 Diesel Fuel Line Schematic – 47900N	10-50
Fig. 10-26 Electrical Schematic: PN 44100	10-52
Fig. 10-27 Electrical Schematic: PN 47900N	10-54
Fig. 10-28 Air Compressor Assembly: PN 47480N (47900N).....	10-56
Fig. 10-29 Hydraulic Compressor Valve Assembly: PN 45425 (47900N)	10-58
Fig. 10-30 High Output Air Lance Assembly	10-60
Fig. 10-31 Wand Assembly PN 52200	10-62
Fig. 10-32 Optional Engine Cover for 44100	10-64
Fig. 10-33 Optional Engine Cover for 47900N	10-66
Fig. 10-34 Hot Air Lance (Option)	10-68

List of Tables

Table 2-1 Safety Symbols and Notices	2-3
Table 2-2 Safety Symbols and Notices (continued).....	2-4
Table 4-1 Machine Specifications.....	4-1
Table 5-1 Preparing the Machine for Start Up	5-1
Table 5-2 Starting the Burner	5-3
Table 5-3 Starting the Burner for Electric Hose (continued).....	5-4
Table 5-4 Starting the Burner for Electric Compressor	5-5
Table 5-5 Starting the Burner for Electric Compressor (continued).....	5-6
Table 5-6 Operating the Electric Hose	5-9
Table 5-7 Dispensing the Material.....	5-10
Table 5-8 Loading Material into the Sealant Tank	5-11
Table 5-9 Material Tank Depth Chart	5-12
Table 5-10 Shutting Down and Cleaning Out the Machine (44100)	5-13
Table 5-11 Shutting Down and Cleaning Out the Machine (47900N)	5-14
Table 5-12 Hose for Transport Instructions	5-15
Table 5-13 Overnight Heater Use.....	5-16
Table 5-14 Mounting a Skid Machine	5-17
Table 6-1 Air Compressor Maintenance Chart	6-1
Table 6-2 Maintenance Chart.....	6-4
Table 6-3 Service Instructions.....	6-5
Table 6-4 General Maintenance Parts.....	6-5
Table 6-5 Recommended Spare Parts	6-6
Table 6-6 Recommended Fluids and Lubricants	6-6
Table 6-7 Applicable Brand of Heat Transfer Oil	6-7
Table 6-8 Material Pump Replacement	6-8
Table 6-9 Material Pump Replacement (continued)	6-9
Table 6-10 Material Pump Replacement (continued)	6-10
Table 6-11 Material Pump Replacement (continued)	6-11
Table 6-12 Material Pump Replacement (continued)	6-12
Table 6-13 Material Pump Replacement (continued)	6-13
Table 6-14 Material Pump Replacement (continued)	6-14

List of Tables

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

List of Tables

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

List of Tables

Table 9-27 Pump Electrical Troubleshooting (continued)	9-33
Table 9-28 Pump Electrical Troubleshooting (continued)	9-34
Table 9-29 Pump Electrical Troubleshooting (continued)	9-35
Table 9-30 Pump Hydraulic Troubleshooting	9-37
Table 9-31 Engine DTC Table PN 47900N	9-38
Table 9-32 Engine DTC Table PN 47900N (continued).....	9-39
Table 9-33 Engine DTC Table PN 47900N (continued).....	9-40
Table 10-1 Super Shot 250 Diesel Melter: PN 44100.....	10-3
Table 10-2 Super Shot 250 Diesel Melter: PN 44100 (continued)	10-5
Table 10-3 Super Shot 250 Diesel Melter: PN 44100 (continued)	10-7
Table 10-4 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N	10-9
Table 10-5 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N (continued).....	10-11
Table 10-6 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N (continued).....	10-13
Table 10-7 Tank Assembly: All Models	10-15
Table 10-8 Control Box Assembly: 44100	10-17
Table 10-9 Control Box Assembly: 47900N	10-19
Table 10-10 Control Box Assembly : 47900N (continued).....	10-21
Table 10-11 Engine Assembly: PN 44100.....	10-23
Table 10-12 Engine Assembly: PN 47900N	10-25
Table 10-13 Engine Assembly: PN 47900N Air Filter Side	10-27
Table 10-14 Hydraulic Control Valve Assembly: PN 45420 All Models	10-29
Table 10-15 Material Flow Control Assembly: PN 46060 All Models	10-31
Table 10-16 Pump/Mixer Motor Assembly: PN 44832 All Models	10-33
Table 10-17 Diesel Burner Assembly: PN 46380 All Models	10-35
Table 10-18 Hydraulic Diagram: PN 26690 (44100).....	10-37
Table 10-19 Hydraulic Diagram: PN 26690 (44100 continued)	10-39
Table 10-20 Hydraulic Diagram: PN 26659N (47900N).....	10-41
Table 10-21 Hydraulic Diagram: PN 26659N (47900N continued)	10-43
Table 10-22 Hydraulic Diagram: PN 26659N (47900N continued)	10-45
Table 10-23 Diesel Fuel Line Schematic – 44100	10-47
Table 10-24 Diesel Fuel Line Schematic – 44100 (continued)	10-49

List of Tables

Table 10-25 Diesel Fuel Line Schematic – 47900N.....	10-51
Table 10-26 Electrical Schematic: PN 44100	10-53
Table 10-27 Electrical Schematic: PN 47900N.....	10-55
Table 10-28 Air Compressor Assembly: PN 47480N (47900N)	10-57
Table 10-29 Hydraulic Compressor Valve Assembly: PN 45425 (47900N)	10-59
Table 10-30 High Output Air Lance Assembly	10-60
Table 10-31 Wand Assembly PN 52200.....	10-63
Table 10-32 Optional Engine Cover for 44100	10-65
Table 10-33 Optional Engine Cover for 47900N.....	10-67
Table 10-34 Hot Air Lance (Option).....	10-69

Chapter 1 Introduction

1.0 About This Manual

This manual is supplied with each new CrafcO Super Shot 250 Diesel Melter. The manual assists your machine operators in the proper use of the melter applicator and provides information about the machine's mechanical functions.

Your CrafcO Super Shot 250 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 mouse is left-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 mouse is left-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-click on any section/heading in the bookmarks panel you will be sent to that page.

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 the 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. Check the oil each day before starting the burner. With the machine on a level surface, check the heat transfer oil level using the mark on the dipstick closest to the current oil temperature (0°F, 70°F, or 150°F) See Fig. 5-2 Heat Transfer Oil Dip Stick. Add oil if required. 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 [6.11 Temperature Control Calibration](#).
- Replace any hoses that show signs of wear, fraying or splitting.
- Make sure all fittings and joints are tight and do not leak each time the machine is used.
- Do not leave the machine unattended while the burner is lit.
- Tighten all bolts and screws every 100 hours of machine operation.

Chapter 2 Safety


2.4 California Proposition 65

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

2.4.1 All Crafco, Inc. Equipment

 **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov
26471N

2.4.2 All Crafco, Inc. Equipment with a diesel engine

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

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

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

26307

2.5 Towing or Driving for Transporting with Burner On

The burner in your Crafco machine is designed for operation only while the unit is parked or towed at slow speeds while applying sealant at a jobsite. When driving or towing this machine for transport, the burner shall be turned off. Operating the burner when transporting the machine is a violation of The Code of Federal Regulations, CFR Title 49, Part 392, Subpart G, 392.67 and may cause damage to the burner and/or machine.

CAUTION






The burner in your Crafco machine is designed for operation only while the unit is parked or towed at slow speeds while applying sealant at a jobsite. **When driving or towing this machine for transport, the burner shall be turned off.**

Chapter 2 Safety

2.6 Safety Symbols and Notices





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

Table 2-1 Safety Symbols and Notices

Symbol	Item	Remarks
WARNING	Warning	Refers to possible bodily injury or death.
CAUTION	Caution	Refers to possible equipment damage or operational malfunction.
	Severe Burn Hazard	Hot material can cause severe burns.
	Protective Shoes	Wear hard-soled work shoes.
	Protective Gloves	Wear heat-resistant gloves.
	Protective Face or Eye Wear	Wear face shield or safety glasses.
	Body Crush Hazard	Do not stand between trailer and hitch when hooking melter to truck.

Chapter 2 Safety

Table 2-2 Safety Symbols and Notices (continued)

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



Chapter 3 Warranty Information

3.0 Limited Warranty

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

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

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

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

CAUTION

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

Chapter 3 Warranty Information

3.1 Warranty Claim Instructions

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

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

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

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

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

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

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

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

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

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

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

For Warranty:
Crafco, Inc.
25527 South Arizona Avenue, Chandler, AZ
85248
Phone: (480) 655-8333 or (800) 528-8242
Fax: (480) 655-1712

For all other inquires:
Crafco, Inc.
6165 W Detroit Street,
Chandler, AZ 85226
Phone: (602) 276-0406 or (800) 528-8242
Fax: (480) 961-0513
CustomerService@crafco.com

Chapter 4 Machine Specifications

4.0 Machine Specifications

Table 4-1 Machine Specifications

Specification	PN 44100	PN 47900N
Vat Capacity	250 gallons (946.3 liters)	
Melt Capacity	2000 lbs. (907.1 kg.) per hour	
Heat Transfer Oil Required	47 gallons (177.9 liters) at 70°F	
Tank Construction	Double boiler type	
Tank Opening Size	Two 14" (355.6mm) x 18" (457.2mm)	
Maximum Heat Input	270,000 BTUs	
Burner and Temperature Control	Diesel-forced air thermostatic control	
Engine Isuzu Diesel	3 cylinder Model 3CH1 – 21.2 BHP @ 3000 RPM	4 cylinder Model 4LE2T – 48.0 BHP @ 2350 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.	
Axle Capacity	Dual 5,200 lbs. (2358 kg.)	
Tires	ST225/75R15 Load Range D	
Dry Weight Approximately	5,525 lbs. (2506 kg.)	6,300 lbs. (2857 kg.)
Diesel Tank Capacity	30 Gal (113L)	
Hydraulic Tank Capacity	24 Gal (90.8L)	
Air Compressor	N/A	100CFM (2,831 l/m) @ 125 PSI (8.61 bar)

Chapter 5 Operating Instructions


5.0 Operating Instructions

The Crafco Super Shot 250 Diesel Melter was developed to melt Crafco sealants. However, it works well with most road asphalt and federal specification crack or joint sealants.

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

5.1 Preparing the Machine for Start Up

Table 5-1 Preparing the Machine for Start Up

Step	Action
1	Fill the engine fuel tank with diesel fuel. Note: Use No. 1 Diesel fuel in cold weather and No. 2 Diesel fuel in warm weather
2	Check the oil level in the engine crankcase. (Refer to the manufacturer’s instruction for the engine.)
3	Check the hydraulic fluid level while at a temperature of 70°F (21.1°C). Add fluid if necessary. See 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. (21.1°C) The oil should be at the full mark on the dipstick. There are two other full marks representing 0°F (-17.8°C) and 150°F (65.6°C). See Fig. 5-2 Heat Transfer Oil Dip Stick . DO NOT overfill or spillage may occur when the oil is heated and expands.
5	Make sure all toggle switches are turned “OFF” and all temperature control dials are set to their minimum settings.
6	Check the oil level in the air compressor if this machine is so equipped.
WARNING	
	<p>The safe operation of this machine is the operator’s responsibility. Use extreme care when operating this machine; safety is the result of being careful and paying attention to details. Remember the diesel flame is approximately 2,200°F (1,204.4°C). Some exposed parts of the machine reach 500°F (260°C), the sealant 400°F (204.4°C), and the hydraulic fluid 180°F (85.2°C).</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, that shows any signs of wear, fraying, or splitting. Tighten all bolts, nuts, and screws every 100 hours.</p>

Chapter 5 Operating Instructions

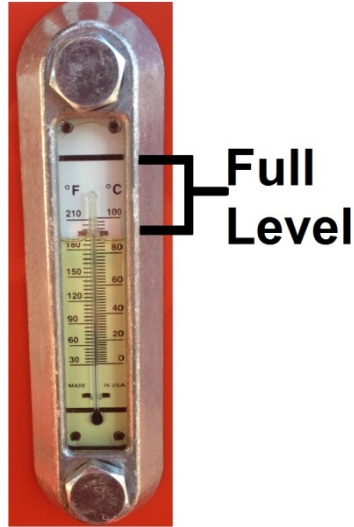


Fig. 5-1 Hydraulic Fluid Level and Temp. Gauge

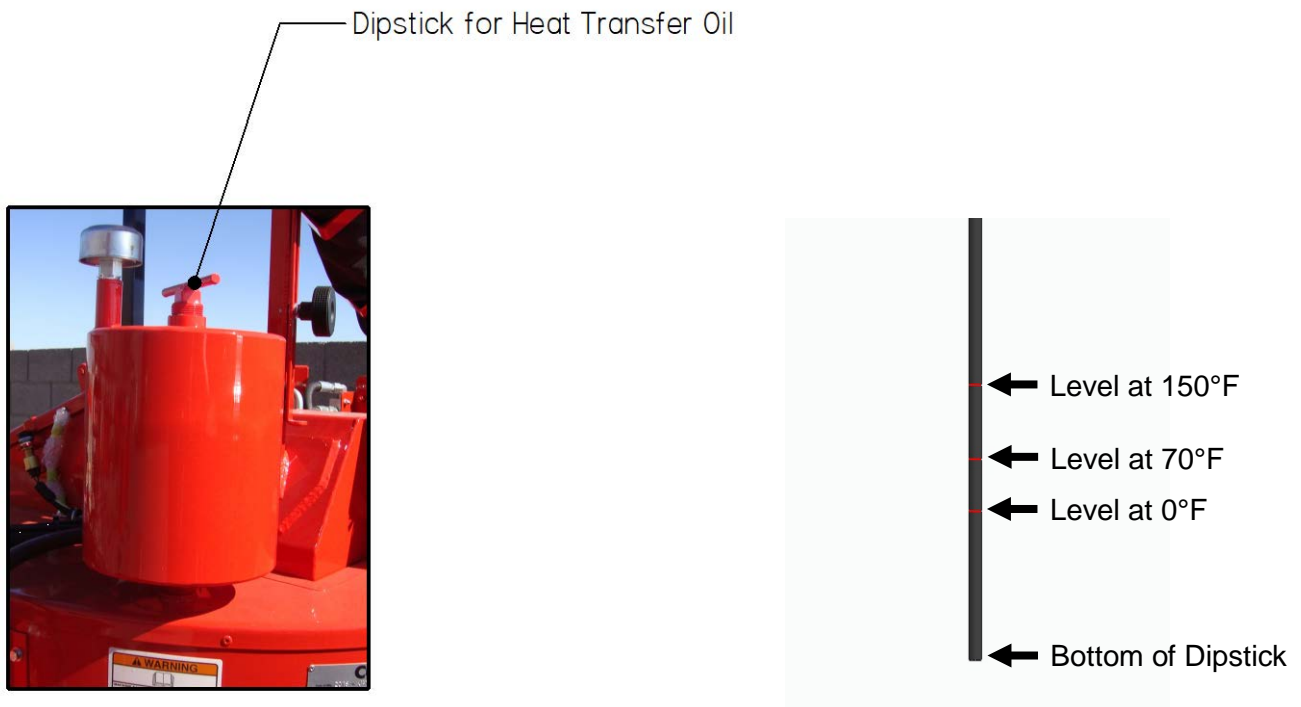


Fig. 5-2 Heat Transfer Oil Dip Stick

Chapter 5 Operating Instructions

5.2 Machine Start Up for 44100

Table 5-2 Starting the Burner

Step	Action
1	Fully open the exhaust stack cover.
2	Start the engine: <ol style="list-style-type: none"> a) Turn main power keyswitch to “ON” position b) Make sure engine controller is in AUTO mode (display should show “Waiting to Start”). If not in AUTO mode, press the AUTO mode button once c) Press the “RUN” button once. The engine will not crank immediately, it will first run the fuel pump and heat the glow plugs for several seconds, then engine will crank and start. d) Engine will run at 1450 RPM until the material temperature reaches 275F, at which time, the throttle solenoid on the engine will open the throttle to 2400 RPM. If the engine is started with a warm material tank (over 275F), the engine will run at 1450 RPM for 30 seconds, then the throttle solenoid will open the throttle to 2400 RPM.
3	Turn the “BURNER” toggle switch in the control box to the “ON” position. The red light marked “BURNER” will illuminate indicating that the material and hot oil temperatures are below set point. When the red light goes off this indicates the material or oil temperatures are up to the set point. Note: Just because this light is illuminated does not indicate the burner is actually working.
4	Set the heat transfer oil temperature at 500°F (260°C).
5	Set the material temperature to the manufacturer’s recommended temperature.
	<div style="background-color: yellow; text-align: center; padding: 5px;">CAUTION</div> <p>If the burner fails ignition after 3 attempts the “BURNER LOCKOUT” alarm will sound. To reset burner, hold the “RESET” toggle switch in the “DOWN” position for 5 seconds, then release. The burner should ignite. If the burner still does not ignite, refer to 8.1.1 Symptoms: Burner will Not Ignite to determine the malfunction.</p> <p>Important: The solid material in the tank melts first around the walls, and bottom. 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 temperature, but the material in the center 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.</p>
6	Allow the heat transfer oil to continue to heat.
7	When the material reaches 275°F (135°C), engage the mixer by turning the toggle switch at the hydraulic control panel to “MIXER” position. If the mixer does not move, allow the material to heat longer. Note: Mixer speed is preset at the factory and cannot be adjusted. The mixer cannot be engaged until the material reaches 275°F (135°C).

Chapter 5 Operating Instructions

Table 5-3 Starting the Burner for Electric Hose (continued)

Step	Action
	<p style="text-align: center;">CAUTION</p> <p>Jamming the mixer can cause the hydraulic oil to overheat and damage the machine.</p>
8	<p>The hose automatically turns “ON” when the material temperature reaches 275°F (135°C). The red light marked ‘HOSE” will illuminate when the hose control is calling for heat.</p>
9	<p>Adjust the temperature dial to the manufacturer’s recommended temperature. Note: The hose reaches operating temperature in approximately 30 minutes.</p>
10	<p>After the hose reaches the temperature set point, the light in the control box marked “HOSE” turns off.</p>
11	<p>Reduce the temperature to approximately 360°F (182.2°C). Note: We recommend that you run the hose at the suggested temperature setting.</p> <p>Important: The hose must reach 325°F (162.8°C) before dispensing can take place. If the hose does not dispense when the trigger is activated, allow the material to heat longer. If the hose still does not dispense, shut the machine down, locate and remove the plug in the line.</p>
	<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 control of more than 400°F (204.4°C). DO NOT move or bend the hose when cold: it can cause damage to the hose. DO NOT leave the hose cycling for longer than 30 minutes without dispensing material; coking can occur and permanently damage the hose. DO NOT remove the hose from the boom during operation or kinking will occur.</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 Machine Start Up for 47900N

Table 5-4 Starting the Burner for Electric Compressor

Step	Action
1	Fully open the exhaust stack cover.
2	Turn the main power key to the "ON" position. Allow engine controller to boot up.
2a	To start engine, press "Auto" then "RUN". Engine will preheat then start. The engine will start and run at 1000 RPM for 30 seconds, then the RPM will increase to medium RPM. When the material temperature reaches 275°F (135°C) or the compressor toggle switch is turned "ON" the RPM will increase to high RPM which is full throttle.
3	Turn the "BURNER" toggle switch in the control box to the "ON" position. The red light marked "BURNER" will illuminate indicating that the material and hot oil temperatures are below set point. When the red light goes off this indicates the material or oil temperatures are up to the set point. Note: Just because this light is illuminated does not indicate the burner is actually working.
4	Set the heat transfer oil temperature at 500°F (260°C).
5	Set the material temperature to the manufacturer's recommended temperature.
	CAUTION
	If the burner fails ignition after 3 attempts the "BURNER LOCKOUT" alarm will sound. To reset burner, hold the "RESET" toggle switch in the "DOWN" position for 5 seconds, then release. The burner should ignite. If the burner still does not ignite, refer to 8.1.1 Symptoms: Burner will Not Ignite to determine the malfunction.
	Important: The solid material in the tank melts first around the walls, and bottom. 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 temperature, but the material in the center of the tank is still solid. This is normal, and when the heated hose is ready for operation, most of the material in the tank will be melted and heated to the proper application temperature.
6	Allow the heat transfer oil to continue to heat.
7	When the material reaches 275°F (135°C), the mixer light will illuminate which indicates the mixer can be engaged by turning the toggle switch at the control panel to "FORWARD" position. If the mixer does not move, allow the material to heat longer. Note: Mixer speed is preset at the factory and cannot be adjusted. The mixer cannot be engaged until the material reaches 275°F (135°C).
	CAUTION
	Jamming the mixer can cause the hydraulic oil to overheat and damage the machine.
8	The hose automatically turns "ON" when the material temperature reaches 275°F (135°C). The red light marked "HOSE" will illuminate when the hose control is calling for heat.

Chapter 5 Operating Instructions

Table 5-5 Starting the Burner for Electric Compressor (continued)

Step	Action
9	Adjust the temperature dial to the manufacturer's recommended temperature. Note: The hose reaches operating temperature in approximately 30 minutes.
10	After the hose reaches the temperature set point, the light in the control box marked "HOSE" turns off.
11	Reduce the temperature to approximately 360°F (182.2°C). Note: We recommend that you run the hose at the suggested temperature setting.
	Important: The hose must reach 325°F (162.8°C) before dispensing can take place. If the hose does not dispense when the trigger is activated, allow the material to heat longer. If the hose still does not dispense, shut the machine down, locate and remove the plug in the line.
	<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 control of 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

5.4 Altitude Compensation System 44100

This unit may be equipped with an Altitude Compensation System. If so, there will be a small boxed housing mounted near the rear engine mounting leg on the curb side of the engine. The system is automatic during most operating conditions. However, if the machine is taken from above or below an altitude of 2,624 ft. (800 Meters) while the engine is running, the engine will need to be stopped and then restarted. There is a yellow indicator light that illuminates when the machine is above 2,624 ft. (800 Meters) indicating that the system is active.

5.5 Air Compressor: PN 47900N

There is one machine model in the Super Shot 250 series that includes an air compressor unit, which is designed to assist in the cleaning of debris from cracks and joints.

- Always use approved high pressure air hoses with properly installed fittings that are not frayed or worn.
- A cold air lance is supplied.
- For the 47900N, the engine RPM will increase to full RPM once the material temperature reaches 275°F (135°C) or if the compressor is switched to the “ON” position.
- If the compressor is not needed, turn off the toggle switch in the control box (labeled compressor).
- The compressor is operated hydraulically and runs continuously. When air is not being discharged, the compressor automatically reduces the air output to a minimum.
- There is an intentional air leak at the air muffler that provides lubrication of the compressor.
- Do not replace the air muffler with aftermarket parts as damage will occur to the compressor.
- The PN 47900N equipped with the 100 CFM air compressor used in high elevations.
 - The Tier 4 Final engine de-rates itself to produce cleaner emissions when the machine is above 8200ft (2500meters) elevation. Since the engine loses some of its power, you may not be able to run the compressor while the machine is heating, agitating and pumping sealant. If the compressor is used above that elevation, the engine will most likely stall. If the engine stalls, turn off the compressor, turn off the burner power switch, re-start the engine, turn on the burner power switch and continue use without the air compressor.
- For PN 47900N equipped with the 100 CFM air compressor, comes equipped with an air safety shut off valve. In the event of a hose rupture, this valve will significantly reduce the air flow to prevent injuries from a failing hose. This valve will also trigger if the compressor is started without the hose and wand connected. To reset valve, shut off compressor toggle switch for 30 seconds, then turn on the compressor.

Chapter 5 Operating Instructions

5.6 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, that runs the length of the hose to heat the material within the hose. The hose is covered with high temperature, durable rubber.

The Wand

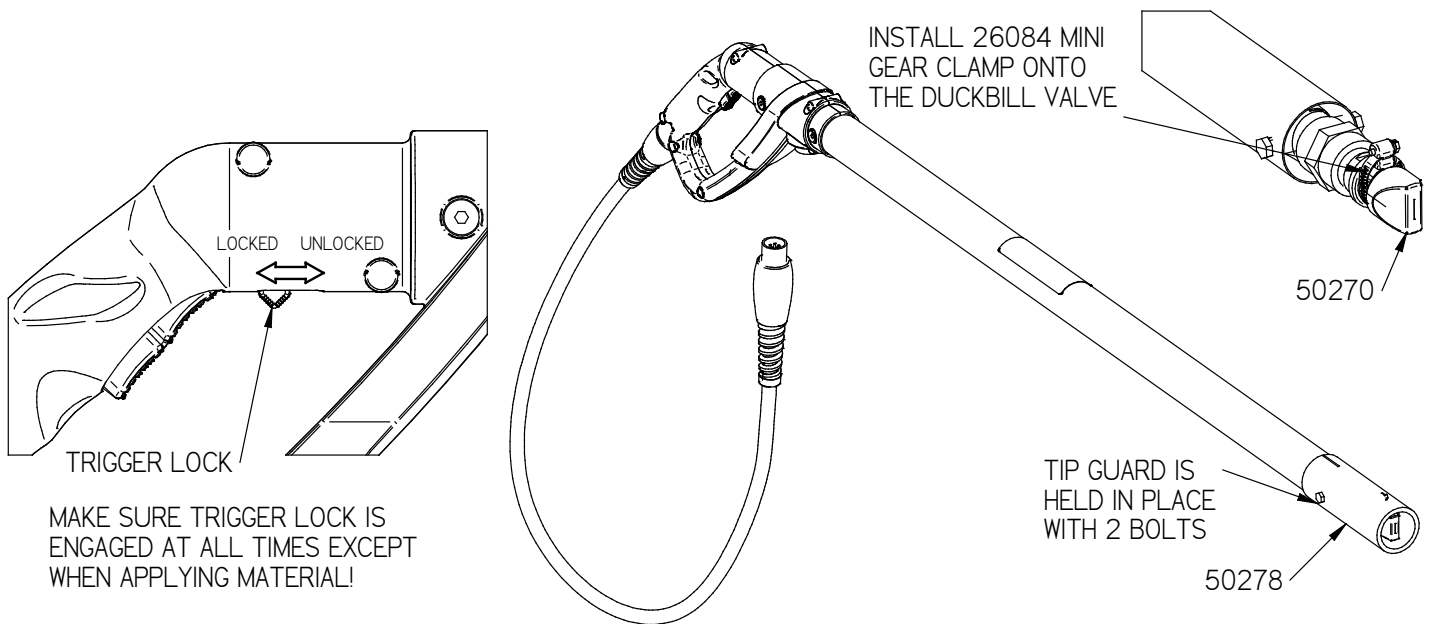
The wand has an aluminum tube to protect both the wand and the operator. The pistol grip actuator is equipped with an electric switch, which when depressed, sends a signal to actuate the pump. The wand is equipped with a trigger lock to prevent accidental pump actuation when it is not pumping material. 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 [11.0 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 a 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

5.7 Operating the Electric Hose


Table 5-6 Operating the Electric Hose

Step	Action
	<p style="text-align: center;">CAUTION</p> <p>Twisting and kinking of the electric hose (used on SS60, SS125, and SS250 Melter) causes the hose to fail; the electric heating wires are shorted out to the metal hose cover and the hose stops heating.</p> <p>Note: 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 hose over sharp edges such as the edge of the frame or tank.</p> <p>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.

Chapter 5 Operating Instructions

5.8 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 your body or at any other person. Hot materials 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 into the shoebox to facilitate material melting in the valve. Insert the wand tip for only a short time before proceeding.</p>
1	Allow the material to reach 380°F (139.3°C) and the hose to reach 380°F (139.3°C); or proper operating temperatures.
2	Turn the pump speed control to the lowest setting by turning the speed control knob fully clockwise.
3	With the wand tip inserted in the shoebox on top of the melter, depress the trigger on the wand and slowly increase the pump speed by turning the speed control knob counterclockwise until the pump motor starts to turn and material flows from the tip of the duckbill valve.
4	Adjust the pump speed to the desired rate of flow.
5	<p>Dispense the material as required.</p> <p>Note: The rate of flow can be varied while the pump is running by rotating the control knob.</p>

5.9 About the Active Screen Pump Protection

The pump is completely encircled by a protective screen. The screen prevents anything larger than ½ inch (1.27 cm) in size to pass from the sealant tank into the pump suction port. The screen continuously rotates 360 degrees around the pump whenever the sealant agitator is engaged. The active screen protects the pump from foreign object damage and self-cleans as it rotates around the sealant pump and suction port.


Chapter 5 Operating Instructions

5.10 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. This is a safety feature for the operator and should never be disabled for any reason.

WARNING
Personal injury could occur if this safety system is disabled.

Table 5-8 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. For approximate material volume see Table 5-9 Material Tank Depth Chart
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

5.10.1 Material Tank Depth Chart

Table 5-9 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	9.91	37.51	240.42	910.09
2	19.82	75.02	230.51	872.58
3	29.73	112.53	220.60	835.07
4	39.64	150.04	210.69	797.56
5	49.55	187.55	200.78	760.05
6	59.46	225.06	190.87	722.54
7	69.37	262.57	180.96	685.03
8	79.28	300.08	171.05	647.52
9	89.19	337.59	161.14	610.01
10	99.10	375.10	151.23	572.50
11	109.01	412.61	141.32	534.99
12	118.92	450.12	131.41	497.48
13	128.83	487.63	121.50	459.97
14	138.74	525.14	111.59	422.46
15	148.65	562.65	101.68	384.95
16	158.56	600.16	91.77	347.44
17	168.47	637.67	81.86	309.93
18	178.38	675.18	71.95	272.42
19	188.29	712.69	62.04	234.91
20	198.20	750.20	52.13	197.40
21	208.11	787.71	42.22	159.89
22	218.02	825.22	32.31	122.38
23	227.93	862.73	22.40	84.87
24	237.84	900.24	12.49	47.36
25	247.75	937.75	2.58	9.85
25.25	250.33	947.60	0.00	0.00

Chapter 5 Operating Instructions

5.11 Shutting Down and Cleaning Out the Machine (44100)

Table 5-10 Shutting Down and Cleaning Out the Machine (44100)

Step	Action
	CAUTION
	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.
1	Leaving the hose in the boom, swing the boom toward 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	Place the hose in the hose guide and secure with the Velcro straps.
4	Reverse the pump approximately 30 more seconds.
5	Turn the mixer toggle switch to the "CENTER" position.
5	Turn the burner toggle switch to the "OFF" position.
6	Stop the engine by pressing the "OFF" button on the engine controller. The engine will go into an "IDLE COOL" for ten seconds and then the engine will shut down and stop.
7	Turn the "MAIN POWER" switch to the "OFF" position.

Chapter 5 Operating Instructions

5.12 Shutting Down and Cleaning Out the Machine (47900N)

Table 5-11 Shutting Down and Cleaning Out the Machine (47900N)

Step	Action
	CAUTION
	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.
1	Leaving the hose in the boom, swing the boom toward 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	Place the hose in the hose guide and secure with the Velcro strap.
4	Reverse the pump approximately 30 more seconds.
5	Turn the mixer toggle switch to the "CENTER" position.
6	Turn the "BURNER" switch to the "OFF" position.
7	Stop the engine by pressing the "OFF" button on the engine controller. The engine will go into a "COOLDOWN" for ten seconds and then the engine will shut down and stop.
8	Turn off all power in the control box by turning the key to the "OFF" position.

Chapter 5 Operating Instructions

5.13 Storing the Electric Hose for Transport

Table 5-12 Hose for Transport Instructions

Step	Action
1	Leave the hose in the boom, swing the boom toward 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.
3	Place the hose in the hose guide and secure with the Velcro strap.
	<p style="text-align: center;">CAUTION</p> <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.

Chapter 5 Operating Instructions

5.14 Overnight Heater Use

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

Table 5-13 Overnight Heater Use

Step	Action
	<p style="text-align: center;">WARNING</p> <p>The overnight heaters are for overnight use only. If the overnight heater is used, the material must be dispensed the next day. If the material can't be dispensed, the machine needs to be heated to mixing temperatures, and agitated to prevent settling. If you don't dispense the material after 1 night's use, you risk damaging the material and possibly the machine due to settled material, which can harden in the bottom of the material tank</p>
1	Attach each heater to a suitable extension cord.
2	Attach each heater to its own outlet rated for 15 amps minimum.
	<p style="text-align: center;">CAUTION</p>
	Attaching both heaters to the same outlet will most likely pop the circuit breaker inline from the power source. Combining both heaters together will draw too much amperage for most common 15 amp circuits.
	<p style="text-align: center;">WARNING</p> <p>Suitable extension cord size requirements for 110 Volt use: 25-50 FT • 16-20 Amps • 12 Gauge (Heavy Duty) or 10 Gauge (Extra Heavy Duty) 100 FT • 16-20 Amps • 10 Gauge (Extra Heavy Duty)</p> <p>Suitable extension cord size requirements for 220 Volt use: 25-50 FT • 8-10 Amps • 14 Gauge (Medium Duty) or 12 Gauge (Heavy Duty) 100 FT • 8-10 Amps • 12 Gauge (Heavy Duty)</p> <p>Failure to use the correct size extension cord could result in damage and possible fire!</p>
3	Disconnect the heater when using the machine's burner system.
	<p style="text-align: center;">CAUTION</p>
	Do not use the heater without heat transfer oil in the tank. Doing so will overheat and damage the heater, and it will have to be replaced.

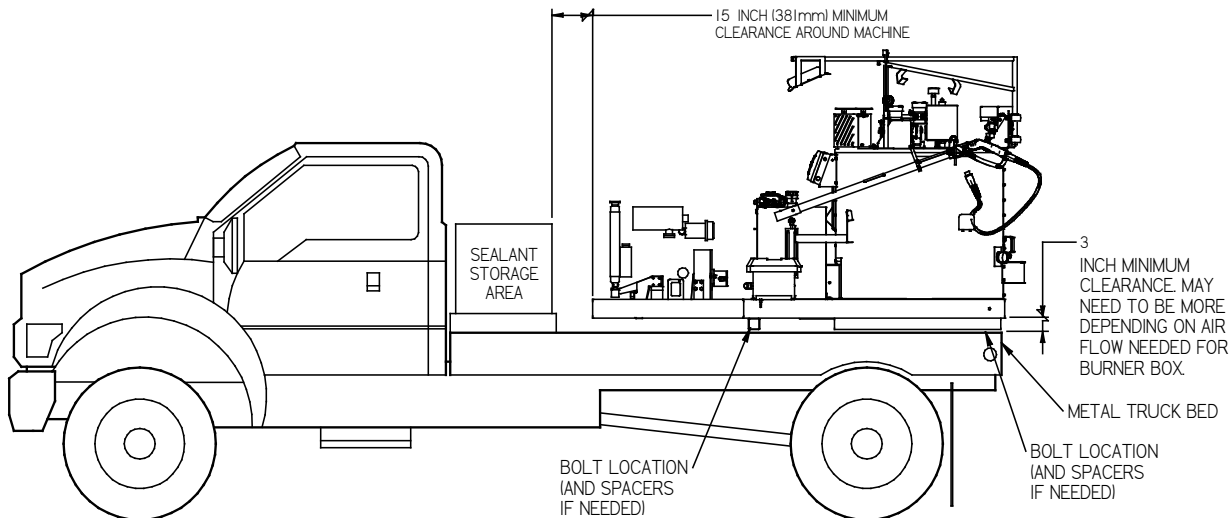
Chapter 5 Operating Instructions

5.15 Mounting a Skid Machine

Table 5-14 Mounting a Skid Machine

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

TYPICAL SKID MOUNT GUIDELINES



Chapter 5 Operating Instructions

5.16 Shot Timer Option

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

5.17 Storing the Machine

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

Evidence that moisture has collected in the heat transfer oil is a constant popping noise. If this popping noise is heard, warm the heat transfer oil to 300°F (149°C) for two to three hours to evaporate the moisture. Failure to follow this procedure will cause the heat transfer oil to overflow the tank resulting in possible machine damage and/or personal injury.

Best practice is to check in the material tank prior to starting the burner. If water is present, try and remove as much as possible. If the water is not noticed prior to starting the machine, heat the material to 300°F (149°C) for two to three hours to evaporate the moisture. Failure to follow this procedure will cause the material to overflow the tank resulting in possible machine damage and/or personal injury.

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

Chapter 6 Maintenance Instructions

6.0 Maintenance Instructions

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

6.1 Engine

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

6.2 Air Compressor

Table 6-1 contains the recommended service intervals for the air compressor, as well as the part numbers for the maintenance kits. Also refer to the manufacturer's operating and maintenance instructions for the air compressor.

Table 6-1 Air Compressor Maintenance Chart

Use Every	Kit Description	Part No.
2500 Hrs.	Maintenance Kit A, Air filter service kit	45328A
5000 Hrs.	Maintenance Kit B, Oil Filter service kit	45328B
10,000 Hrs.	Maintenance Kit C, Separator service kit	45328C

6.3 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.

6.4 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.

6.5 Wheel Bearing

Pack the wheel bearing every 24,000 miles (38,624 km) or every two years, whichever comes first. Use a good grade of bearing grease.

6.6 Material Sensor Tube

Check for heat transfer oil in tube every 50 hours of operation. 2 ounces (59.1 ml) required.

Chapter 6 Maintenance Instructions

6.7 Cleaning Material Tank and Sensor Area

The material tank needs to be cleaned every year, or as needed, for proper operation. As the machine is used, material builds up around the tank walls and sensor guard. The built up material prevents heat from getting to the fresh material and causes longer heat up times. The built up material will also prevent the material temperature sensor from reading accurately because it becomes insulated from the fresh material. The coked material needs to be scraped or chipped from the tank walls. The area between the sensor and sensor guard needs to be cleaned also for proper temperature sensing. An air chisel with various sized blades usually works best to break up the material and remove it from the walls. Once the walls and sensor guard areas are cleaned, remove all the loose chunks from the tank, and vacuum out any smaller pieces.

6.8 Lug Nuts

Torque all nuts/bolts before first road use and after each wheel removal. Check and torque after the first 10 miles (16 km), 25 miles (40 km), and again at 50 miles (80 km). Check periodically thereafter.

Torque in stages as follows:

First stage 20-25 foot-pound (ft-lb) (89-111 N)

Second stage 50-60 foot pound (ft-lb) (222-266 N)

Third stage 90-120 foot pound (ft-lb) (400-534 N)

Tighten bolts and nuts in the sequence shown in [Fig. 6-1 Lug bolt Tightening Sequence](#).

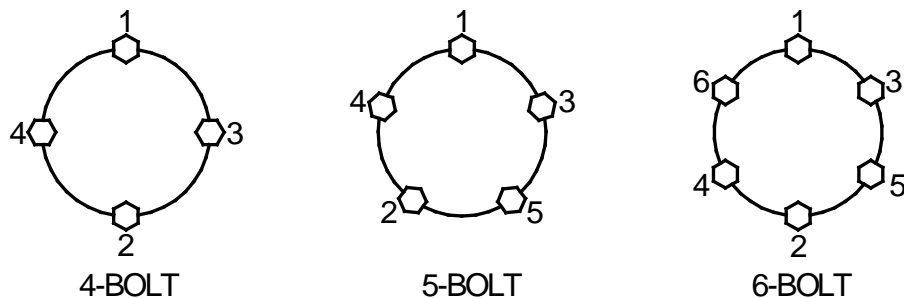


Fig. 6-1 Lug bolt Tightening Sequence

6.9 Brakes

Check the brakes daily.

6.10 Tongue Jack

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

Chapter 6 Maintenance Instructions

6.11 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 Temperature Control Calibration)

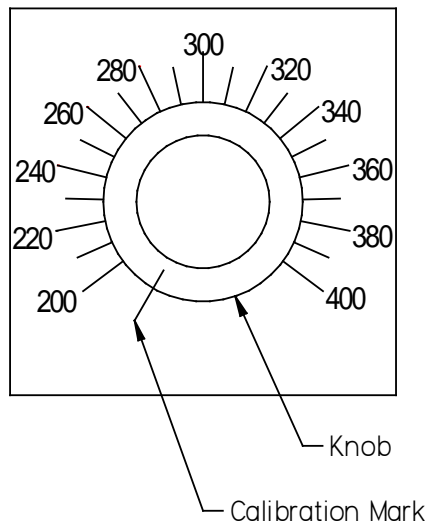


Fig. 6-2 Temperature Control Calibration

6.12 Cleaning the Melter

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

Chapter 6 Maintenance Instructions

6.13 Maintenance Chart

Table 6-2 Maintenance Chart

Possible Cause	Procedure	Hours			
		8	50	250	500
Engine Check Oil Level	Refer to the manufacturer's instructions for the engine	X			
Engine Air Filter(s)	Change the primary filter when restriction indicator says to. Safety filter is there to protect the engine if the main filter becomes damaged, meaning an increase in dust for the safety. Check the safety filter when changing the primary filter, - if it shows excessive dirt or the restriction indicator is still high after servicing the primary filter then the safety filter needs to be changed. See Fig. 10-13				
Other Engine Maintenance	Refer to the manufacturer's operating and maintenance instructions for the engine				
Material Sensor Tube	Check for HTO fluid		X		
	Add	As needed			
Heat Transfer Oil	Check	X			
	Change				X
Hydraulic Oil	Check	X			
	Change				X
Hydraulic Oil Filter	Change			X	
Burner	Check burner box insulation				X
	Clean CAD cell				X
	Check Electrodes				X
	Check Flame Retainer/Head				X
	Replace burner nozzle				X
Wheel Bearings	Clean and re-pack using a good grade of bearing grease	Every 24,000 miles (38,624 km) or two years			
Tongue Jack	Grease using a good grade of bearing grease	Once a year			
Air Compressor Oil	Check		X		
	Change	Once a year			
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 6-4 General Maintenance Parts](#).

Chapter 6 Maintenance Instructions

6.14 Service Instructions

Table 6-3 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 6-5 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 6-2 Maintenance Chart

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

6.15 General Maintenance Parts

Table 6-4 General Maintenance Parts

Quantity	Description	Machine	Part No.
1	Burner Fuel Filter	47900N	41867
1	Engine Fuel Filter	44100	41867
1	Engine Pre-Fuel Filter	47900N	47176N
1	Engine Fuel Filter	47900N	47167N
1	Engine Oil Filter	44100	45389
1	Engine Oil Filter	47900N	47168N
1	Engine Air Filter	44100	45391
1	Engine Air Filter	47900N	47169N
1	Nozzle, Burner 1.65x80B	All	41881
1	Hydraulic Oil Filter	All	45438
Table 6-6	Hydraulic Oil	All	Table 6-6
Table 6-6	Heat Transfer Oil	All	Table 6-7

Chapter 6 Maintenance Instructions

6.16 Recommended Spare Parts

Table 6-5 Recommended Spare Parts

Quantity	Description	Machine	Part No.
1	Temperature Controller, Material	All	51672
1	Temperature Controller, Electric Hose	All	51691
1	Temperature Controller, Hot Oil	All	43391
1	DC Controller	All	42335
1	Coupling, Fuel Pump	All	41970
1	Electric Hose, 18'	All	52405
1	Relay (Crank, Burner and Compressor)	47900N	51673

6.17 Recommended Fluids and Lubricants

Table 6-6 Recommended Fluids and Lubricants

Application	Recommended	Full Point	Machine No.
Fuel	Diesel #1 Cold Climate Diesel #2 Warm Climate	30 Gal (113 l)	All Models
Engine Oil	Refer to engine manual	3 Qt. (2.8 l)	PN 44100
		2.75 Gal (10.4 l)	PN 47900N
Hydraulic Oil	Shell AW Hydraulic 46	24 Gal (90 l)	All Models
Heat Transfer Oil	Shell Turbo T 68 (Group II)	47 Gal (177 l)	All Models
Air Compressor Oil	Mattei Rotoroil 8000 F2 (Crafco PN 26017)	1.1 Gal (4 l)	PN 47900N

Legend:

PN 44100: Super Shot 250 Diesel Melter

PN 47900N: Super Shot 250 Diesel Melter 100 CFM Compressor

Chapter 6 Maintenance Instructions

6.18 Applicable Brands of Heat Transfer Oil

Table 6-7 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.

6.19 Typical Heat Transfer Oil Specifications

ISO	68
Flash Point, COC	445°F (229.4°C)
Viscosity @ 100°F-SUS	325
Viscosity @ 210°F-SUS	50
Viscosity Index	95-100
Pour Point	0°F (-17.8°C)
Carbon Residue	1%

Chapter 6 Maintenance Instructions

6.20 Material Pump Replacement

Table 6-8 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.
	<p style="text-align: center;">WARNING</p> <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 both the agitator and pump shafts until the connecting link and set screws are accessible. (See Fig. 6-3 Agitator and Pump Shaft Alignment)



Fig. 6-3 Agitator and Pump Shaft Alignment

Chapter 6 Maintenance Instructions

Table 6-9 Material Pump Replacement (continued)

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

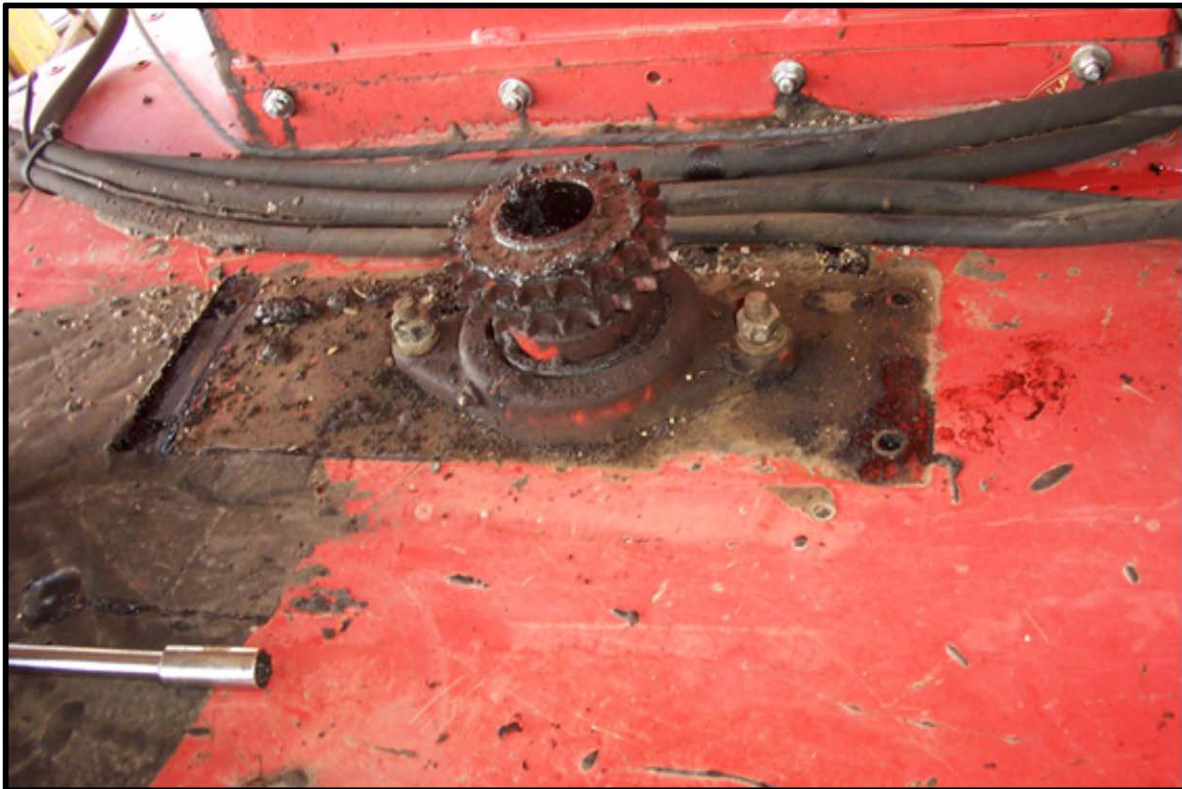


Fig. 6-4 Removal of Motor Mount Assembly

Chapter 6 Maintenance Instructions

Table 6-10 Material Pump Replacement (continued)

Step	Action
12	When the unit has cooled sufficiently, remove the six (6) bolts holding the paddles on top of the screen.
13	Remove the paddles from the tank.
14	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.



Fig. 6-5 Supporting the Agitator Away from the Material Pump

Chapter 6 Maintenance Instructions

Table 6-11 Material Pump Replacement (continued)


Step	Action
15	Remove the six (6) bolts attaching the pump to the tank. Note: A clean pump was used in the figure below for clarity.
16	Lift the pump from the sealant tank.
	<p style="text-align: center;">WARNING</p> <p>Crush Hazard. The pump weighs approximately 90 pounds (40.8 kg). 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>



Fig. 6-6 Unbolting the Material Pump

Chapter 6 Maintenance Instructions

Table 6-12 Material Pump Replacement (continued)

Step	Action
17	Clean any sealant from the top of the pump mounting plate and clean the shaft holes. (See Fig. 6-7 Cleaning of the Pump Mounting Plate)
CAUTION	
	Premature pump wear results if the pump mounting plate and bolt holes are not properly cleaned.



Fig. 6-7 Cleaning of the Pump Mounting Plate

Chapter 6 Maintenance Instructions

Table 6-13 Material Pump Replacement (continued)

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



Fig. 6-8 Pump Drive Shaft Dry Fit to Material Pump

Chapter 6 Maintenance Instructions

Table 6-14 Material Pump Replacement (continued)

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



Fig. 6-9 New Material Pump Mounting

Chapter 6 Maintenance Instructions

Table 6-15 Material Pump Replacement (continued)

Step	Action
19	Crafcro, Inc. recommends that you use a new screen assembly to ensure the agitator and paddles have good threads to secure with, along with new hardware.
20	Remove the paddles from the old screen assembly and bolt them to the new screen assembly, using (10) ½"-13 x 1" bolts with (10) ½" grade 8 washers. The use of Loctite on the threads before assembling is also recommended. Torque these bolts to 80 lb-ft.
21	Place the material screen and paddle assembly onto the material pump. Lower the agitator shaft down onto the screen assembly and secure it with (4) ½"-13 x 1" bolts with (4) ½" grade 8 washers. The use of Loctite on the threads before assembling is also recommended. Torque these bolts to 80 lb-ft.



Fig. 6-10 Agitator Shaft and Paddles Mounting

Chapter 6 Maintenance Instructions

Table 6-16 Material Pump Replacement (continued)

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



Fig. 6-11 Pump Shaft Placement

Chapter 6 Maintenance Instructions

Table 6-17 Material Pump Replacement (continued)

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



Fig. 6-12 Pump Shaft to Hydraulic Pump Motor Placement

Chapter 6 Maintenance Instructions

Table 6-18 Material Pump Replacement (continued)

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

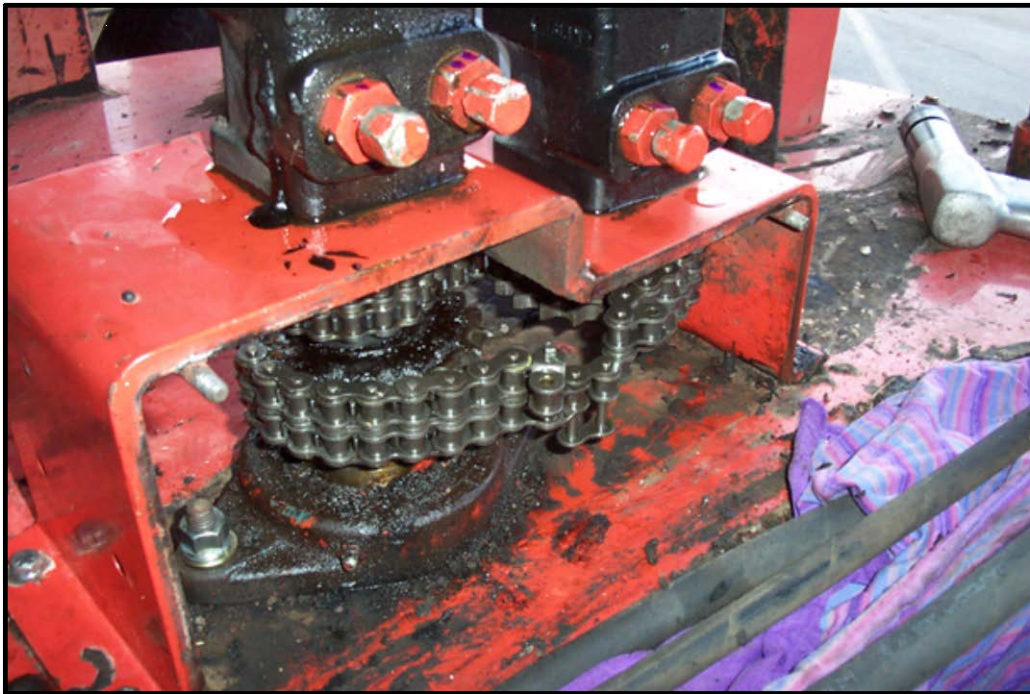


Fig. 6-13 Agitator Connecting Link

Chapter 6 Maintenance Instructions

Table 6-19 Material Pump Replacement (continued)

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

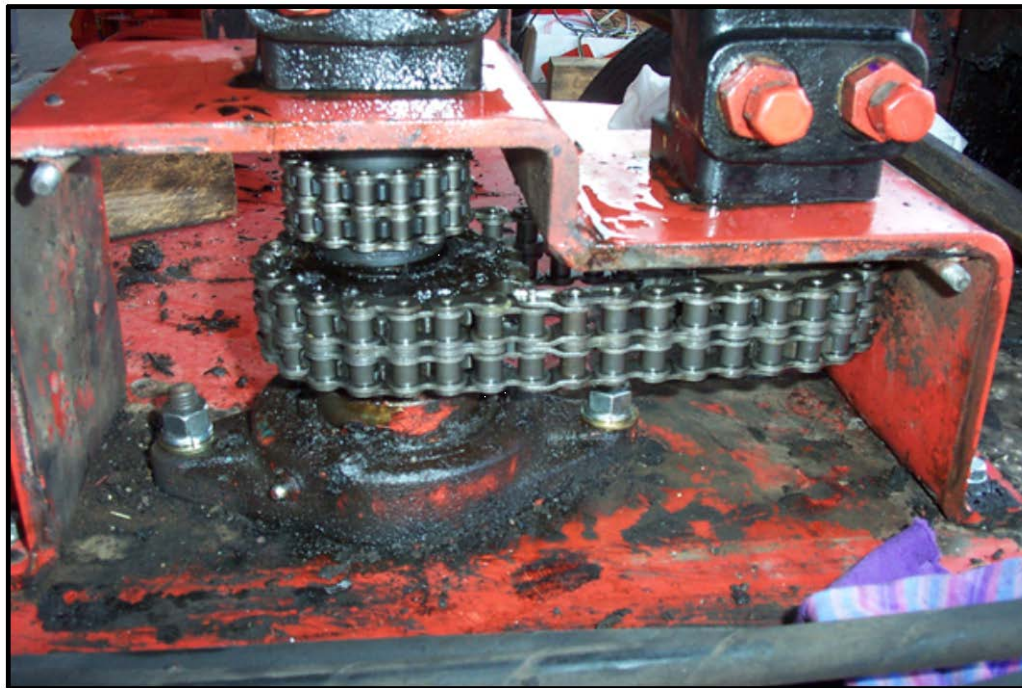


Fig. 6-14 Agitator Chain Tightening Steps

Chapter 6 Maintenance Instructions

6.21 Wand Repair Instructions

The following sections will address how to replace the wand handle, wand cable, switch, and terminal block of the 52200 wand assembly. Actuator, actuator lock, and spring can also be replaced. See section for parts breakdown.

6.21.1 Cable Replacement

1. Disconnect the cable from the electric hose. Lay wand on flat surface with socket head screws facing up.
2. Remove (7) #10-32 x 1" socket head screws and (2) 1/4-20 x 1/2" socket head screws.
3. Carefully remove top handle half. **Caution:** Actuator pin may lift actuator and spring from bottom handle half. Do not lose spring or pin.
4. Remove red and orange wire from switch.
5. Remove green, white, and black wires from terminal block.
6. Remove cable from handle.
7. Replace cable in handle. Note: Look for flats on strain relief of cable that correspond to flats on handle.
8. Install red wire on top of switch (see [Fig.6-15 Switch Wire Location](#)), then install orange wire on (NO) terminal (top rear of switch).
9. Strip green, white, and black wires 3/8" and twist wires strands then install (**Note** white black wire is routed under switch see [Fig.6-16 Wire Routing](#)) on open terminals of terminal block. Make sure to install completely under the clamp before tightening screws. Torque screws to 16 in-lbs. Bend all (3) wires over the top of terminal block (see [Fig.6-17 Terminal Block Wiring](#)).
10. Replace top wand handle half.
11. Use blue Locktite® on all external handle screws before installation. Install (7) #10-32 x 1" socket head screws hand tight, then install (2) 1/4-20 x 1/2" socket head screws hand tight. Now torque all #10-32 screws to 12 in-lbs. and all 1/4-20 screws to 25 in-lbs.
12. Reconnect cable to electric hose.

6.21.2 Switch Replacement

1. Follow steps 1-4 from [6.21.1](#) above.
2. Remove (2) #4-40 x 1/2" pan head screws from switch, then remove switch from handle.
3. See [Fig.6-18 Actuator Spring Location](#) and [Fig.6-19 Actuator / Trigger Assembly](#) for proper assembly of actuator to switch.
4. Replace switch and install (2) #4-40 x 1/2" screws and tighten.
5. Follow Steps 10-12 from [6.21.1](#) above.

6.21.3 Terminal Block Replacement

1. Follow steps 1-4 from [6.21.1](#) above.
2. Remove (2) #10-32 x 5/8" round head machine screw from terminal block then remove terminal block from handle.
3. Replace terminal block and install (2) #10-32 x 5/8" screws and tighten.
4. Follow steps 10-12 from [6.21.1](#) above. If actuator, pin, and spring need to be reinstalled, see [Fig.6-18 Actuator Spring Location](#) and [Fig.6-19 Actuator / Trigger Assembly](#).

Chapter 6 Maintenance Instructions**6.21.4 Wand Handle Replacement**

1. Follow steps 1-6 from 6.21.1 above.
2. Remove actuator, actuator lock, pin, and spring.
3. Remove (2) #4-40 x 1/2" pan head screws from switch, then remove switch from handle.
4. Remove (2) #10-32 x 5/8" round head machine screw from terminal block then remove terminal block from handle.
5. Flip wand over and remove the remaining (2) 1/4-20 x 1/2" screws from the handle. Remove handle from wand tube.
6. Install new handle by reversing previous steps.

**Fig.6-15 Switch Wire Location****Fig.6-16 Wire Routing**

Chapter 6 Maintenance Instructions



Fig.6-17 Terminal Block Wiring



Fig.6-18 Actuator Spring Location

Chapter 6 Maintenance Instructions

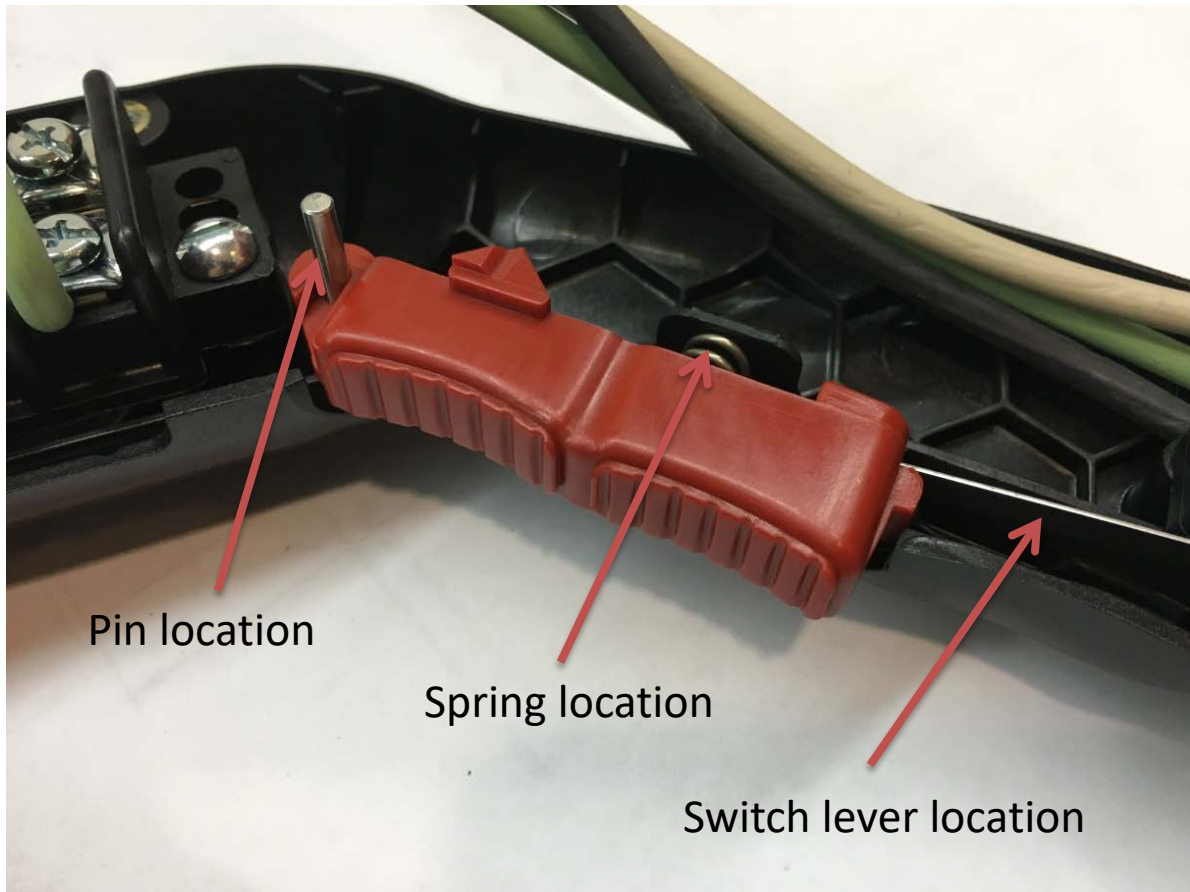


Fig.6-19 Actuator / Trigger Assembly

Chapter 6 Maintenance Instructions

6.22 Burner Fuel Filter Replacement

For machines that have a separate fuel filter for the burner, follow the steps below to replace the fuel filter.

Table 6-20 Burner Fuel Filter Replacement

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

Chapter 7 How to Use a Multimeter

7.0 How to Use a Multimeter

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

The electric hose and wand uses 24-volt 3-phase alternating current (AC). The AC power is from the generator which hangs under the radiator. This system has no reference to ground so there is no possibility of electrical shock unless you are between 2 of the phases. **NOTE: ONLY CHECK AMPERAGE ON A HOSE WITH A CLAMP-ON AMP METER.** (See [Fig. 7-2 Clamp – On Amp Meter/Multimeter](#))

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

7.1 Checking DC Voltage with a Multimeter

Connect the probes to the meter.

Set the range to a position that includes 12-volts or higher. (See [Fig. 7-1 Standard Multimeter](#))

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 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. (See [Fig. 7-1 Standard Multimeter](#))

7.3.2 How to Check RTD Sensor

Set to dial Ohms Ω . If your meter has different ranges set to 2K or 2000 ohm range. (See [Fig. 7-1 Standard Multimeter](#))

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

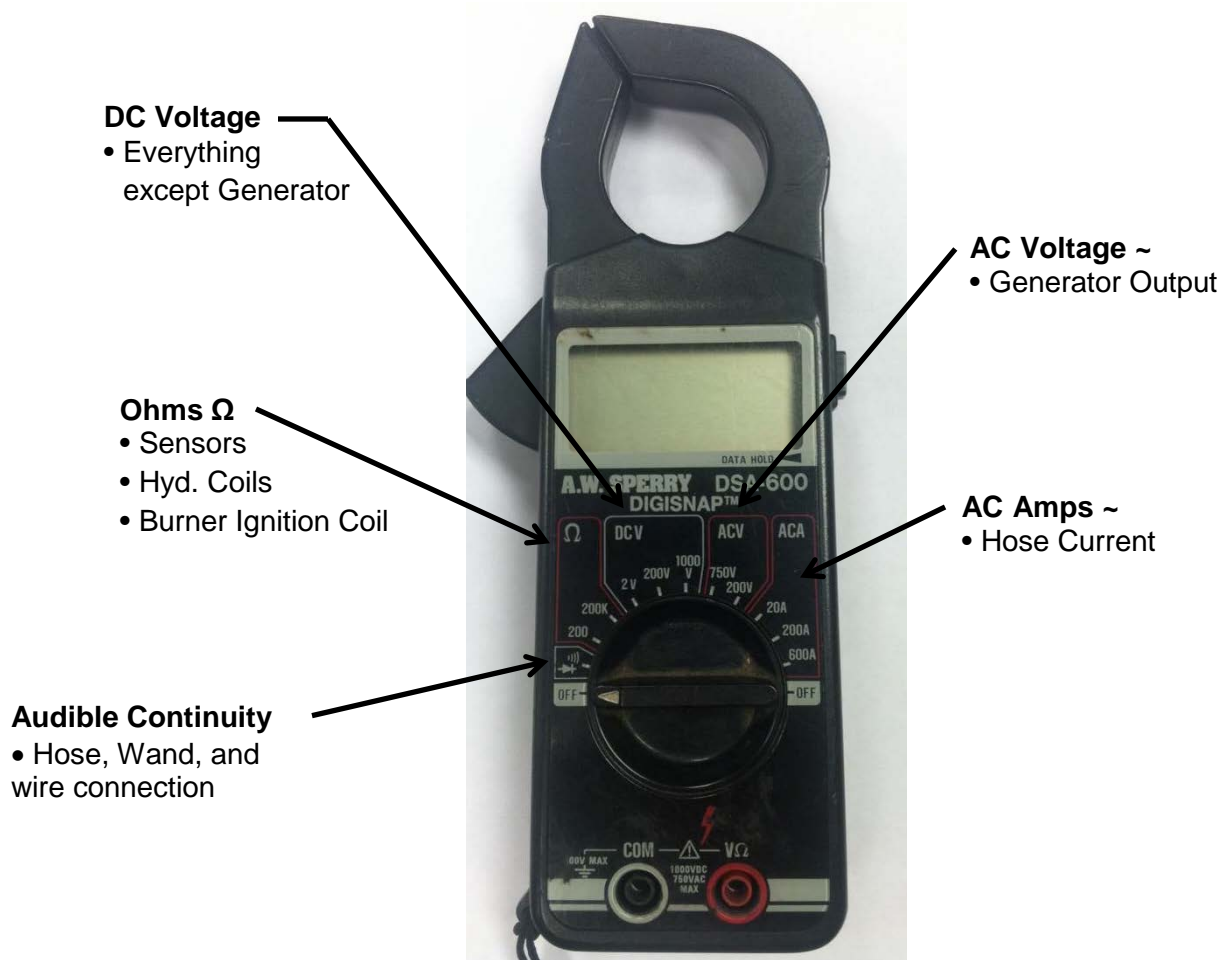


Fig. 7-2 Clamp – On Amp Meter/Multimeter

Chapter 8 Troubleshooting (44100)

8.0 Troubleshooting (44100)

8.1 Diesel Burner Troubleshooting

8.1.1 Symptoms: Burner will Not Ignite

Table 8-1 Basic Visual Troubleshooting

Step	Possible Cause	If . . .
1	Start Troubleshooting at the control box. Is the diesel engine running?	<ul style="list-style-type: none"> • Yes, go to Step 2. • No, start the engine. • 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.
2	Is the "MAIN POWER" key switch in the "ON" position?	<ul style="list-style-type: none"> • Yes, go to Step 3. • No, turn the key switch to the "ON" position.
3	Is the "BURNER" toggle switch in the "ON" position?	<ul style="list-style-type: none"> • Yes, go to Step 4. • No, turn the toggle switch to the "ON" position.
4	Are both the Material and Hot Oil temperature dials set to proper operating temperatures?	<ul style="list-style-type: none"> • Yes, go to Step 5. • No, set the Material according to the type of sealant you are using and the Hot Oil 100°F above the Material set point.
5	Are both the Material and Hot Oil temperature displays reading a three digit positive number?	<ul style="list-style-type: none"> • Yes, go to Step 6. • No, go to Table 8-3 Burner Electrical Troubleshooting, Step 2a.
6	Is the red "Burner" light "ON"?	<ul style="list-style-type: none"> • Yes, go to Step 7. • No, go to Table 8-3 Burner Electrical Troubleshooting, Step 4.
7	Is the diesel tank full?	<ul style="list-style-type: none"> • Yes, go to Step 8. • No, fill your tank or make sure you have enough fuel for the day.
8	Did you run the diesel tank low on fuel or empty?	<ul style="list-style-type: none"> • Yes, you need to bleed your burner, go to Table 8-12 Bleeding the Diesel Burner. • No, go to Step 9.

Chapter 8 Troubleshooting (44100)

Table 8-2 Basic Visual Troubleshooting (continued)

Step	Possible Cause	If . . .
9	Is there smoke coming out of the exhaust stack?	<ul style="list-style-type: none"> • Yes go to Table 8-7 Smoke Coming Out of Exhaust Stack. • No, go to Step 10.
10	Is your burner working properly, but it seems like it takes a lot longer 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.

8.1.2 Burner Electrical Troubleshooting

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 yellow and black wires at the burner plug?	<ul style="list-style-type: none"> • Yes, go to Step 4. • No, go to Step 1a.
1a	Is there 12Vdc between the yellow wire on the burner relay in the control box and the black wire on the relay?	<ul style="list-style-type: none"> • Yes, check for poor connection or broken wire between the burner relay in the control box and the plug on the burner. • No, go to Step 1b.
1b	Is there 12Vdc between WHT/RED wire on the burner relay in the control box and the black wire on the relay?	<ul style="list-style-type: none"> • Yes, go to Step 2. • No, check for poor connection or broken wire between the burner relay in the control box and the burner reset switch.
2	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.
2a	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 (44100)

Table 8-4 Burner Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
3	Is there 12Vdc between the positive and negative battery post? If this check is done while the engine is running the reading should be 13.8 volts.	<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	Is there 12Vdc between the green wire in the burner plug and the black wire in the burner plug?	<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-CH1-S" on hot oil PAKSTAT and nearby ground source (black wire)?	<ul style="list-style-type: none"> • Yes, check for loose or broken wires between burner plug and PAKSTAT. • No, go to Step 5.
5	Is there 12Vdc between gray wire labeled "GRY-1" on hot oil PAKSTAT and terminal #5 black wire of the oil PAKSTAT	<ul style="list-style-type: none"> • Yes, replace hot oil PAKSTAT. • No, go to Step 5a.
5a	Is there 12Vdc between the gray wire on the material PAKSTAT and terminal #8 black wire of the material PAKSTAT	<ul style="list-style-type: none"> • Yes, check for loose or broken wires between hot oil PAKSTAT and the material PAKSTAT. • No, go to Step 6a.
6a	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 6b.
6b	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 6c.
6c	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 7.
7	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 8.

Chapter 8 Troubleshooting (44100)

Table 8-5 Burner Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
8	Is there 12Vdc between bottom terminal (orange wire) of burner ON/OFF toggle 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 9.
9	Is there 12Vdc between middle terminal (red wire) of burner ON/OFF toggle switch and nearby ground source (black wire)?	<ul style="list-style-type: none"> • Yes, replace switch. • No, go to Step 10.
10	Is there 12Vdc between the “Main Power Switch” (red-2 wire) and nearby ground source (black wire)?	<ul style="list-style-type: none"> • Yes, check for loose or broken wires between those two points. • No, go to Step 11.
11	Is there 12Vdc between the “Main Power Switch” (red-3 wire) and nearby ground source (black wire)?	<ul style="list-style-type: none"> • Yes, replace contact block. • 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.
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 the red wire on top-left terminal of ignition switch and nearby ground source (black wire)?	<ul style="list-style-type: none"> • Yes, check for loose or broken wires between of ignition switch and bottom terminal of circuit breaker. • No, go to Step 13a.
13a	Is there 12Vdc between red wire on both red wires on the crank lockout relay in the control box (left relay next to the burner relay) and nearby ground source (black wire)?	<ul style="list-style-type: none"> • Yes, power on one red wire only, replace the crank lockout relay. • No power on either red wire on the crank lockout relay, 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 15.
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 (44100)

Table 8-6 Burner Electrical Troubleshooting (continued)

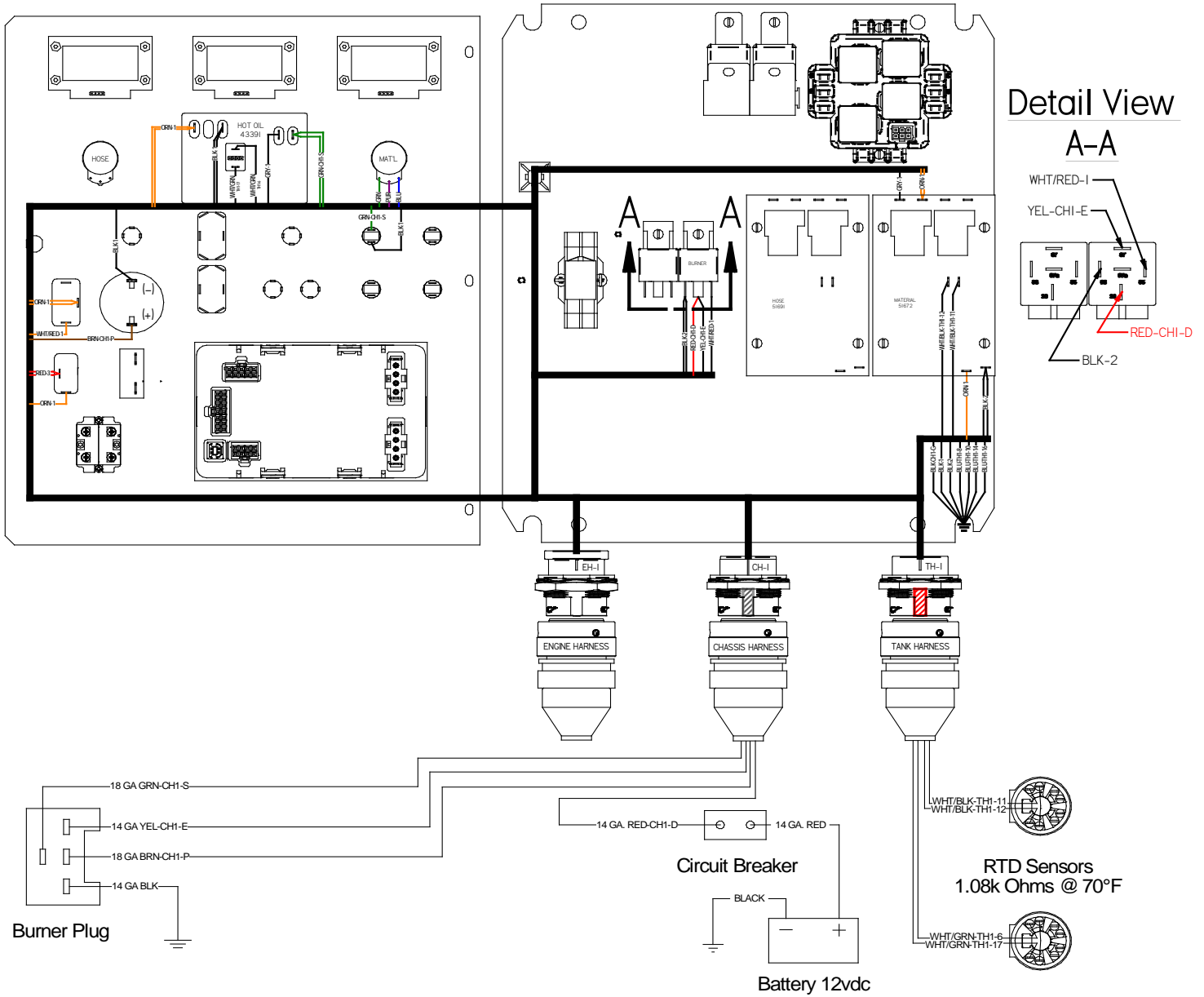


Fig. 8-1 Diesel Burner Schematic

Chapter 8 Troubleshooting (44100)

8.1.3 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
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.

8.1.4 Burner Lights but Shuts Down After 15 Seconds

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

Step	Possible Cause	If . . .
1	Does the CAD EYE have soot or dirt on the lens?	<ul style="list-style-type: none"> • Yes, clean cad eye lens with a soft cloth. • No, go to Step 2.
2	Are the two yellow wires for the CAD EYE loose or broken?	<ul style="list-style-type: none"> • Yes, repair or replace as needed. • No, go to Step 3.
3	Is the CAD EYE faulty?	<ul style="list-style-type: none"> • Yes, replace CAD EYE. • No, call a Crafco Inc. service technician.

Chapter 8 Troubleshooting (44100)

8.1.5 Testing 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.

8.1.6 Burner Fuel Solenoid Testing

Table 8-10 Burner Fuel Solenoid Test

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 (44100)

8.1.7 Burner Ignition Coil Testing

Table 8-11 Burner Ignition Coil Test

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.

8.1.8 Bleeding the Burner

Table 8-12 Bleeding the Diesel 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.

NOTE: The fuel line to the burner is plumbed to have the burner be self-priming. Ensure the "Main Power" and "Burner" switch is "ON" and burner fuel pump will start circulating fuel through the fuel lines, which removes all air bubbles automatically, since it has a return line to the fuel tank.

Chapter 8 Troubleshooting (44100)

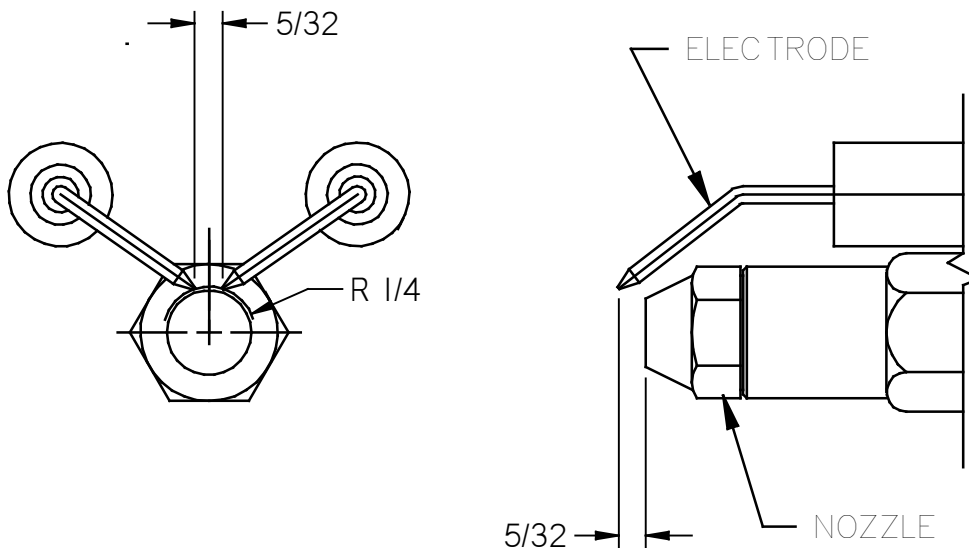


Fig. 8-2 Diesel Burner Electrode Adjustment

Air Shutter = 8
 Air Band = 0
 Fuel Pressure = 140 PSI
 Adjustment Plate = 3

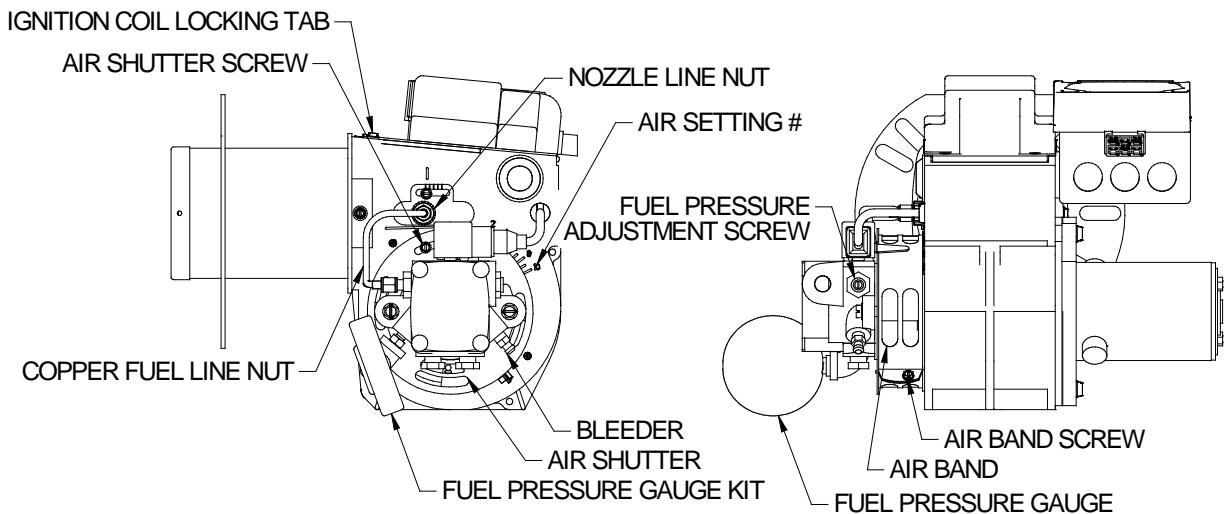


Fig. 8-3 Diesel Burner Air Settings

Chapter 8 Troubleshooting (44100)

8.1.9 Sealant is 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 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 (44100)

8.2 Mixer Troubleshooting

8.2.1 Symptom: Mixer Does Not Rotate

Table 8-14 Basic Visual 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 3. • No, go to Table 8-15 Mixer Electrical Troubleshooting
3	Are both of the loading doors closed?	<ul style="list-style-type: none"> • Yes, go to Step 4. • No, shut both loading doors.
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 un-melted 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 (44100)

8.2.2 Mixer Electrical Troubleshooting

Note: Use [Fig. 8-5 Mixer Schematic](#) while troubleshooting the mixer electrical system.

Table 8-15 Mixer Electrical Troubleshooting

Step	Possible Cause	If . . .
1	Is the amber light "ON" on the Din Plug when the "Mixer" toggle switch is in the "Forward" position? (For forward din plug location. Refer to 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 8-17 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 8-17 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 wires)? (With the "Mixer" toggle switch in the "Forward" position.) See Fig. 8-7 Din Plug Layout .	<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 wires)?	<ul style="list-style-type: none"> • Yes, replace mixer toggle switch • No, go to Step 3.
3	Is there 12Vdc between both lids switches red, red/blk and red/wht wires and a nearby ground source? (Check both red, red/blk and red/wht wires on the bottom of the lid switch with the lid closed. Check each lid switch one at a time, This unit has two.)	<ul style="list-style-type: none"> • Yes, on both red wires check for loose connections or broken wires between lid switch and control box. • Yes, on only one red wire when the lid is closed. Readjust the lid switch so that the lid completely depresses the switch, and then recheck for 12Vdc. If the same result happens, replace the lid switch. • No, go to Step 4.

Chapter 8 Troubleshooting (44100)

Table 8-16 Mixer Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
4	Check for 12Vdc at red wire labeled Red TH1-21 and pink wire labeled Pink-1 on the hose PAKSTAT terminal #9 and terminal #8 ground source (black wire)?	<ul style="list-style-type: none"> • Yes on both, check for loose connections or broken wires between lid switch and hose board. • No, go to Step 4a.
4a	Is there 12Vdc between the Material PAKSTAT terminal #2 pink wire and terminal #8 black ground wire? (Refer to Fig. 8-5 Mixer Schematic.)	<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, if this is the case then the diesel burner would not be working properly. Recheck the steps list above or contact a Crafco, Inc. customer service technician for help.

Chapter 8 Troubleshooting (44100)



Fig. 8-4 Checking Din Plug Voltage

Chapter 8 Troubleshooting (44100)

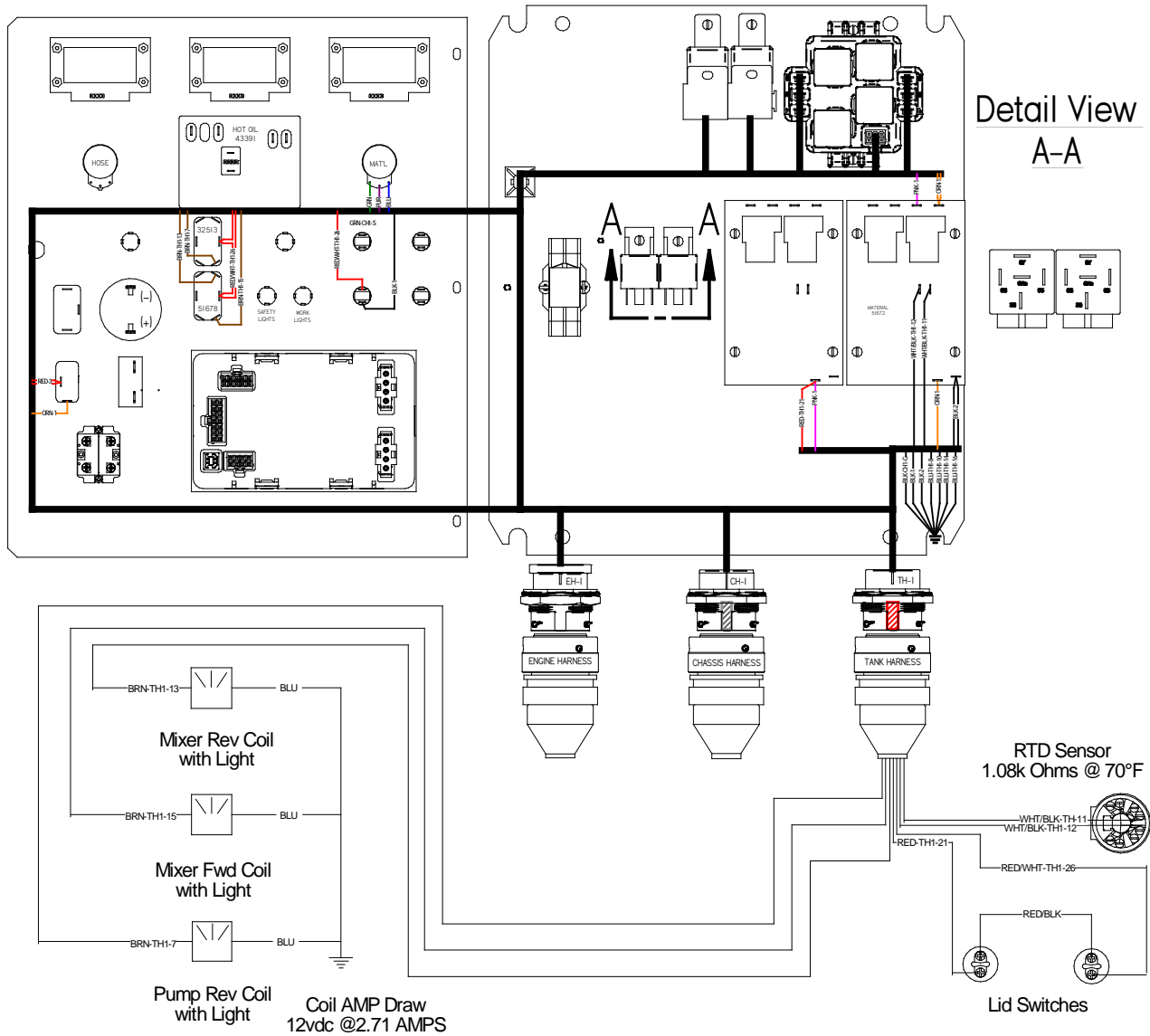


Fig. 8-5 Mixer Schematic

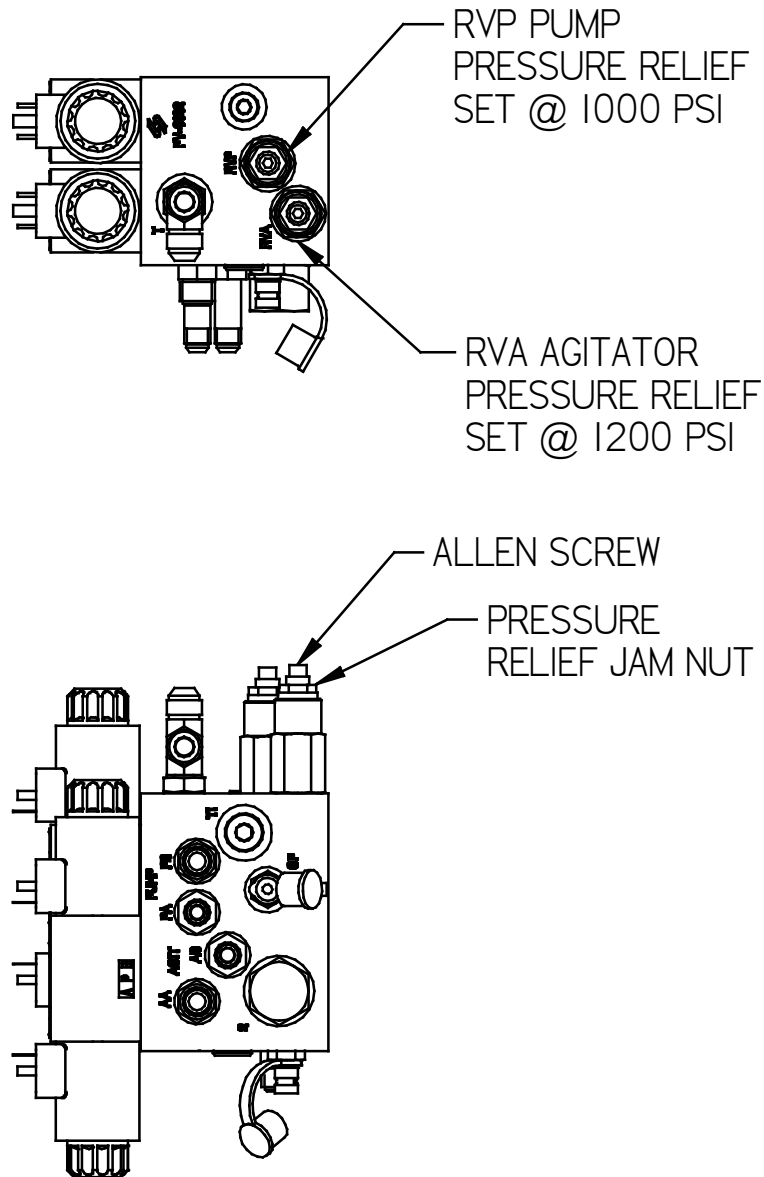
Chapter 8 Troubleshooting (44100)

8.2.3 Mixer Hydraulic Troubleshooting

Table 8-17 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, and 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, contact a Crafco, Inc. customer service technician for help. • No, replace the hydraulic pump.

Chapter 8 Troubleshooting (44100)



Agitation Direction = Counterclockwise
Hydraulic Flow Standard = 9.04 GPM @ 2400 RPM

Fig. 8-6 Hydraulic Valve Pressure Setting

Chapter 8 Troubleshooting (44100)

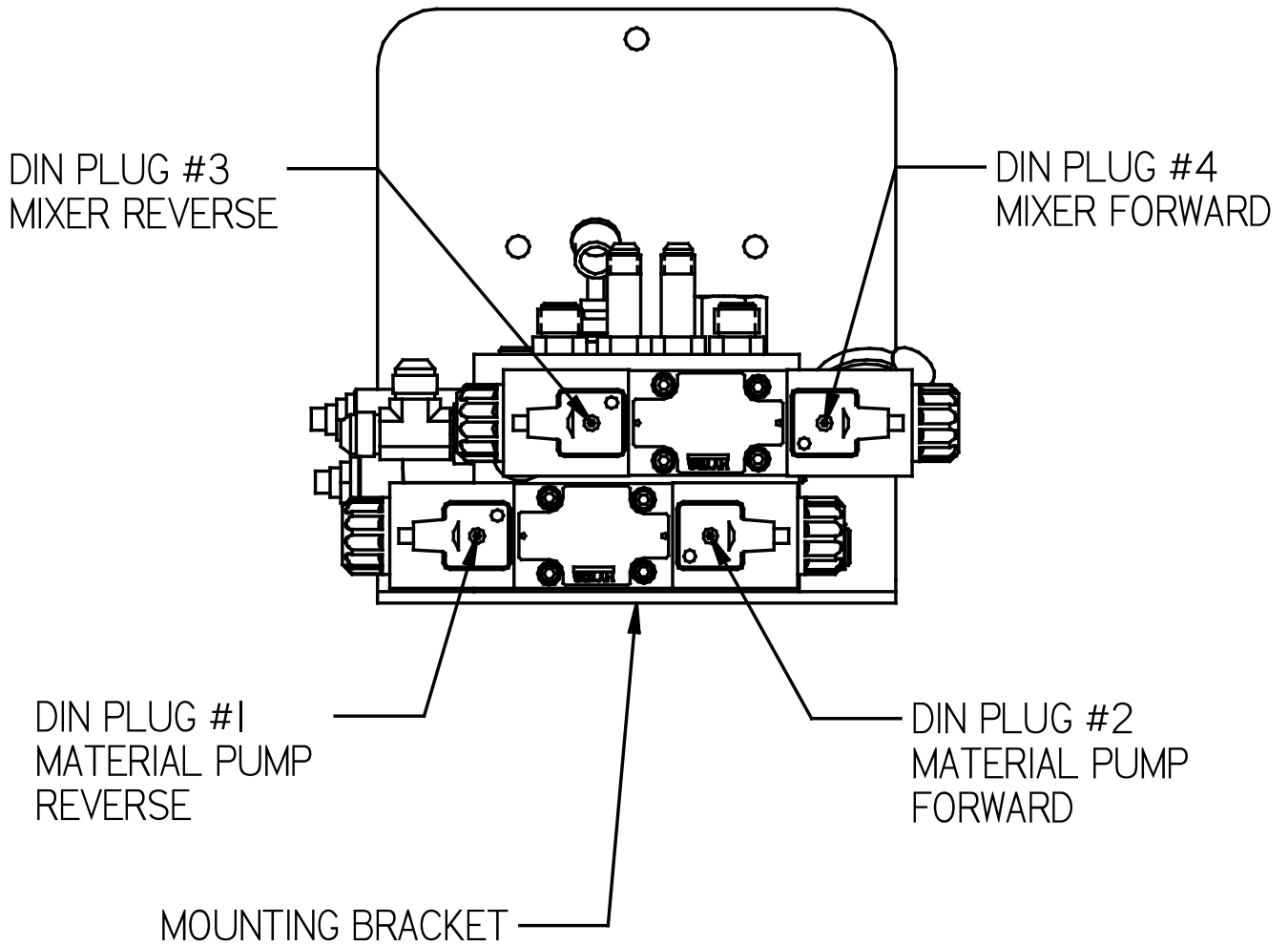


Fig. 8-7 Din Plug Layout

Chapter 8 Troubleshooting (44100)

8.3 Hose Troubleshooting

8.3.1 Symptom: Hose Does Not Heat

Table 8-18 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 8-19 Hose 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 8-19 Hose Electrical Troubleshooting

8.3.2 Hose Electrical Troubleshooting

NOTE: Use [Fig. 8-9 Hose Circuit Schematic](#) while troubleshooting the hose electrical system.

Table 8-19 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. See Fig. 8-8 Junction Box Voltage Testing .	<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 30-35 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.

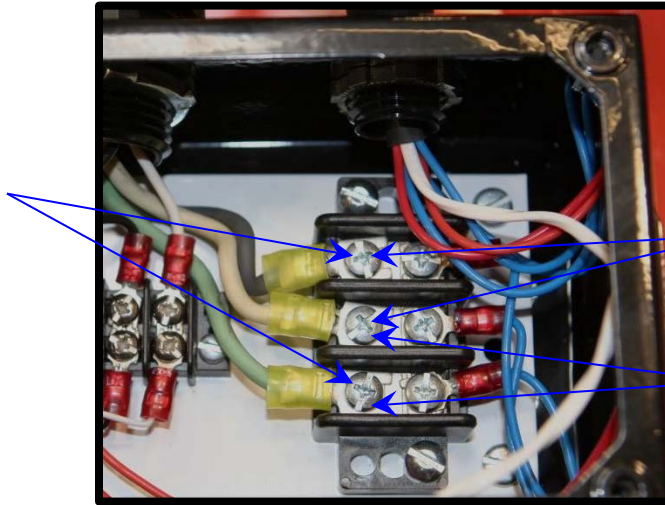
Chapter 8 Troubleshooting (44100)

Table 8-20 Hose 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 8-22 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 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 “BATT” terminal on the generator. • No, go to Step 6.
6	<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 7.
7	<p>Is there 12Vdc between Hose PAKSTAT pink wire terminal #9 and black wire terminal #8?</p>	<ul style="list-style-type: none"> • Yes, check for loose or broken wires between terminal #9 and terminal #3. • No, go to Step 8.
8	<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 wire between terminal #9 and terminal #1. • No if this is the case then the diesel burner would not be working properly. Recheck the steps list above or contact a CrafcO, Inc. customer service technician for help.

Chapter 8 Troubleshooting (44100)

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

Chapter 8 Troubleshooting (44100)

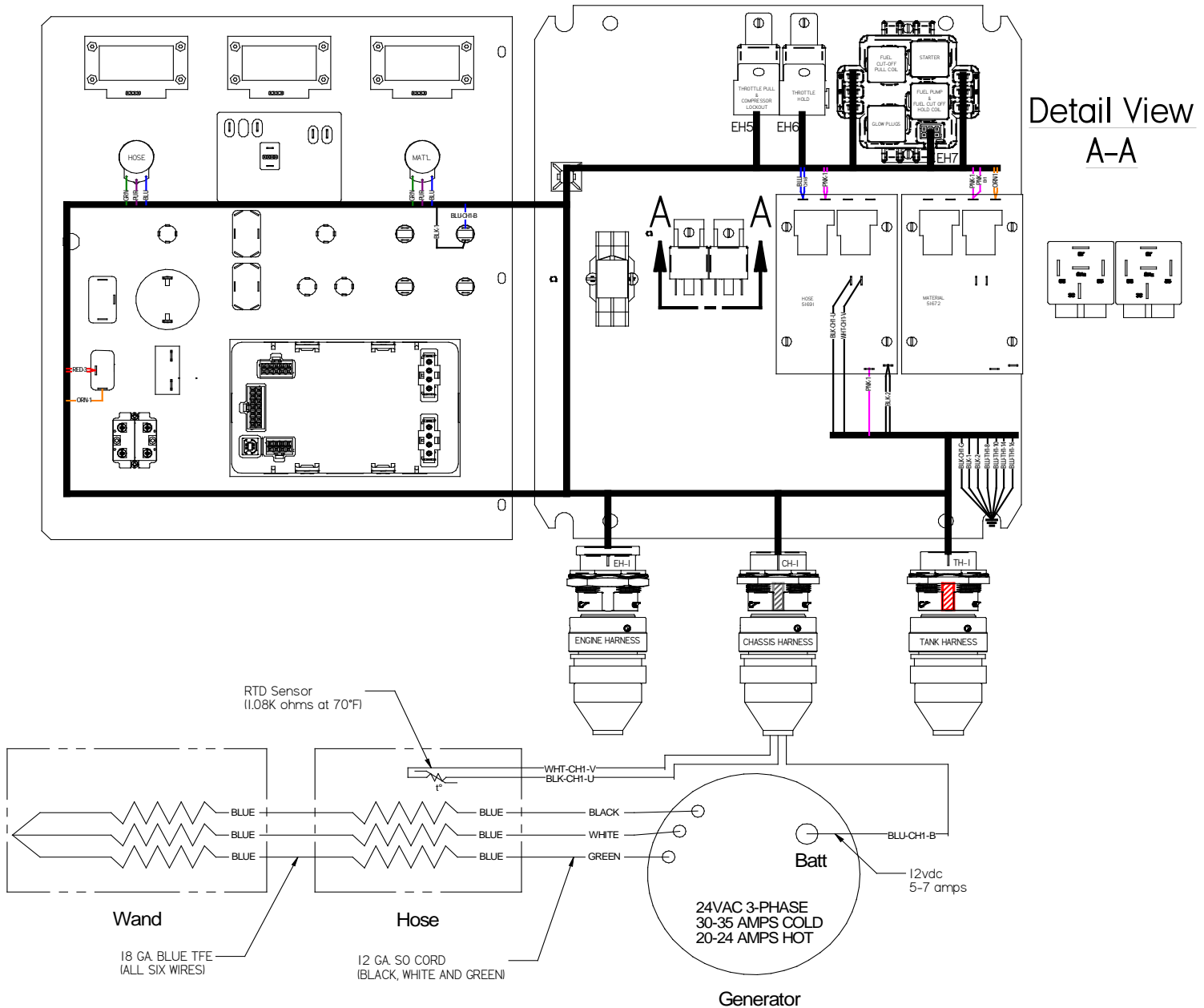


Fig. 8-9 Hose Circuit Schematic

Chapter 8 Troubleshooting (44100)

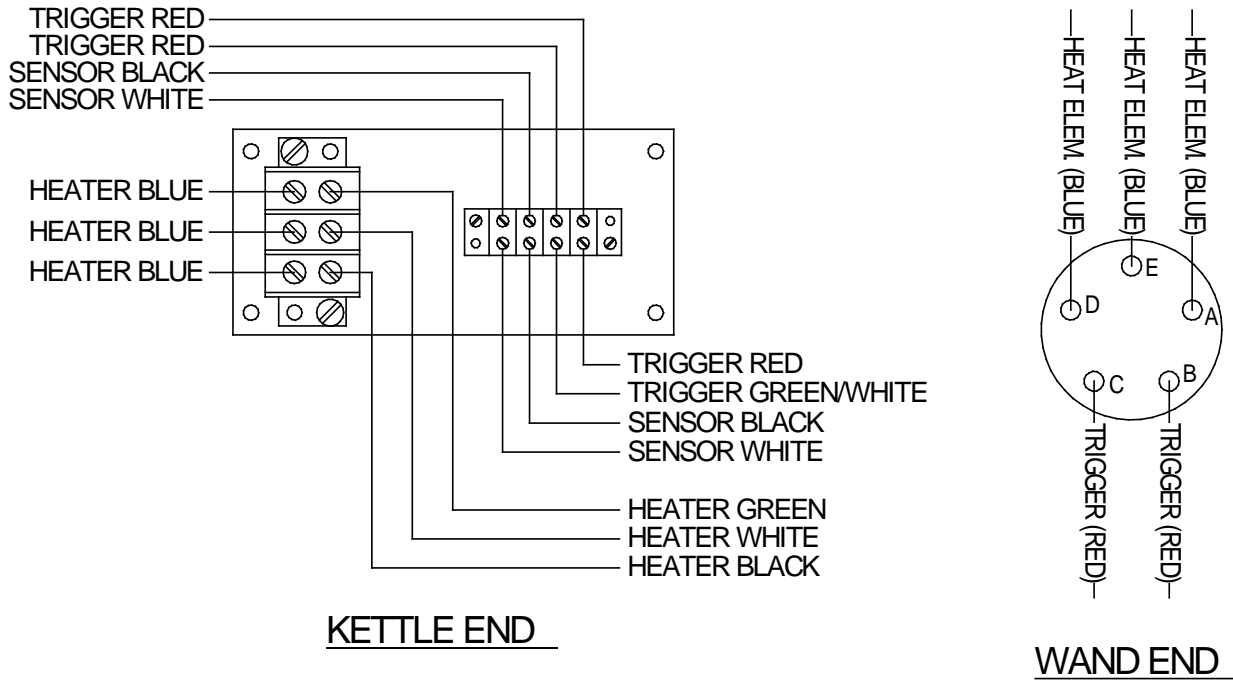


Fig. 8-10 Junction Box Wiring

Chapter 8 Troubleshooting (44100)

8.3.3 Symptom: Trigger is not Working

Table 8-21 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 8-24 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 (44100)

8.3.4 RTD Sensor Ohms vs. Temperature

Table 8-23 and Table 8-24 below shows what the ohm reading would be for a given temperature. The following are the instructions for using the table.

Measure the resistance (ohms) of the sensor in question with an ohm meter (See [7.3 Checking Resistance \(Ohms\)](#)) in Section 7 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 8-22 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 (44100)

Table 8-23 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 (44100)

8.4 Pump Troubleshooting

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

Table 8-24 Basic Visual Pump Troubleshooting

Step	Possible Cause	If . . .
1	Start Troubleshooting at the control box. 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 machine to heat. (Make sure the Hose dial is set at the operating temperature.)
2	Is the red "Pump" light "ON"?	<ul style="list-style-type: none"> • Yes, go to Step 3. • No, allow the hose to continue to heat.
3	With the wand in the shoebox, pull the wand trigger and look at the material pump shaft chain coupler. Is it spinning clockwise? (Remove the chain guard if necessary.)	<ul style="list-style-type: none"> • Yes, go to Step 5. • No, adjust the material flow control to increase the flow. • No, go to Step 4.
4	Inside the control box and under the front panel, find the relay cube for the pump. It is found near the middle, left-hand side of the box. It is a clear yellow cube with a green button facing the top of the control box. When you press this button, material should dispense from the wand, so be careful. Does the material pump shaft coupler turn when you press the green button?	<ul style="list-style-type: none"> • Yes, this tells you that everything from the cube relay to the hydraulic manifold is working properly, your issue is inside the hose and wand. Go to Table 8-19 Hose Electrical Troubleshooting, Steps 1 through 5 to find the problem. • No, go to Step 5.
5	Is the hydraulic fluid level near the center of the sight gauge? See Fig. 5-1 Hydraulic Fluid Level and Temp. Gauge	<ul style="list-style-type: none"> • Yes, go to Table 8-25 Pump Electrical Troubleshooting • No, fill oil to the center of the sight gauge.

Chapter 8 Troubleshooting (44100)

8.4.2 Pump Electrical Troubleshooting

NOTE: Use Fig. 8-11 Pump Schematic while troubleshooting the pump electrical system.

Table 8-25 Pump Electrical Troubleshooting

Step	Possible Cause	If . . .
1	Is the Hose Temperature at or above 325°F?	<ul style="list-style-type: none"> • Yes go to Step 2. • No, continue to allow the machine to heat.
2	Is there 12 Vdc between the Hose PAKSTAT terminal #2 red and redCH1-L wire and terminal #8 blk-2 ground wire? (Refer to the pump circuit schematic Fig. 8-11 Pump Schematic)	<ul style="list-style-type: none"> • Yes, go to Step 3. • No, go to Step 2a.
2a	Is there 12 Vdc between the Hose PAKSTAT terminal #1 pink wire and terminal #8 blk-2 ground wire?	<ul style="list-style-type: none"> • Yes, check for a broken wire or poor wire crimp on the terminal #2 red and redCH1-L wire and recheck for 12 Vdc. (If still no voltage replace the Material PAKSTAT.) • No, go to Step 2b.
2b	Is there 12 Vdc between the Hose PAKSTAT terminal #9 pink wire and terminal #8 blk-2 ground wire?	<ul style="list-style-type: none"> • Yes, check for a broken wire or poor wire crimp on terminal #1 pink wire. (If you have 12 Vdc on terminal #9 pink then you must have 12 Vdc on terminal #1 pink wire; they are the same wire.) • No, If this is the case you would have had a hose heating issue.
3	Move to the junction box at the rear of the machine and open the cover. Is there 12 Vdc between the trigger red wire coming from the control box and a nearby ground source?	<ul style="list-style-type: none"> • Yes, go to Step 3a. • No, check for a broken wire or poor wire crimp between the junction box and the control box red wire labeled red-trig.
3a	Is there 12 Vdc between the trigger red wire going toward the hose (just above where you checked in Step 4) and a nearby ground source?	<ul style="list-style-type: none"> • Yes go to Step 3b. • No, check for a broken wire or poor wire crimp on the red trigger going toward the hose.

Chapter 8 Troubleshooting (44100)

Table 8-26 Pump Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
3b	<p>Is there 12 Vdc between the trigger red wire going toward the hose and a nearby ground source?</p> <p>(Make sure the wand trigger is pulled during this Step.)</p>	<ul style="list-style-type: none"> • Yes, go to Step 3c. • No, go to Step 4.
3c	<p>Is there 12 Vdc between the trigger green/white-CH1-M wire coming from the control box and a nearby ground source?</p> <p>(Make sure the wand trigger is pulled during this Step.)</p>	<ul style="list-style-type: none"> • Yes, go to Step 5. • No, check for a broken wire or poor wire crimp on the green trigger wire going to the control box.
4	<p>Disconnected the five pin connector between the hose and wand. Refer to Fig. 8-10 Junction Box Wiring</p> <p>Is there continuity on the wand connector between red trigger "C" post and red trigger "B" post while the wand trigger is pulled?</p>	<ul style="list-style-type: none"> • Yes, go to Step 4a. • No, call Crafc, Inc. and request an RA # so you can send your wand back for repair.
4a	<p>Disconnect the two red trigger wires in the junction box going toward the hose. Move the wand end of the hose next to the junction box.</p> <p>Is there continuity on the hose connector "C" socket and only one red trigger in the junction box?</p> <p>(Check both red trigger wires in the junction box one at a time.)</p>	<ul style="list-style-type: none"> • Yes, go to Step 4b. • No, recheck the hose connector "C" socket to the other red trigger wire in the junction box. (You want to see continuity between only one red trigger wire and the "C" socket.) • Still no or continuity to both red trigger wire, then call Crafc, Inc. and request an RA# so you can send your hose back for repair.
4b	<p>Is there continuity on the hose connector "B" socket and red trigger in the junction box?</p>	<ul style="list-style-type: none"> • Yes, call Crafc, Inc. and speak to a service technician, you should have found the problem. • No, recheck the hose connector "B" socket to the other red trigger wire in the junction box. (You want to see continuity between only one red trigger wire and the "B" socket.) • Still no or continuity to both red trigger wire, then call Crafc, Inc. and request an RA# so you can send your hose back for repair.

Chapter 8 Troubleshooting (44100)

Table 8-27 Pump Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
5	<p>Move back to the control box.</p> <p>Is there 12 Vdc between the pump relay base #14 terminal green/white-CH1-M trigger wire and the #13 terminal blk-2 ground wire, when the trigger is pulled?</p>	<ul style="list-style-type: none"> • Yes, go to Step 6. • No, check for a broken wire or loose wire at the relay base on both the green trigger wire and the two black ground wires. Also check for any damage to the green/white-CH1-M trigger wire from the junction box to the control box.
6	<p>Is there 12 Vdc between the pump relay base #12 terminal red-3 wire and the #13 terminal blk-2 ground wire?</p>	<ul style="list-style-type: none"> • Yes, go to Step 7. • No, go to Step 6a.
6a	<p>Is there 12 Vdc between the circuit breaker bottom post red-3 wire and the pump relay base #13 terminal blk-2 ground wire?</p>	<ul style="list-style-type: none"> • Yes, check for a broken wire or loose wire at the circuit breaker and at the terminal block red wire. • No, if this is the case you would have had problems with the burner working. Call Crafcro, Inc. and speak to a service technician.
7	<p>Is there 12 Vdc between the pump relay base #8 terminal brn-TH1-9 pump wire and the #13 terminal blk-2 ground wire?</p>	<ul style="list-style-type: none"> • Yes, go to Step 8. • No, replace the pump relay cube.
8	<p>Move to the rear of the machine. Remove the cover over the hydraulic manifold.</p> <p>Is the amber light "ON" when the wand trigger is pulled?</p> <p>(Looking down at the top of the hydraulic valve, Pump forward is the din plug lower right-hand corner, Refer to Fig. 8-7 Din Plug Layout.)</p>	<ul style="list-style-type: none"> • Yes, go to Step 9. • No, go to Step 8a.

Chapter 8 Troubleshooting (44100)

Table 8-28 Pump Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
8a	<p>Unscrew the din plug center screw so you can pull the din plug up about 1/4", so you can check for voltage.</p> <p>Is there 12 Vdc from side post to side post, when the wand trigger is pulled?</p>	<ul style="list-style-type: none"> • Yes, the electrical system for the agitator is working properly, go to Table 8-30 Pump Hydraulic Troubleshooting. • No, recheck the amber light, if the light comes "ON" and you do not have 12 Vdc then replace the din plug.
9	<p>Does the hydraulic pump shaft coupler turn counter clock wise, when you hold the "Pump" toggle switch in the "Reverse" position?</p>	<ul style="list-style-type: none"> • Yes, this feature is working properly. • No, go to Step 9a.
9a	<p>Is the amber light "ON" when you hold the "Pump" toggle switch in the "Reverse" position?</p> <p>(Looking down at the top of the hydraulic valve, Pump reverse is the din plug lower left-hand corner, Refer to Fig. 8-7 Din Plug Layout.)</p>	<ul style="list-style-type: none"> • Yes, go to Step 9e. • No, go to Step 9b.
9b	<p>Is there 12 Vdc between the "Pump" toggle switch bottom post brn-TH1-7 wire and the blue (4) wires ground din plug, when the toggle switch is in the "Reverse" position? (Refer to Fig. 8-7 Din Plug Layout.)</p>	<ul style="list-style-type: none"> • Yes, go to Step 9e. • No, go to Step 9c.
9c	<p>Is there 12 Vdc between the "Pump" toggle switch center post red-TH1-26 wire and the blue (4) wires ground din plug?</p>	<ul style="list-style-type: none"> • Yes, replace the toggle switch. • No, go to Step 9d.

Chapter 8 Troubleshooting (44100)

Table 8-29 Pump Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
9d	Is there 12 Vdc between the "Mixer" toggle switch center post red-TH1-26 wire and the blue (4) wires ground din plug?	<ul style="list-style-type: none"> • Yes, check for a broken wire or poor wire crimp on the red wire between the "Mixer" toggle switch and the "Pump" toggle switch. • No, if this is the case you would have had an agitator problem. Call CrafcO, Inc. and speak to a service technician.
9e	Unscrew the din plug center screw so you can pull the din plug up about 1/4", so you can check for voltage. Is there 12 Vdc from side post to side post, when the wand trigger is pulled?	<ul style="list-style-type: none"> • Yes, the electrical system for the agitator is working properly, go to Table 8-30 Pump Hydraulic Troubleshooting. • No, recheck the amber light, if the light comes "ON" and you do not have 12 Vdc then replace the din plug.

Chapter 8 Troubleshooting (44100)

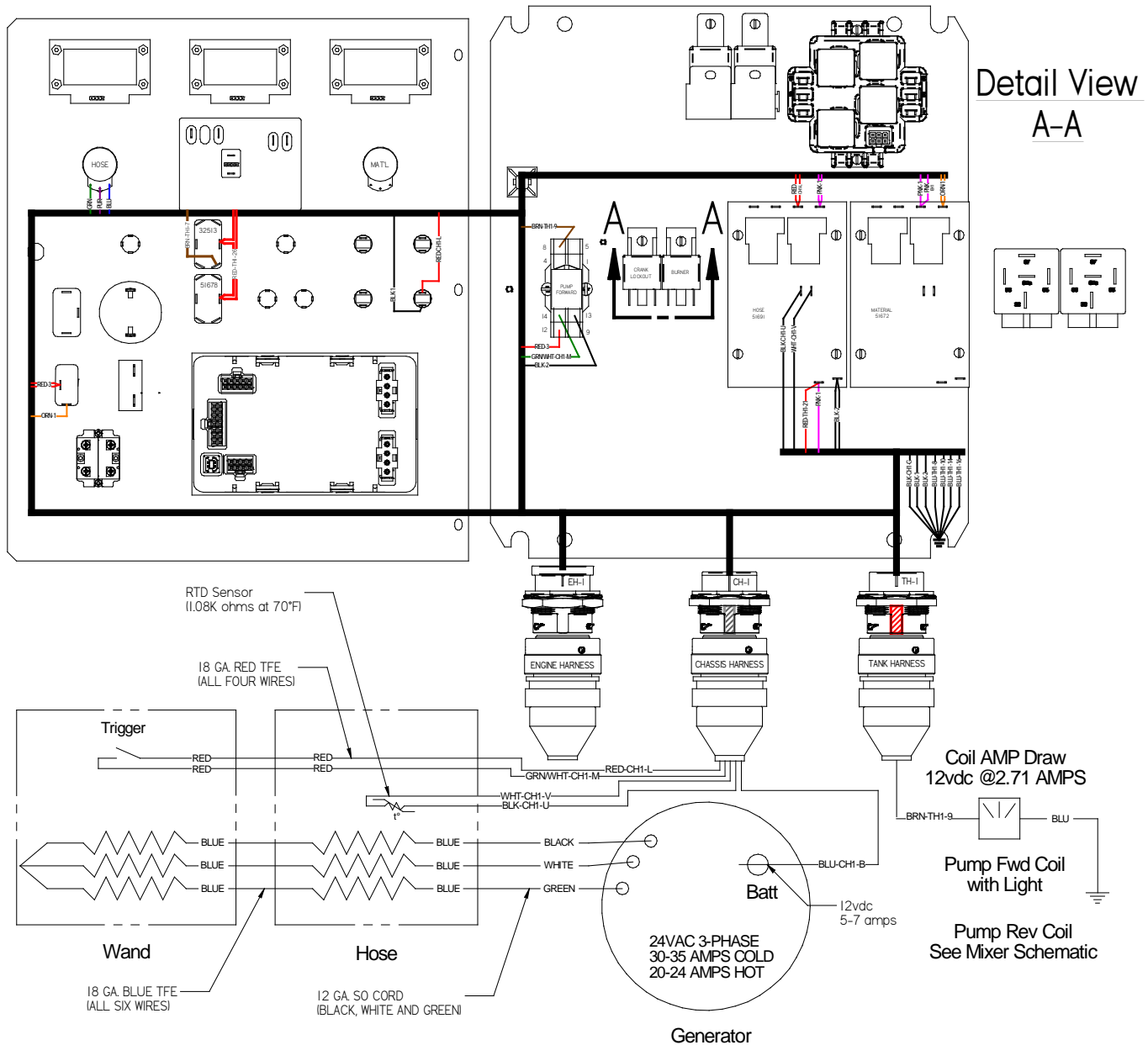


Fig. 8-11 Pump Schematic

Chapter 8 Troubleshooting (44100)

8.4.3 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, and then remove the coil by unscrewing the nut on the end of the coil. With the coil removed reattach the din plug and place a metal screw driver in the center of the coil to see if the coil is magnetic. If it is not, recheck the din plug is plugged into the coil and the amber light is "ON". If still not magnetic replace the coil.
2	Is the relief pressure set correctly? (Refer to Fig. 8-6 Hydraulic Valve Pressure Setting).	<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 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 diesel 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 diesel engine, remove the cap, pressure gauge and reattach the hose.
3	Is the hydraulic flow correct from the hydraulic pump? (Refer to Fig. 8-6 Hydraulic Valve Pressure Setting).	<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 Troubleshooting (47900N)

9.0 Troubleshooting (47900N)

9.1 Diesel Burner Troubleshooting

9.1.1 Symptom: Burner will Not Ignite

Table 9-1 Basic Visual Troubleshooting

Step	Possible Cause	If . . .
1	Start Troubleshooting at the control box. Is the diesel engine running?	<ul style="list-style-type: none"> • Yes, go to Step 2. • No, start the diesel engine. • 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.
2	Is the "Burner ON/OFF toggle" switch in the "ON" position?	<ul style="list-style-type: none"> • Yes, go to Step 3. • No, turn the toggle switch to the "ON" position.
3	Are both the Material and Hot Oil temperature dials set to proper operating temperatures?	<ul style="list-style-type: none"> • Yes, go to Step 4. • No, set the Material according to the type of sealant you are using and the Hot Oil 100°F above the Material set point.
4	Are both the Material and Hot Oil temperature displays reading a three digit positive number?	<ul style="list-style-type: none"> • Yes, go to Step 5. • No, go to Table 9-3 Burner Electrical Troubleshooting.
5	Is the red "Burner" light "ON"?	<ul style="list-style-type: none"> • Yes, go to Step 6. • No, go to Table 9-3 Burner Electrical Troubleshooting, Step 4.
6	Is the diesel tank full?	<ul style="list-style-type: none"> • Yes, go to Step 7. • No, fill your tank or make sure you have enough fuel for the day.

Chapter 9 Troubleshooting (47900N)

Table 9-2 Basic Visual Troubleshooting (continued)

Step	Possible Cause	If . . .
7	Is there smoke coming out of the exhaust stack?	<ul style="list-style-type: none"> • Yes go to Table 9-7 Smoke Coming Out of Exhaust Stack. • No, go to Step 8.
8	Is your burner working properly, but it seems like it takes a lot longer to reach operating temperature?	<ul style="list-style-type: none"> • Yes, go to Table 9-12 Sealant is Heating Slowly. • No, Call Crafco, Inc. and speak to a customer service technician.

Chapter 9 Troubleshooting (47900N)

9.1.2 Burner Electrical Troubleshooting

Note: Use Fig. 9-1 Diesel Burner Schematic while troubleshooting the burner electrical system.

Table 9-3 Burner Electrical Troubleshooting

Step	Possible Cause	If . . .
1	Is there 12Vdc between the yellow and black wires at the burner plug?	<ul style="list-style-type: none"> • Yes, go to Step 4. • No, go to Step 1a.
1a	Is there 12Vdc between the yellow wire on the burner relay in the control box and the black wire on the relay?	<ul style="list-style-type: none"> • Yes, check for poor connection or broken wire between the burner relay in the control box and the plug on the burner. • No, go to Step 1b.
1b	Is there 12Vdc between WHT/RED wire on the burner relay in the control box and the black wire on the relay?	<ul style="list-style-type: none"> • Yes, go to Step 2. • No, check for poor connection or broken wire between the burner relay in the control box and the burner reset switch.
2	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.
2a	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 9 Troubleshooting (47900N)

Table 9-4 Burner Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
3	Is there 12Vdc between the positive and negative battery post? If this check is done while the engine is running the reading should be 13.8 volts.	<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	Is there 12Vdc between the green wire in the burner plug and the black wire in the burner plug?	<ul style="list-style-type: none"> • Yes, go to Table 9-9 Testing the DC Controller. • No, go to Step 4a.
4a	Is there 12Vdc between green wire labeled “GRN-BRNR” on terminal block lower right hand corner 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” on terminal block lower right hand corner 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 terminal block upper left hand corner 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 terminal block upper right hand corner 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 9 Troubleshooting (47900N)

Table 9-5 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 the terminal block right side middle 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 the terminal block left side middle 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 bottom terminal (orange wire) of burner ON/OFF toggle 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 middle terminal (red wire) of burner ON/OFF toggle 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 the "Main Power Switch" (red-2 wire) and nearby ground source (black wire)?	<ul style="list-style-type: none"> • Yes, check for loose or broken wires between those two points. • No, go to Step 13.
13	Is there 12Vdc between the "Main Power Switch" (red-3 wire) and nearby ground source (black wire)?	<ul style="list-style-type: none"> • Yes, replace contact block. • No, go to Step 14.

Chapter 9 Troubleshooting (47900N)

Table 9-6 Burner Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
14	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 14a.
14a	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 15.
15	Is there 12Vdc between the red wire on top-left terminal of ignition switch and nearby ground source (black wire)?	<ul style="list-style-type: none"> • Yes, check for loose or broken wires between of ignition switch and bottom terminal of circuit breaker. • No, go to Step 15a.
15a	Is there 12Vdc between red wire on both red wires on the crank lockout relay in the control box (left relay next to the burner relay) and nearby ground source (black wire)?	<ul style="list-style-type: none"> • Yes, power on one red wire only, replace the crank lockout relay. • No power on either red wire on the crank lockout relay, go to Step 16.
16	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 17.
17	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 9 Troubleshooting (47900N)

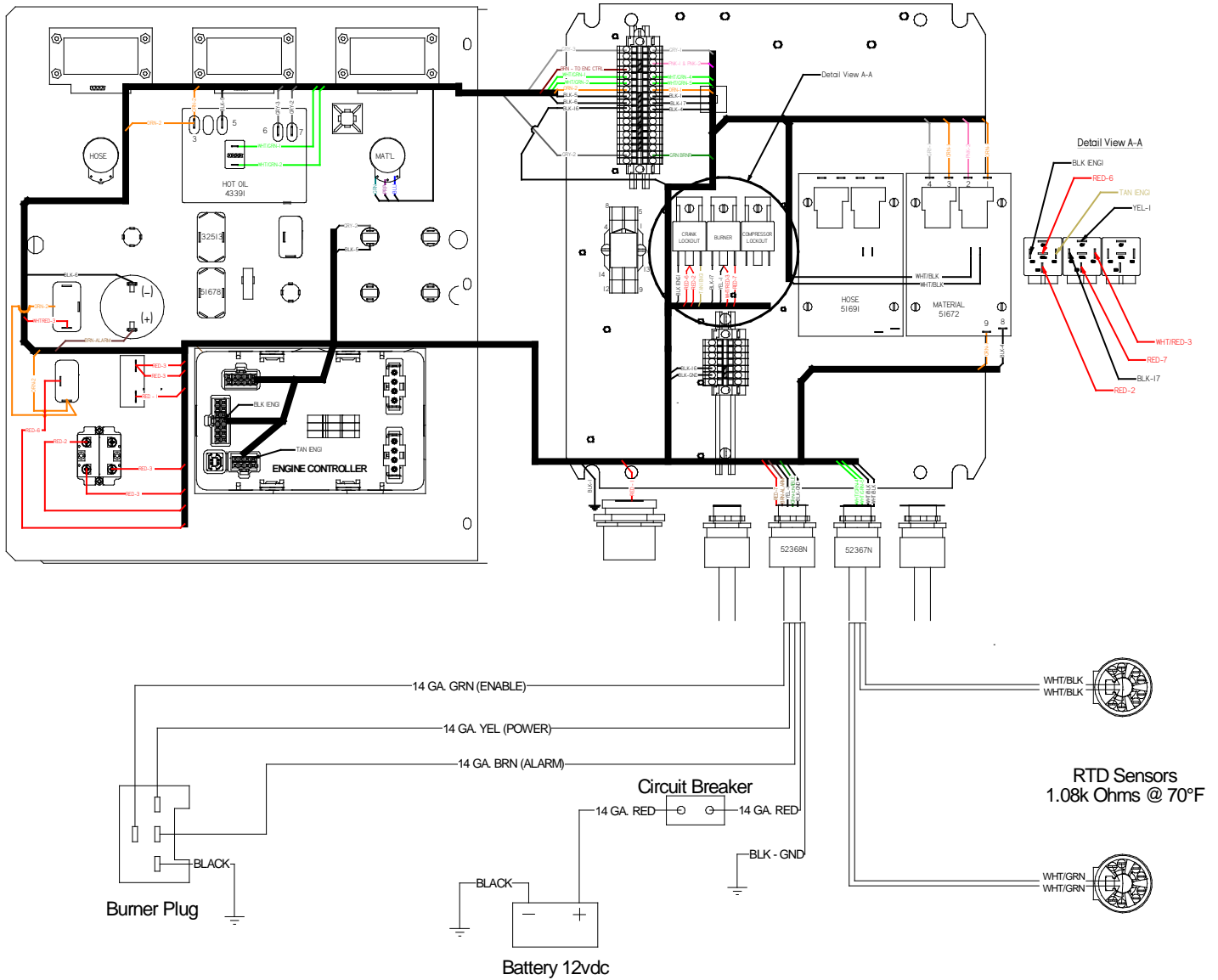


Fig. 9-1 Diesel Burner Schematic

Chapter 9 Troubleshooting (47900N)

9.1.3 Excessive Smoke Coming Out of Exhaust Stack

Table 9-7 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. 9-3 Diesel Burner Air Settings
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. 9-3 Diesel Burner Air Settings
3	Refer to Fig. 9-3 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. 9-2 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.

9.1.4 Burner Lights but Shuts Down After 15 Seconds

Table 9-8 Burner Lights but Shuts Down After 15 Seconds

Step	Possible Cause	If . . .
1	Does the CAD EYE have soot or dirt on the lens?	<ul style="list-style-type: none"> • Yes, clean cad eye lens with a soft cloth. • No, go to Step 2.
2	Are the two yellow wires for the CAD EYE loose or broken?	<ul style="list-style-type: none"> • Yes, repair or replace as needed. • No, go to Step 3.
3	Is the CAD EYE faulty?	<ul style="list-style-type: none"> • Yes, replace CAD EYE. • No, call a CrafcO Inc. service technician.

Chapter 9 Troubleshooting (47900N)

9.1.5 Testing DC Controller

Table 9-9 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.

9.1.6 Burner Fuel Solenoid Testing

Table 9-10 Burner Fuel Solenoid Test

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 9 Troubleshooting (47900N)

9.1.7 Burner Ignition Coil Testing

Table 9-11 Burner Ignition Coil Test

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.

9.1.8 Bleeding the Burner

NOTE: The 47900N compressor unit is plumbed to have the burner be self-priming. Ensure the “Main Power” and “Burner” switch is “ON” and burner fuel pump will start circulating fuel through the fuel lines, which removes all air bubbles automatically, since it has a return line to the fuel tank.

Chapter 9 Troubleshooting (47900N)

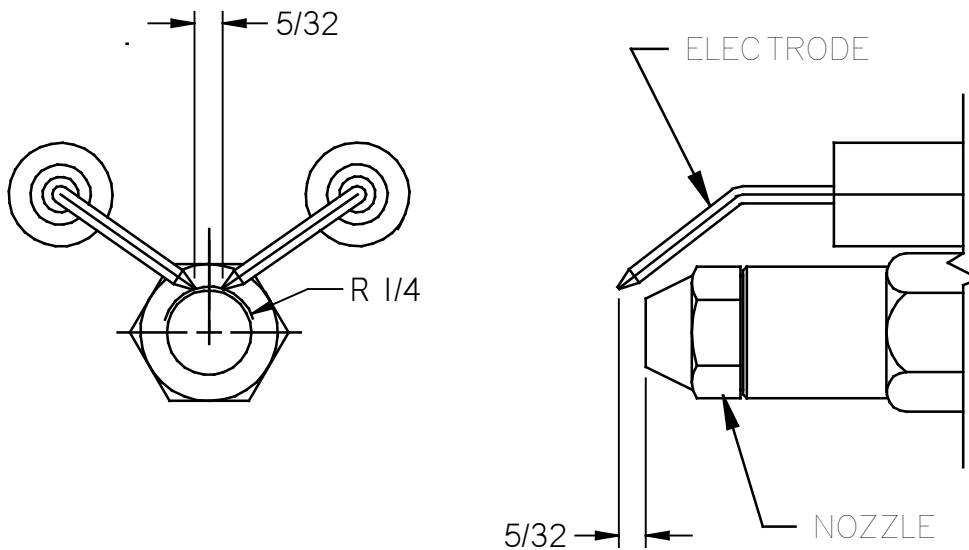


Fig. 9-2 Diesel Burner Electrode Adjustment

Air Shutter = 8
 Air Band = 0
 Fuel Pressure = 140 PSI
 Adjustment Plate = 3

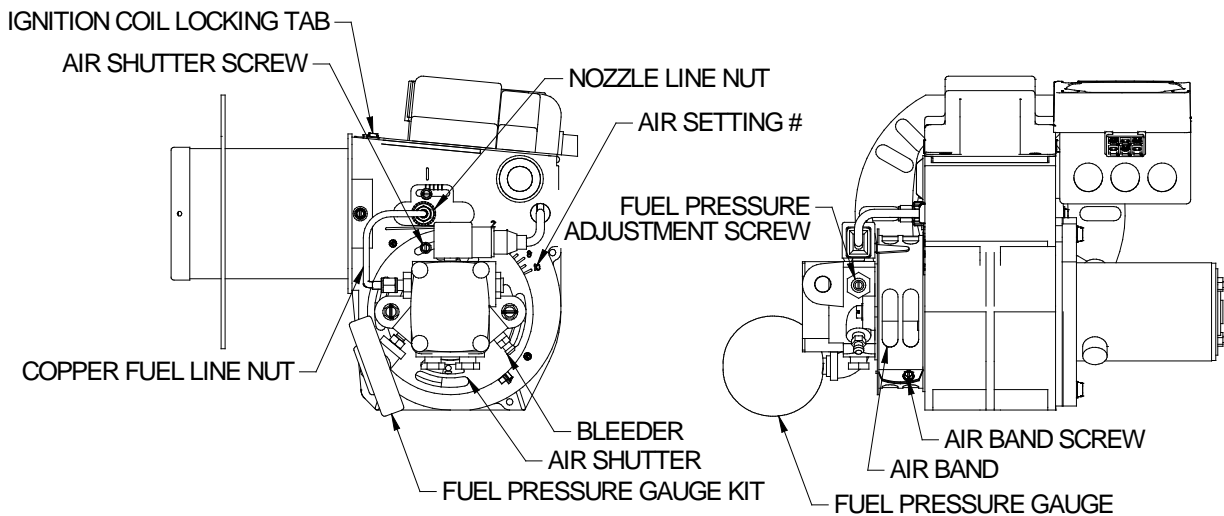


Fig. 9-3 Diesel Burner Air Settings

Chapter 9 Troubleshooting (47900N)

9.1.9 Sealant is Heating Slowly

Table 9-12 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 9 Troubleshooting (47900N)

9.2 Mixer Troubleshooting

9.2.1 Symptom: Mixer Does Not Rotate

Table 9-13 Basic Visual 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 3. • No, go to Table 9-14 Mixer Electrical Troubleshooting.
3	Are both of the loading doors 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 9-14 Mixer Electrical Troubleshooting.
6	Open one of the Material loading doors. Are there several un-melted 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 9-14 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 9-14 Mixer Electrical Troubleshooting. • No, fill oil to the center of the sight gauge.

Chapter 9 Troubleshooting (47900N)

9.2.2 Mixer Electrical Troubleshooting

Note: Use [Fig. 9-5 Mixer Schematic](#) while troubleshooting the mixer electrical system.

Table 9-14 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. 9-7 Din Plug Layout).	<ul style="list-style-type: none"> • Yes, then the mixer should be working. If it is not working see Table 9-17 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 9-17 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 bolt? (With the "Mixer" toggle switch in the "Forward" position.) See Fig. 9-5 Mixer Schematic .	<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 wires)?	<ul style="list-style-type: none"> • Yes, replace mixer toggle switch • No, go to Step 3.
3	Is there 12Vdc between both lids switches red, red/blk and red/wht wires and a nearby ground source? (Check both red, red/blk and red/wht wires on the bottom of the lid switch with the lid closed. Check each lid switch one at a time, This unit has two.)	<ul style="list-style-type: none"> • Yes, on both red wires check for loose connections or broken wires between lid switch and control box. • Yes, on only one red wire when the lid is closed. Readjust the lid switch so that the lid completely depresses the switch, and then recheck for 12Vdc. If the same result happens, replace the lid switch. • No, go to Step 4.

Chapter 9 Troubleshooting (47900N)

Table 9-15 Mixer Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
4	Check for 12Vdc at red wire labeled Red Lid and pink wire labeled Pink-2 on terminal block left side upper corner 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 both wires are securely installed in the terminal block, and that the yellow jumper bar is securely installed between the two terminal blocks. • No, go to Step 4a.
4a	Is there 12Vdc between the Material PAKSTAT terminal #2 pink wire and terminal #8 black ground wire? (Refer to Fig. 9-5 Mixer Schematic.)	<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 upper 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.

Chapter 9 Troubleshooting (47900N)

Table 9-16 Mixer Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
7	Is there 12Vdc between top terminal of the burner reset toggle switch orange wire 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 9.
9	Is there 12Vdc between bottom terminal (orange wire) of burner ON/OFF toggle 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 10.
10	Is there 12Vdc between middle terminal (red wire) of burner ON/OFF toggle switch and nearby ground source (black wire)?	<ul style="list-style-type: none"> • Yes, replace switch. • No, go to Step 11.
11	Is there 12Vdc between the “Main Power Switch” (red-2 wire) and nearby ground source (black wire)?	<ul style="list-style-type: none"> • Yes, check for loose or broken wires between those two points. • No, go to Step 12.
12	Is there 12Vdc between the “Main Power Switch” (red-3 wire) and nearby ground source (black wire)?	<ul style="list-style-type: none"> • Yes, replace contact block. • No, call CrafcO, Inc. and speak to a customer service technician you should have been able to find the problem.

Chapter 9 Troubleshooting (47900N)



Fig. 9-4 Checking Din Plug Voltage

Chapter 9 Troubleshooting (47900N)

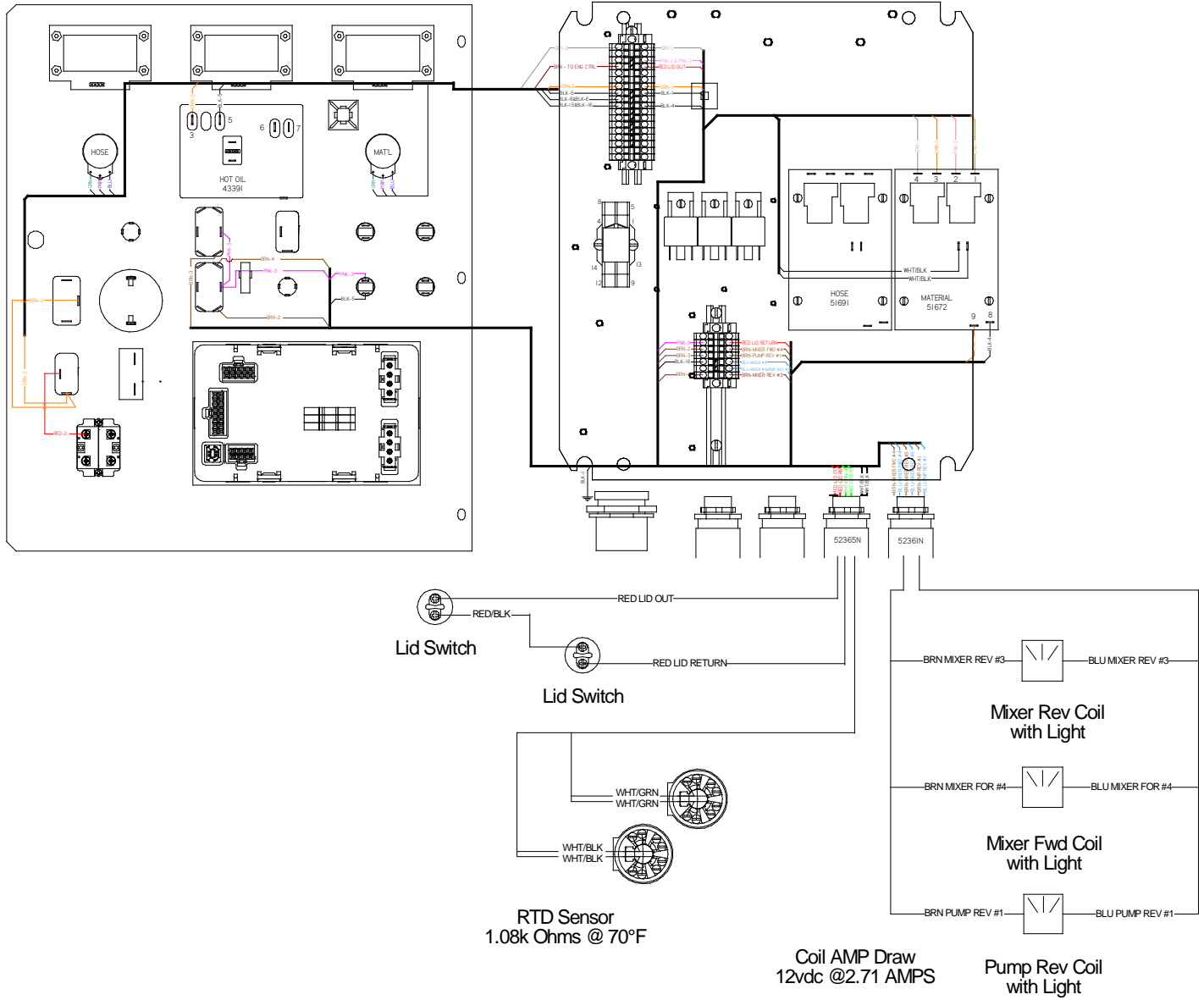


Fig. 9-5 Mixer Schematic

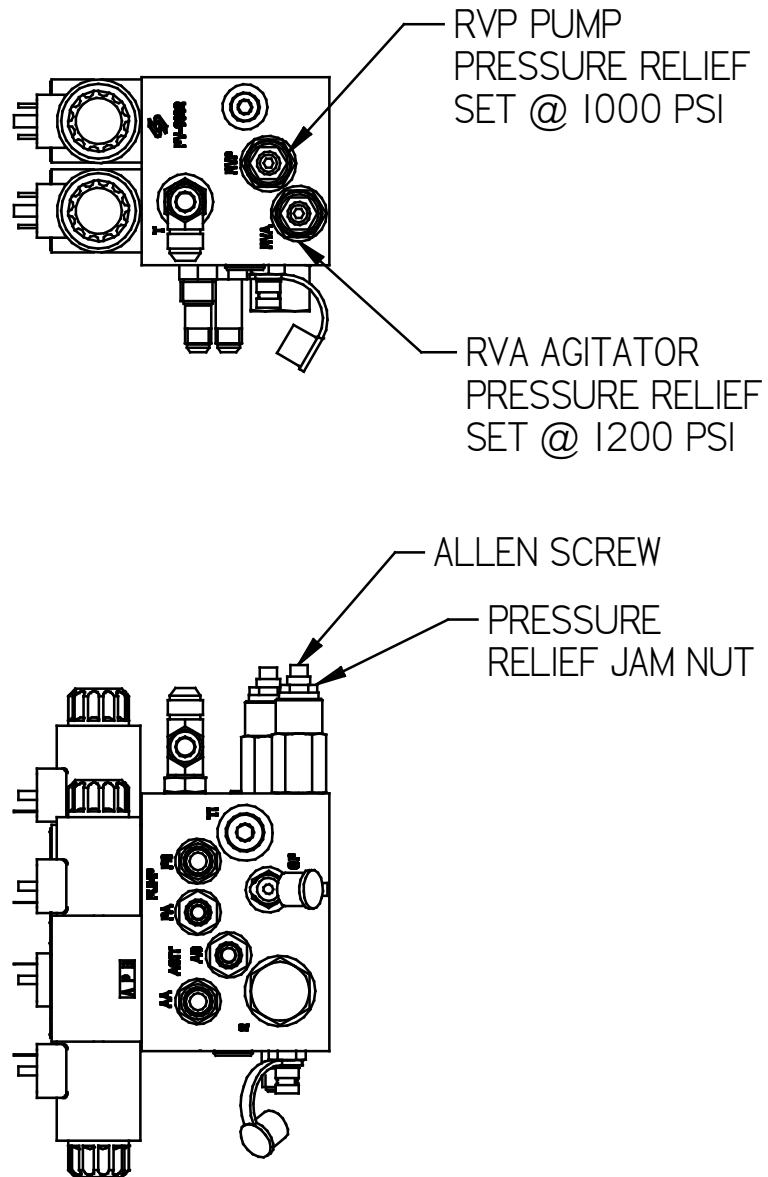
Chapter 9 Troubleshooting (47900N)

9.2.3 Mixer Hydraulic Troubleshooting

Table 9-17 Mixer Hydraulic Troubleshooting

Step	Possible Cause	If . . .
1	Remove the din plug, and then remove the coil by unscrewing the nut on top of the coil. With the coil removed, re-attach the din plug and energize the coil by moving the mixer switch to Forward or Reverse, then insert a screw driver into the center of the coil. Does the coil magnetize when the din plug amber light is "ON"?	<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. 9-6 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, and 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. 9-6 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.

Chapter 9 Troubleshooting (47900N)



Agitation Direction = Counterclockwise

Hydraulic Flow Compressor = Front section 23.27 GPM @ 24000 RPM

Hydraulic Flow Compressor = Rear section 7.94 GPM @ 2400 RPM

Compressor Relief = 2500 PSI

Fig. 9-6 Hydraulic Valve Pressure Setting

Chapter 9 Troubleshooting (47900N)

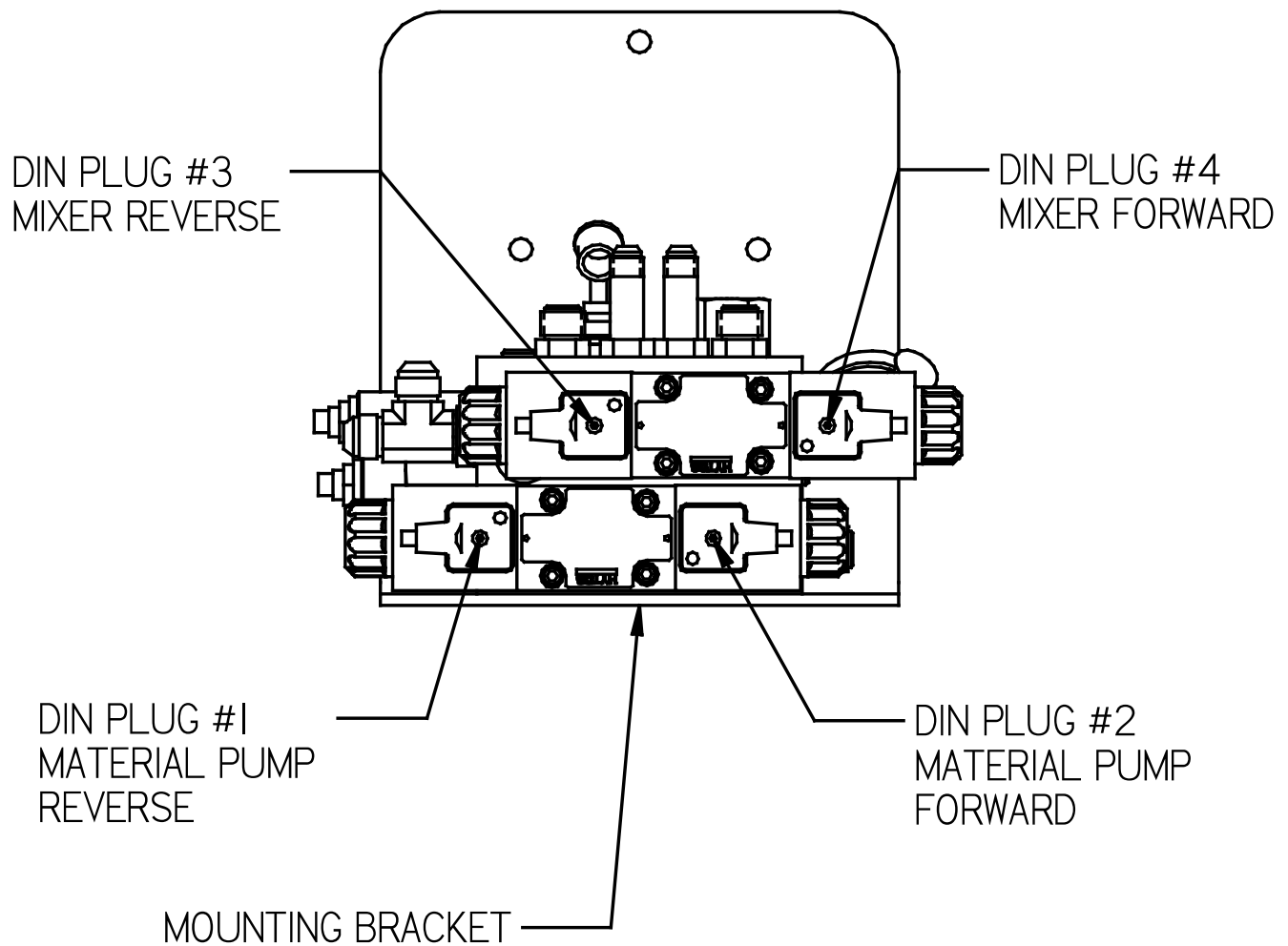


Fig. 9-7 Din Plug Layout

Chapter 9 Troubleshooting (47900N)

9.3 Hose Troubleshooting

9.3.1 Symptom: Hose Does Not Heat

Table 9-18 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 9-19 Hose 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 9-19 Hose Electrical Troubleshooting.

9.3.2 Hose Electrical Troubleshooting

NOTE: Use [Fig. 9-9 Hose Circuit Schematic](#) while troubleshooting the hose electrical system.

Table 9-19 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. See Fig. 9-8 Junction Box Voltage Testing .	<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 30-35 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.

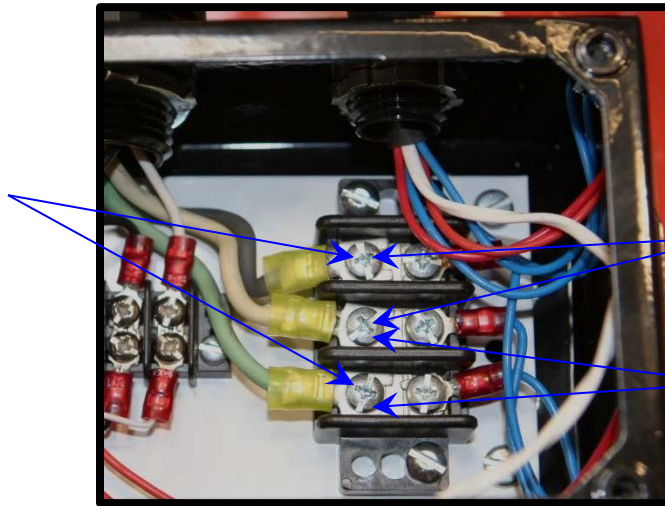
Chapter 9 Troubleshooting (47900N)

Table 9-20 Hose 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. 9-10 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 Crafcoc, 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 9-23 RTD Sensor Ohms vs. Temperature (continued)</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 Crafcoc, 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 Crafcoc, Inc. to send back the wand for repair.
5	<p>Is there 12Vdc between wire labeled “BLU-GEN” on the upper 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 the “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.
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-1 on the upper terminal block and a nearby ground source (black wire)?</p>	<ul style="list-style-type: none"> • Yes, check for loose or broken wire between terminal block and terminal #1. • No go to Step 7.
7a	<p>Is there 12Vdc between pink wire labeled “PNK-3 and nearby ground source (black wire)?</p>	<ul style="list-style-type: none"> • Yes, call Crafcoc, Inc. and speak to a customer service technician you should have been able to find the problem. • No, replace terminal block.

Chapter 9 Troubleshooting (47900N)

Test #2 between black and green wires



Test #1 between black and white wires

Test #3 between white and green wires

Fig. 9-8 Junction Box Voltage Testing

Chapter 9 Troubleshooting (47900N)

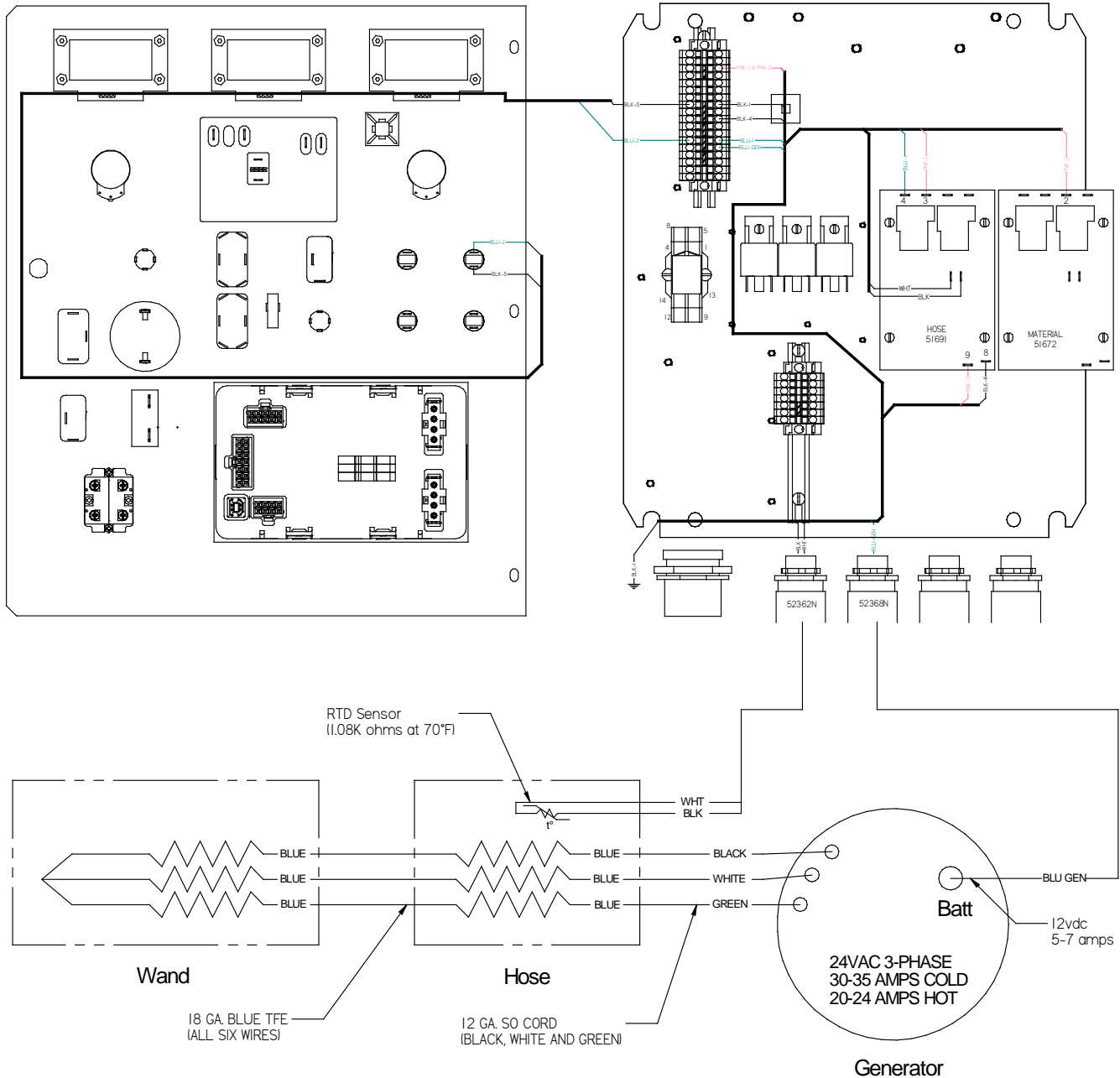


Fig. 9-9 Hose Circuit Schematic

Chapter 9 Troubleshooting (47900N)

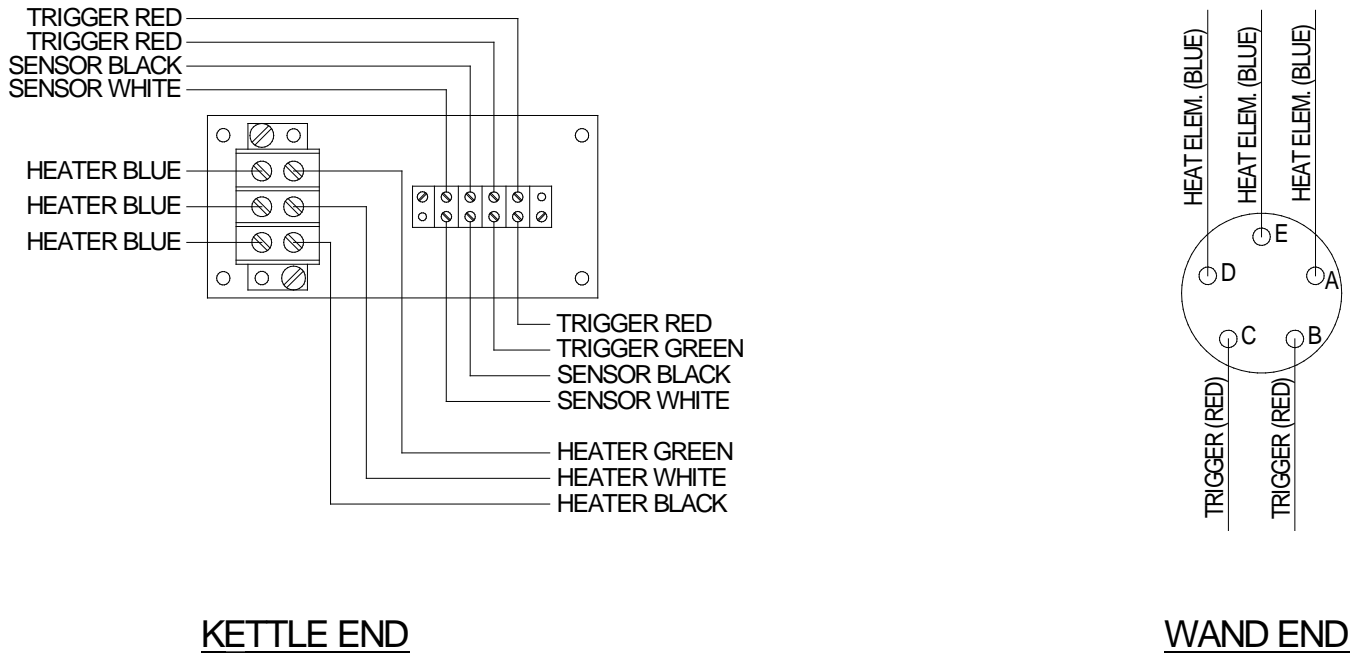


Fig. 9-10 Junction Box Wiring

Chapter 9 Troubleshooting (47900N)

9.3.3 Symptom: Trigger is not Working

Table 9-21 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 9-24 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 9 Troubleshooting (47900N)

9.3.4 RTD Sensor Ohms vs. Temperature

Table 8-23 and Table 8-24 below shows what the ohm reading would be for a given temperature. The following are the instructions for using the table.

Measure the resistance (ohms) of the sensor in question with an ohm meter (See [7.3 Checking Resistance \(Ohms\)](#)) in Section 7 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 9-22 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 9 Troubleshooting (47900N)

Table 9-23 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 9 Troubleshooting (47900N)

9.4 Pump Troubleshooting

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

Table 9-24 Basic Visual Pump Troubleshooting

Step	Possible Cause	If . . .
1	Start Troubleshooting at the control box. 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 machine to heat. (Make sure the Hose dial is set at the operating temperature.)
2	Is the red "Pump" light "ON"?	<ul style="list-style-type: none"> • Yes, go to Step 3. • No, allow the hose to continue to heat.
3	With the wand in the shoebox, pull the wand trigger and look at the material pump shaft chain coupler. Is it spinning clockwise? (Remove the chain guard if necessary.)	<ul style="list-style-type: none"> • Yes, go to Step 5. • No, adjust the material flow control to increase the flow. • No, go to Step 4.
4	Inside the control box and under the front panel, find the relay cube for the pump. It is found near the middle, left-hand side of the box. It is a clear yellow cube with a green button facing the top of the control box. When you press this button, material should dispense from the wand, so be careful. Does the material pump shaft coupler turn when you press the green button?	<ul style="list-style-type: none"> • Yes, this tells you that everything from the cube relay to the hydraulic manifold is working properly; your issue is inside the hose and wand. Go to Table 9-25 Pump Electrical Troubleshooting, Steps 1 through 5 to find the problem. • No, go to Step 5.
5	Is the hydraulic fluid level near the center of the sight gauge? See Fig. 5-1 Hydraulic Fluid Level and Temp. Gauge	<ul style="list-style-type: none"> • Yes, go to Table 9-25 Pump Electrical Troubleshooting • No, fill oil to the center of the sight gauge.

Chapter 9 Troubleshooting (47900N)

9.4.2 Pump Electrical Troubleshooting

NOTE: Use Fig. 9-11 Pump Schematic while troubleshooting the pump electrical system.

Table 9-25 Pump Electrical Troubleshooting

Step	Possible Cause	If . .
1	Is the Hose Temperature at or above 325°F?	<ul style="list-style-type: none"> • Yes go to Step 2. • No, continue to allow the machine to heat.
2	Is there 12 Vdc between the Hose PAKSTAT terminal #2 purple wire and terminal #8 black ground wire? (Refer to the pump circuit schematic Fig. 9-11 Pump Schematic)	<ul style="list-style-type: none"> • Yes, go to Step 3. • No, go to Step 2a.
2a	Is there 12 Vdc between the Hose PAKSTAT terminal #1 pink wire and terminal #8 black ground wire?	<ul style="list-style-type: none"> • Yes, check for a broken wire or poor wire crimp on the terminal #2 purple wire and recheck for 12 Vdc. (If still no voltage replace the Material PAKSTAT.) • No, go to Step 2b.
2b	Is there 12 Vdc between the Hose PAKSTAT terminal #9 pink wire and terminal #8 black ground wire?	<ul style="list-style-type: none"> • Yes, check for a broken wire or poor wire crimp on terminal #1 pink wire. (If you have 12 Vdc on terminal #9 pink then you must have 12 Vdc on terminal #1 pink wire; they are the same wire.) • No, If this is the case you would have had a hose heating issue.
3	Is there 12 Vdc between the terminal block purple wire and the terminal black ground wire?	<ul style="list-style-type: none"> • Yes, go to Step 4. • No, check for a broken wire or poor wire crimp between the Hose PAKSTAT terminal #2 purple wire and the terminal block purple wire.
4	Move to the junction box at the rear of the machine and open the cover. Is there 12 Vdc between the trigger red wire coming from the control box and a nearby ground source?	<ul style="list-style-type: none"> • Yes, go to Step 4a. • No, check for a broken wire or poor wire crimp between the junction box and the control box red wire labeled red-trig.
4a	Is there 12 Vdc between the trigger red wire going toward the hose (just above where you checked in Step 4) and a nearby ground source?	<ul style="list-style-type: none"> • Yes go to Step 4b. • No, check for a broken wire or poor wire crimp on the red trigger going toward the hose.

Chapter 9 Troubleshooting (47900N)

Table 9-26 Pump Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
4b	Is there 12 Vdc between the trigger red wire going toward the hose and a nearby ground source? (Make sure the wand trigger is pulled during this Step.)	<ul style="list-style-type: none"> • Yes, go to Step 4c. • No, go to Step 5.
4c	Is there 12 Vdc between the trigger green wire coming from the control box and a nearby ground source? (Make sure the wand trigger is pulled during this Step.)	<ul style="list-style-type: none"> • Yes, go to Step 6. • No, check for a broken wire or poor wire crimp on the green trigger wire going to the control box.
5	Disconnect the five pin connector between the hose and wand. Refer to Fig. 9-10 Junction Box Wiring Is there continuity on the wand connector between red trigger "C" post and red trigger "B" post while the wand trigger is pulled?	<ul style="list-style-type: none"> • Yes, go to Step 5a. • No, call Crafc, Inc. and request an RA # so you can send your wand back for repair.
5a	Disconnect the two red trigger wires in the junction box going toward the hose. Move the wand end of the hose next to the junction box. Is there continuity on the hose connector "C" socket and only one red trigger in the junction box? (Check both red trigger wires in the junction box one at a time.)	<ul style="list-style-type: none"> • Yes, go to Step 5b. • No, recheck the hose connector "C" socket to the other red trigger wire in the junction box. (You want to see continuity between only one red trigger wire and the "C" socket.) • Still no or continuity to both red trigger wire, then call Crafc, Inc. and request an RA# so you can send your hose back for repair.
5b	Is there continuity on the hose connector "B" socket and red trigger in the junction box?	<ul style="list-style-type: none"> • Yes, call Crafc, Inc. and speak to a service technician, you should have found the problem. • No, recheck the hose connector "B" socket to the other red trigger wire in the junction box. (You want to see continuity between only one red trigger wire and the "B" socket.) • Still no or continuity to both red trigger wire, then call Crafc, Inc. and request an RA# so you can send your hose back for repair.

Chapter 9 Troubleshooting (47900N)

Table 9-27 Pump Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
6	<p>Move back to the control box.</p> <p>Is there 12 Vdc between the pump relay base #14 terminal green trigger wire and the #13 terminal black ground wire, when the trigger is pulled?</p>	<ul style="list-style-type: none"> • Yes, go to Step 7. • No, check for a broken wire or loose wire at the relay base on both the green trigger wire and the two black ground wires. Also check for any damage to the green trigger wire from the junction box to the control box.
7	<p>Is there 12 Vdc between the pump relay base #12 terminal red wire and the #13 terminal black ground wire?</p>	<ul style="list-style-type: none"> • Yes, go to Step 8. • No, go to Step 7a.
7a	<p>Is there 12 Vdc between the terminal block red black wire and the pump relay base #13 terminal black ground wire?</p>	<ul style="list-style-type: none"> • Yes, check a broken wire or loose wire at the pump relay base #12 terminal. • No, go to Step 7b.
7b	<p>Is there 12 Vdc between the terminal block red wire (across to the left of the terminal block red black wire) and the pump relay base #13 terminal black ground wire?</p>	<ul style="list-style-type: none"> • Yes, check for a loose wire in the terminal block. If you have power on one side you should have it on the other. If still the case after checking, then replace the terminal block. • No, go to Step 7c.
7c	<p>Is there 12 Vdc between the circuit breaker bottom post red wire and the pump relay base #13 terminal black ground wire?</p>	<ul style="list-style-type: none"> • Yes, check for a broken wire or loose wire at the circuit breaker and at the terminal block red wire. • No, if this is the case you would have had problems with the burner working. Call Crafco, Inc. and speak to a service technician.
8	<p>Is there 12 Vdc between the pump relay base #8 terminal blue pump wire and the #13 terminal black ground wire?</p>	<ul style="list-style-type: none"> • Yes, go to Step 9. • No, replace the pump relay cube.
9	<p>Move to the rear of the machine. Remove the cover over the hydraulic manifold.</p> <p>Is the amber light "ON" when the wand trigger is pulled? (Looking down at the top of the hydraulic valve, Pump forward is the din plug lower right-hand corner, Refer to Fig. 9-7 Din Plug Layout.)</p>	<ul style="list-style-type: none"> • Yes, go to Step 9c. • No, go to Step 9a.

Chapter 9 Troubleshooting (47900N)

Table 9-28 Pump Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
9a	Follow the brown wire "Forward Pump" din plug to where the insulated spade connection is to the blue pump wire coming from the control box. Are these two wires still connected?	<ul style="list-style-type: none"> • Yes, go to Step 9b. • No, connect these two wires.
9b	Disconnect these two wires. Is there 12 Vdc between the blue pump wire and the blue (4) wire ground connection for the din plugs?	<ul style="list-style-type: none"> • Yes, check for a broken wire or poor wire crimp along the brown "Forward Pump" din plug. • No, check for a broken wire or poor wire crimp along the blue pump wire.
9c	Unscrew the din plug center screw so you can pull the din plug up about 1/4", so you can check for voltage. Is there 12 Vdc from side post to side post, when the wand trigger is pulled?	<ul style="list-style-type: none"> • Yes, the electrical system for the agitator is working properly, go to Table 9-30 Pump Hydraulic Troubleshooting. • No, recheck the amber light, if the light comes "ON" and you do not have 12 Vdc then replace the din plug.
10	Does the hydraulic pump shaft coupler turn counter clock wise, when you hold the "Pump" toggle switch in the "Reverse" position?	<ul style="list-style-type: none"> • Yes, this feature is working properly. • No, go to Step 10a.
10a	Is the amber light "ON" when you hold the "Pump" toggle switch in the "Reverse" position? (Looking down at the top of the hydraulic valve, Pump reverse is the din plug lower left-hand corner, Refer to Fig. 9-7 Din Plug Layout .)	<ul style="list-style-type: none"> • Yes, go to Step 10e. • No, go to Step 10b.
10b	Is there 12 Vdc between the "Pump" toggle switch bottom post brown wire and a nearby ground, when the toggle switch is in the "Reverse" position? (Refer to Fig. 9-5 Mixer Schematic .)	<ul style="list-style-type: none"> • Yes, go to Step 10e. • No, go to Step 10c.
10c	Is there 12 Vdc between the "Pump" toggle switch center post red wire and a nearby ground?	<ul style="list-style-type: none"> • Yes, replace the toggle switch. • No, go to Step 10d.

Chapter 9 Troubleshooting (47900N)

Table 9-29 Pump Electrical Troubleshooting (continued)

Step	Possible Cause	If . . .
10d	Is there 12 Vdc between the "Mixer" toggle switch center post red wire and a nearby ground?	<ul style="list-style-type: none"> • Yes, check for a broken wire or poor wire crimp on the red wire between the "Mixer" toggle switch and the "Pump" toggle switch. • No, if this is the case you would have had an agitator problem. Call Crafco, Inc. and speak to a service technician.
10e	Unscrew the din plug center screw so you can pull the din plug up about 1/4", so you can check for voltage. Is there 12 Vdc from side post to side post, when the wand trigger is pulled?	<ul style="list-style-type: none"> • Yes, the electrical system for the agitator is working properly, go to Table 9-30 Pump Hydraulic Troubleshooting. • No, recheck the amber light, if the light comes "ON" and you do not have 12 Vdc then replace the din plug.

Chapter 9 Troubleshooting (47900N)

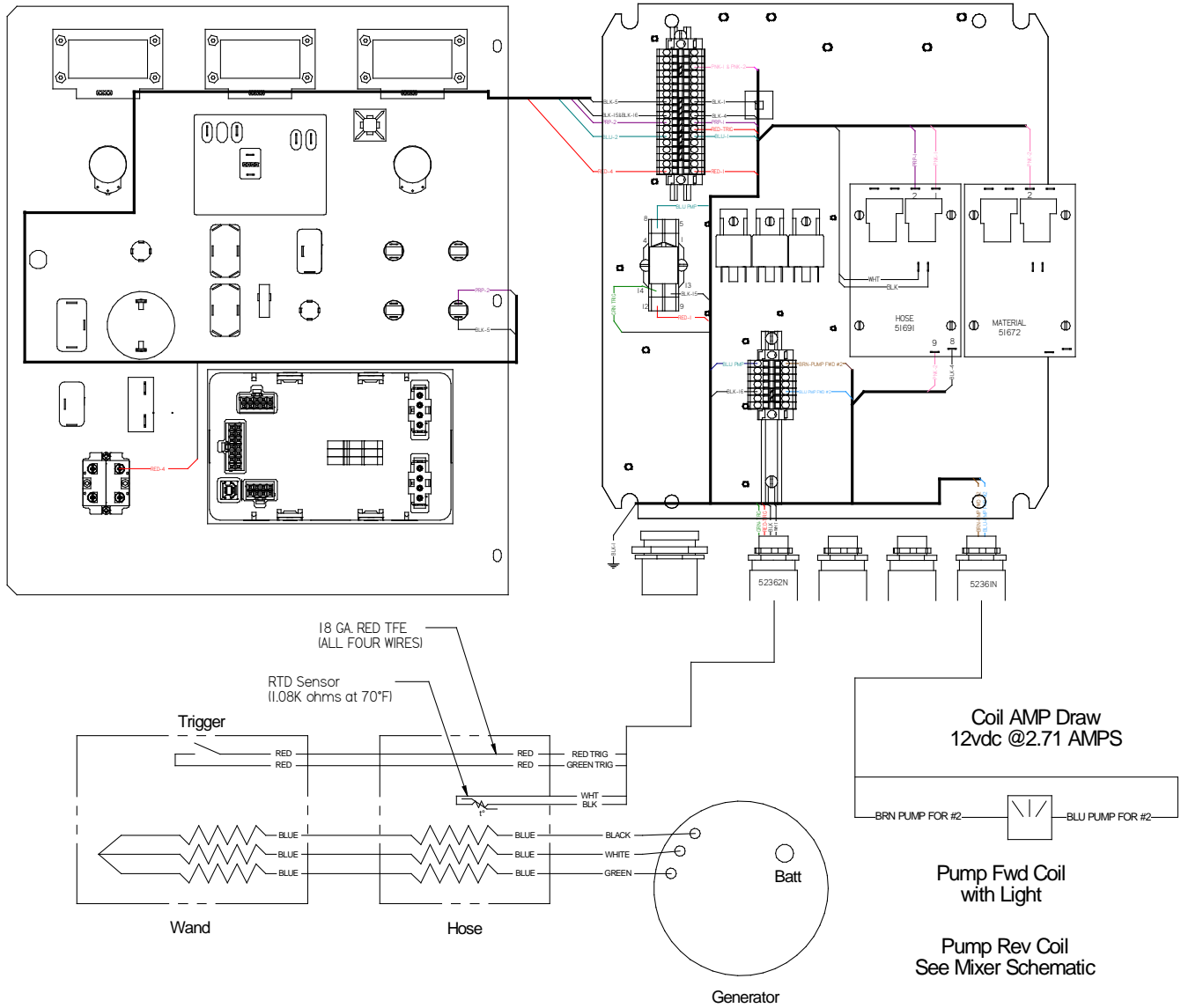


Fig. 9-11 Pump Schematic

Chapter 9 Troubleshooting (47900N)

9.4.3 Pump Hydraulic Troubleshooting

Table 9-30 Pump Hydraulic Troubleshooting

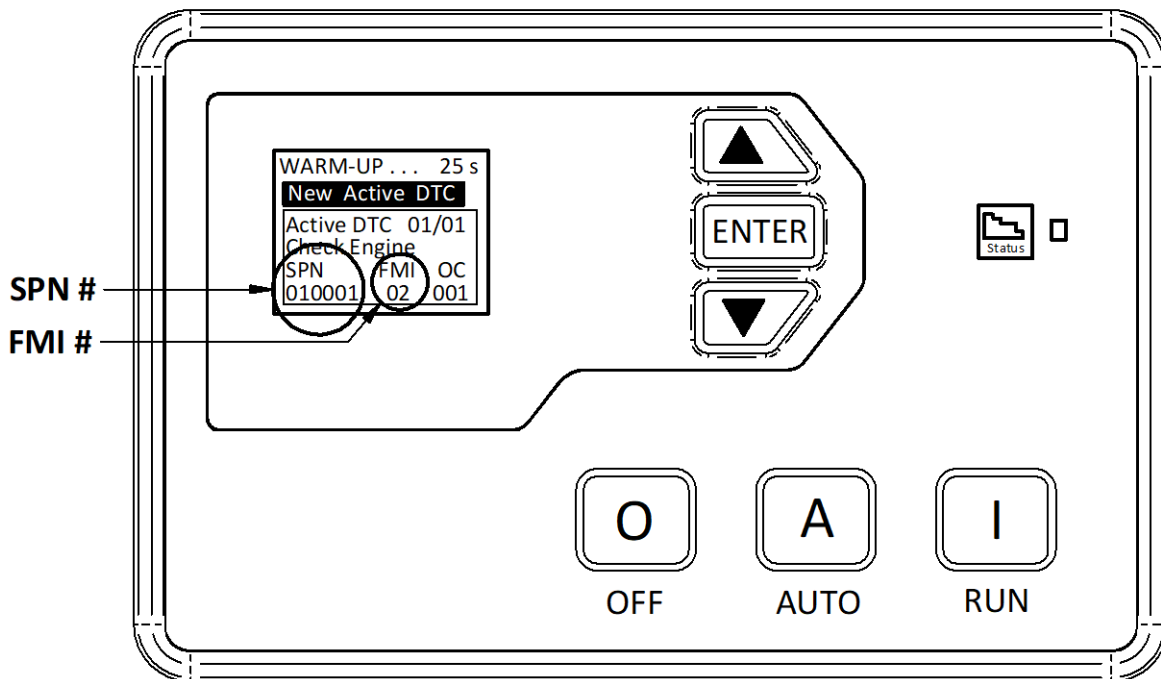
Step	Possible Cause	If...
1	Does the coil magnetize when the din plug amber light is "ON"?	<ul style="list-style-type: none"> • Yes, go to Step 2. • No, remove the din plug, and then remove the coil by unscrewing the nut on the end of the coil. With the coil removed reattach the din plug and place a metal screw driver in the center of the coil to see if the coil is magnetic. If it is not, recheck the din plug is plugged into the coil and the amber light is "ON". If still not magnetic replace the coil.
2	Is the relief pressure set correctly? (Refer to Fig. 9-6 Hydraulic Valve Pressure Setting).	<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 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 diesel engine, turn "ON" the main power in the control box, pull the wand trigger and read the pressure gauge. If the pressure needs to be adjusted, use the pressure relief valve marked "RVP", loosen the jam nut and adjust the pressure with the Allen screw at the end of the relief. Turn clockwise to increase pressure and counter clockwise to decrease pressure, and then tighten the jam nut to lock pressure. Next turn "OFF" the diesel engine, remove the cap, pressure gauge and reattach the hose.
3	Is the hydraulic flow correct from the hydraulic pump? (Refer to Fig. 9-6 Hydraulic Valve Pressure Setting).	<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. 9-6 Hydraulic Valve Pressure Setting.

Chapter 9 Troubleshooting (47900N)

9.5 Engine Diagnostic Trouble Codes (DTC)

9.5.1 How to use the Diagnostic Trouble Code Table

The engine supplied on the Super Shot 250 Diesel 100CFM Compressor machine is capable of displaying Diagnostic Trouble Codes (DTC) on the engine control panel display. If your engine displays a DTC, most likely you will have to contact your local engine repair center for service. To locate your closest engine repair center, please go here: <http://www.isuzuengines.com/#!/network> or call 734-582-9470 and they can help you locate your closest repair center. To use the table, find the SPN and FMI # from the control panel screen, and match it to the first column in the table listed as "SPN-FMI". Please see the following figure below:



YOUR SPN-FMI # IS "10001-2". FIND ON THE TABLE BELOW

10001-2 = EGR position sensor malfunction

Fig. 9-12 Engine Control Display DTC

9.5.2 Engine DTC Table (47900N)

Table 9-31 Engine DTC Table PN 47900N

SPN-FMI	Failure Type
10001-13	EGR zero-point learning malfunction
10001-2	EGR position sensor malfunction
10002-2	EGR valve control malfunction
10003-2	Injection nozzle common 1 driving system malfunction
10004-2	Injection nozzle common 2 driving system malfunction
10005-1	Charge circuit malfunction bank 1

Chapter 9 Troubleshooting (47900N)

Table 9-32 Engine DTC Table PN 47900N (continued)

10006-1	Charge circuit malfunction bank 2
10007-2	CPU monitoring IC malfunction
10008-2	A/D conversion malfunction
10009-2	5V power supply 3 voltage malfunction
100-1	Engine oil pressure drop
10010-2	5V power supply 4 voltage malfunction
10013-2	EEPROM malfunction
100-3	Engine oil press sensor malfunction (high voltage)
10032-2	QR code malfunction
10033-2	RAM malfunction
100-4	Engine oil press sensor malfunction (low voltage)
10045-2	ADIC malfunction
10050-2	Injector IC malfunction
10051-2	Injector IC communicate malfunction
10052-2	Injector IC check sum malfunction
102-3	Boost pressure sensor malfunction (high voltage)
102-4	Boost pressure sensor malfunction (low voltage)
105-3	Boost temp sensor malfunction (high voltage)
105-4	Boost temp sensor malfunction (low voltage)
1077-2	CPU malfunction
1079-2	5V power supply 1 voltage malfunction
1080-2	5V power supply 2 voltage malfunction
108-3	Baro pressure sensor malfunction (high voltage)
108-4	Baro pressure sensor malfunction (low voltage)
110-0	Over heat
110-3	Water temp sensor malfunction (high voltage)
110-4	Water temp sensor malfunction (low voltage)
1131-3	Manifold temp sensor malfunction (high voltage)
1131-4	Manifold temp sensor malfunction (low voltage)
1239-1	Common rail pressure down (No pump pressure feed)
1239-17	Common rail pressure down (pump pressure feed insufficient)
1347-3	SCV driving system + B short
1347-4	SCV driving system disconnection, GND short
1381-3	Fuel filter clogging sensor malfunction (high voltage)
1381-4	Fuel filter clogging sensor malfunction (low voltage)
1485-5	Main relay system malfunction (not connected)
1485-6	Main relay system malfunction (not disconnected)
157-15	Common rail pressure malfunction (pump over pressure feed)
157-3	Common rail press sensor malfunction (high voltage)
157-4	Common rail press sensor malfunction (low voltage)
158-3	Battery system high voltage malfunction
172-3	Intake air temp sensor malfunction (high voltage)
172-4	Intake air temp sensor malfunction (low voltage)
174-3	Fuel temp sensor malfunction (high voltage)
174-4	Fuel temp sensor malfunction (low voltage)
190-0	Over run

Chapter 9 Troubleshooting (47900N)

Table 9-33 Engine DTC Table PN 47900N (continued)

628-2	ROM malfunction
633-7	Pressure limited open
636-2	Cam sensor malfunction (no signal)
636-7	Cam sensor phase shifting
639-19	CAN Bus malfunction
651-5	Injection nozzle 1 driving system disconnection
652-5	Injection nozzle 2 driving system disconnection
653-5	Injection nozzle 3 driving system disconnection
654-5	Injection nozzle 4 driving system disconnection
676-5	Glow relay malfunction
677-5	Starter cut relay malfunction
723-2	Crank sensor malfunction (no or abnormal signal)
91-2	Accelerator sensor 1-2 comparison malfunction
91-3	Accelerator sensor 1-2 malfunction (high voltage)
91-4	Accelerator sensor 1-2 malfunction (low voltage)
968-2	Idle up down switch malfunction

Chapter 10 Illustrated Parts List

10.0 About the Illustrated Parts List

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

The figure and table titles reference the part number (PN) to which they apply. The PNs for each of the Super Shot 250 Diesel Melter machine models are as follows:

- Super Shot 250 Diesel Melter PN 44100
- Super Shot 250 Diesel Melter with Compressor 100 CFM PN 47900N•

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

10.1 Ordering Crafco Parts

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

When ordering parts, give the following information:

- Part Number
- Machine Model
- Serial Number

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

Crafco, Inc. Headquarters

6165 W Detroit St.

Chandler, AZ 85226

Phone: (602) 276-0406

Toll Free: (800) 528-8242

Fax: (480) 961-0513

Visit our website at www.crafco.com

Chapter 10 Illustrated Parts List

10.2 Super Shot 250 Diesel Melter Assembly 44100

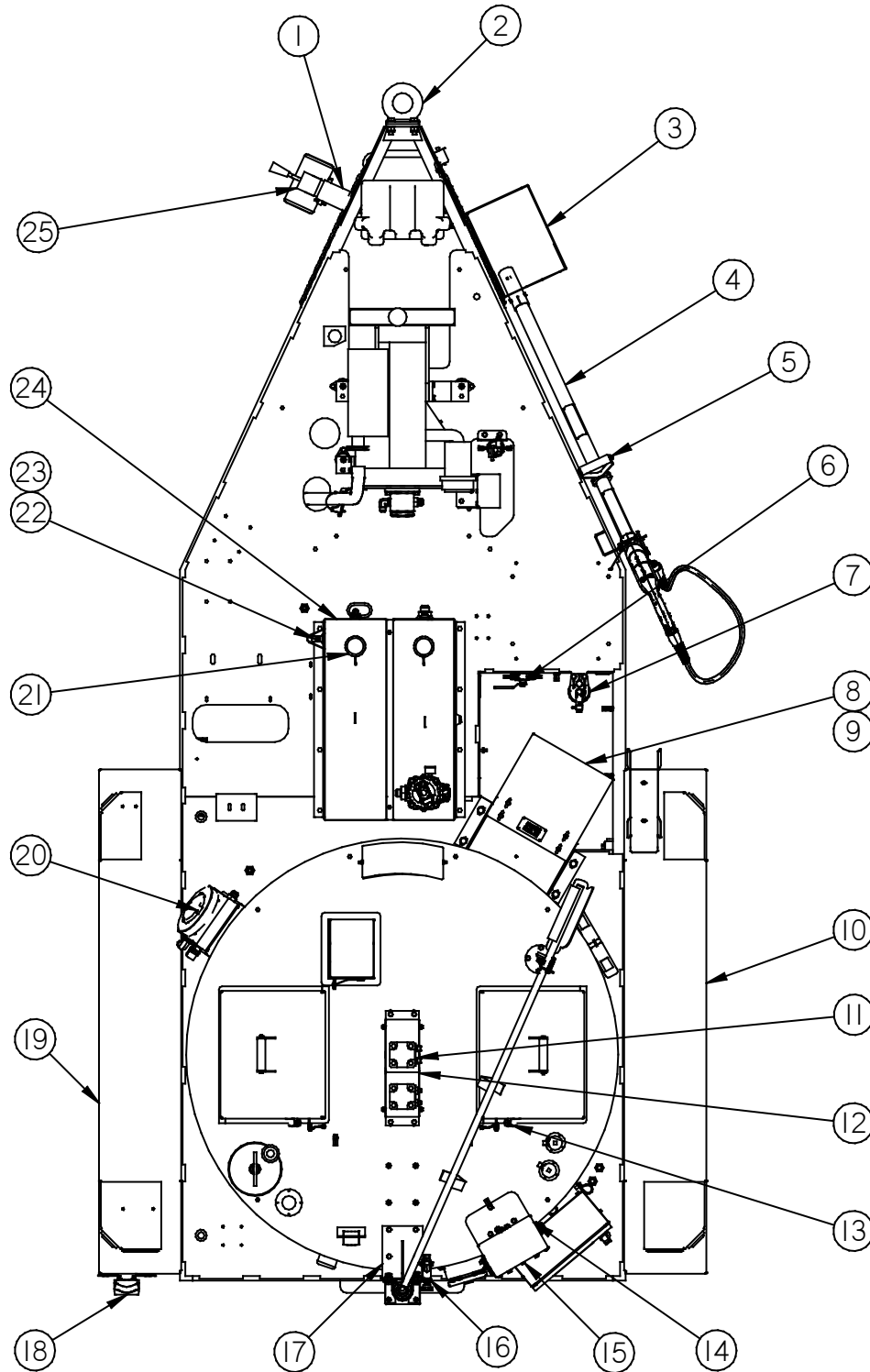


Fig. 10-1 Super Shot 250 Diesel Melter: PN 44100

Chapter 10 Illustrated Parts List

Table 10-1 Super Shot 250 Diesel Melter: PN 44100

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-1	1	23095	SWIVEL BUSHING	1
	2	20014	3" PINTLE HITCH	OPT.
	3	47944N	DRIP PAN ASSEMBLY	1
	4	52200	ELECTRIC HEATED WAND ASSEMBLY 48"	1
	5	43768	WAND HANDLE	1
	6	29195	¼ BALL VALVE	1
	7	47345N	FUEL FILTER ASSY BURNER	1
	8	43114	COVER, BURNER	1
	9	46380	14 VOLT BURNER	1
	10	46172	PASSENGER SIDE FENDER ASSEMBLY	1
	11	43727	CHAIN GUARD ASSEMBLY	2
	12	44832	PUMP / AGITATOR MOTOR ASSEMBLY	1
	13	39608	LID SWITCH	2
	14	47411	BRACKET, HYDRAULIC VALVE	1
	15	44882	COVER, HYDRAULIC VALVE	1
	16	46060	FLOW CONTROL VALVE	1
	17	45579	BOOM BASE	1
	18	44797	LED LICENSE PLATE LAMP	1
	19	46182	DRIVER SIDE FENDER ASSEMBLY	1
	20	45541	HYDRAULIC COOLER SMALL	1
	21	43579	FILLER BREATHER	2
	22	44817	FITTING, SIGHT GAUGE ELBOW	2
	23	44818	TUBING, FUEL SIGHT GAUGE	1
	24	47060N	30 GALLON DIESEL TANK ASSEMBLY	1
	25	23082	TONGUE JACK	1

Chapter 10 Illustrated Parts List

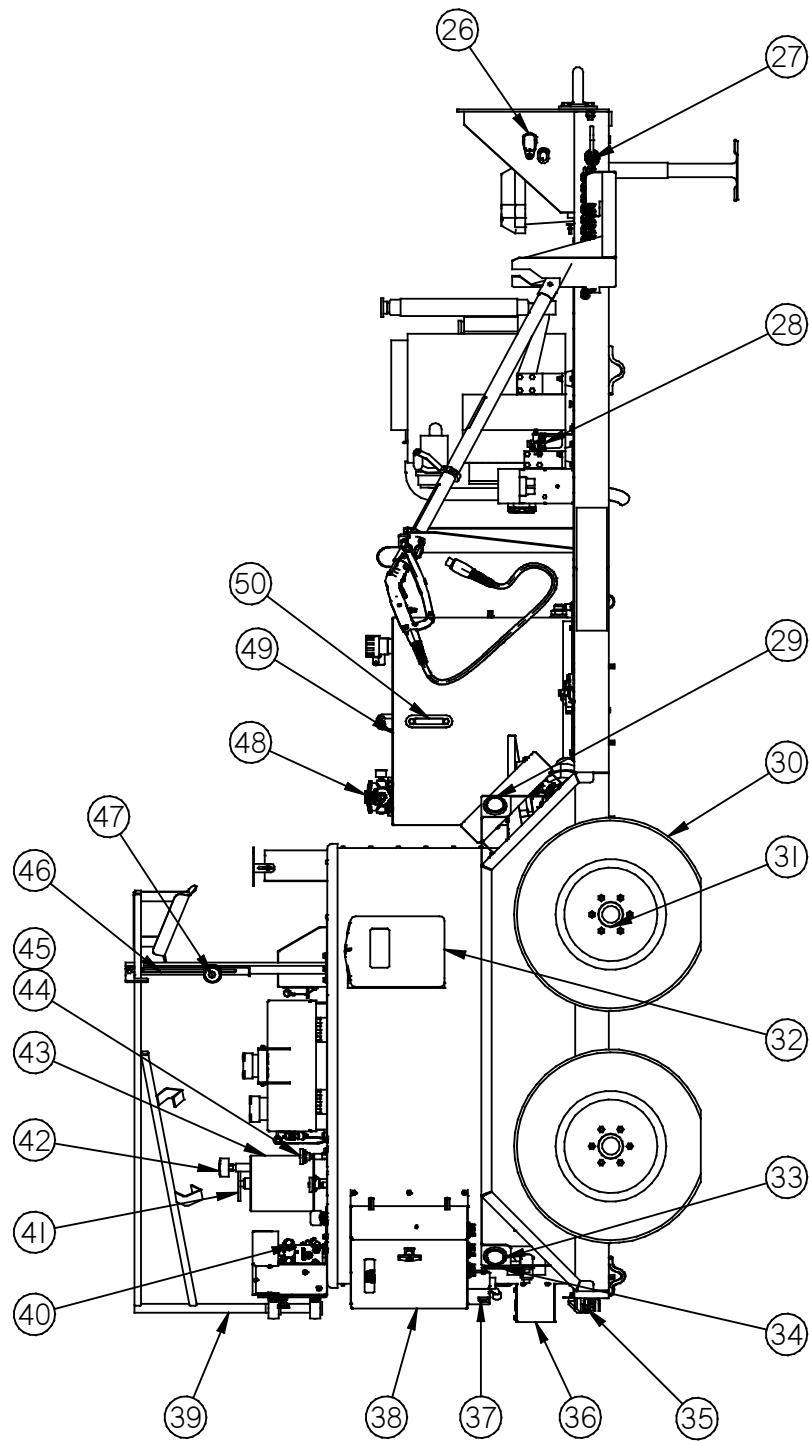


Fig. 10-2 Super Shot 250 Diesel Melter: PN 44100 (continued)

Chapter 10 Illustrated Parts List

Table 10-2 Super Shot 250 Diesel Melter: PN 44100 (continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-2	26	23117	BREAKAWAY SWITCH	1
	27	20130	48" SAFETY CHAIN	2
	28	47150	WATER SEPARATOR	1
	29	44796	YELLOW LED CLEARANCE MARKER	2
	30	44342	TIRE AND WHEEL ASSEMBLY	4
	31	45007	TORSIONAL AXLE ASSEMBLY	2
	32	25289	RECORD BOX	1
	33	32364	2 ½ RED LED SIDE MARKER	2
	34	32363	4" RED LED STOP, TURN AND TAIL LIGHT	2
	35	32371	6" RED CENTER LED KIT	1
	36	43821	HEAT GUARD	1
	37	44027	JUNCTION BOX ASSEMBLY	1
	38	47250N	CONTROL BOX -SS MODULAR	1
	39	45550	HOSE BOOM	1
	40	45420	HYDRAULIC VALVE ASSEMBLY	1
	41	44141	DIP STICK, HEAT TRANSFER OIL	1
	42	26025	AIR BREATHER, HEAT TRANSFER OIL	1
	43	43355	OVERFLOW TANK	1
	44	43465	RTD SENSOR	2
	45	51065	CORD GRIP	2
	46	47914N	BOOM LOCK ASSEMBLY	1
	47	46306	KNOB, THREADED BOOM LOCK	1
	48	45498	HYDRAULIC FILTER ASSEMBLY	1
	48a	45438	HYDRAULIC FILTER ELEMENT	-
	48b	45440	O-RING, HYDRAULIC FILTER	-
	48c	45497	GASKET, HYDRAULIC FILTER	-
	48d	45437	GAUGE, HYDRAULIC FILTER	-
	49	43590	HYDRAULIC TANK ASSEMBLY	1
	50	45415	SIGHT GAUGE, HYDRAULIC	1

Chapter 10 Illustrated Parts List

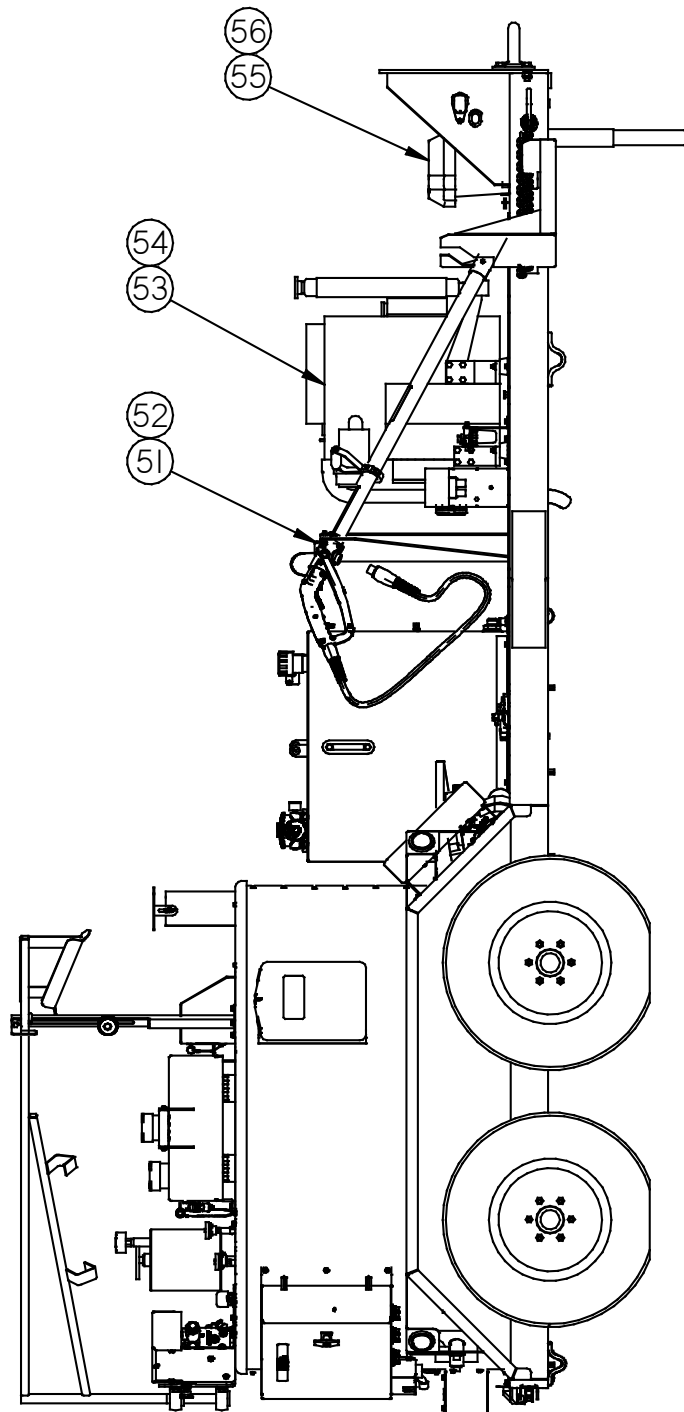


Fig. 10-3 Super Shot 250 Diesel Melter: PN 44100 (continued)

Chapter 10 Illustrated Parts List

Table 10-3 Super Shot 250 Diesel Melter: PN 44100 (continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-3	51	45559	LOCKING ARM, WAND SUPPORT	1
	52	26104	QUICK RELEASE PIN ¼" X 2.5	1
	53	47125N	ENGINE, 3CH1 DYNAGEN CONTROLLER	1
	54	29399	ISOMOUNTS (ENGINE TO FRAME NOT SHOWN)	4
	55	24002	BATTERY BOX	1
	56	24000	12V BATTERY	1
	57	52405	18' ELECTRIC HEATED HOSE (NOT SHOWN)	1
	58	27170	3/8" ROUND SEALING TIP	NS
	59	27171	½" ROUND SEALING TIP	NS
	60	27173	¾" SEALING SHOE	NS
	62	27146	¼" ELONGATED SEALING TIP	NS
	63	50720	WEATHER TIGHT BOOT (NOT SHOWN)	2
	64	31512	30 AMP CIRCUIT BREAKER (NOT SHOWN)	2
	65	24190	OVERNIGHT HEATER ROD	NS
	66	43549	SPARE TIRE WITH MOUNT	NS
	67	51756	DUCKBILL TIP (NOT SHOWN)	1
	68	27162R	3" DISK WITH RESTRICTOR	NS
69	27163R	4" DISK WITH RESTRICTOR	NS	

Chapter 10 Illustrated Parts List

10.3 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N

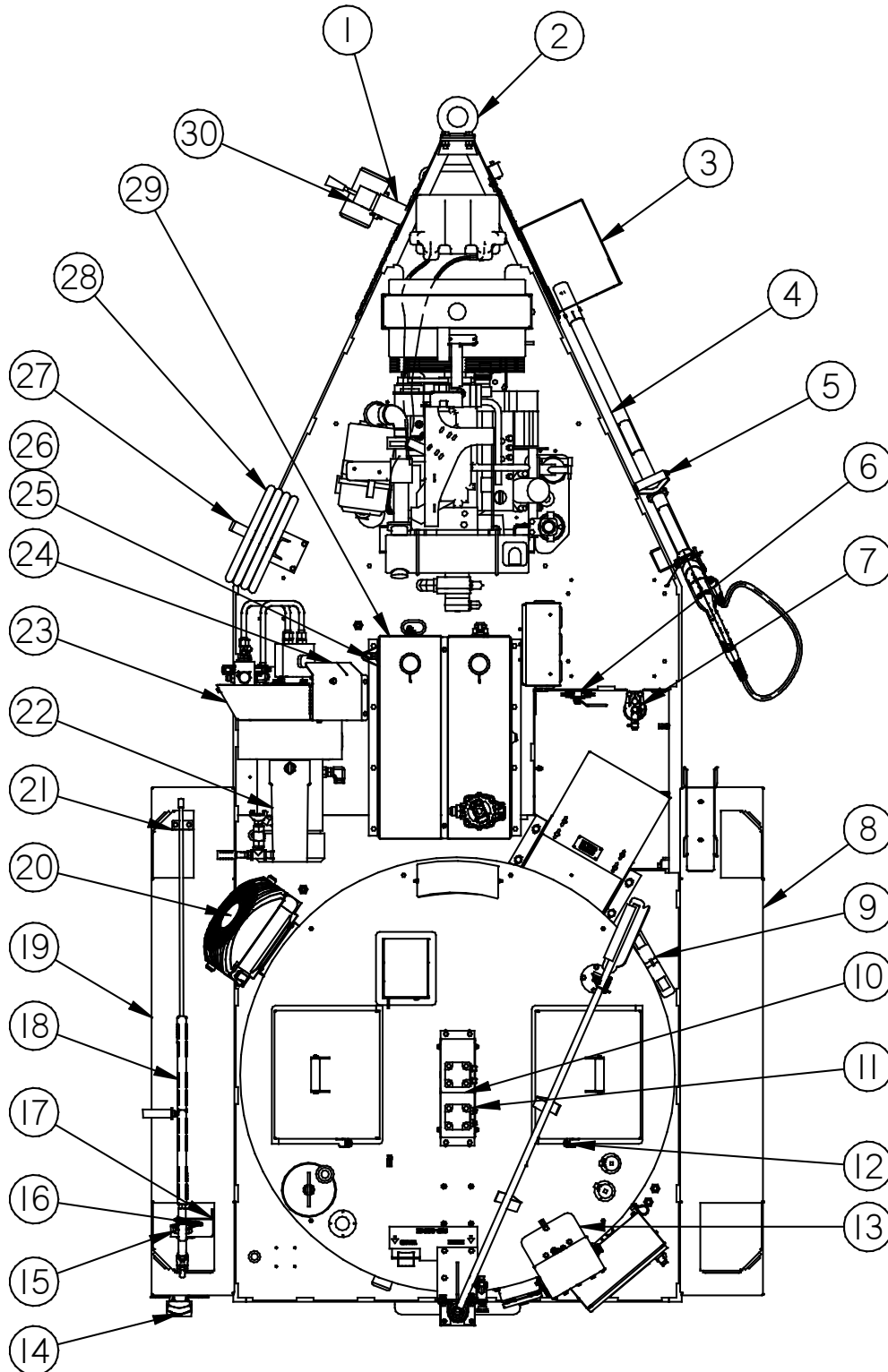


Fig. 10-4 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N

Chapter 10 Illustrated Parts List

Table 10-4 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-4	1	23095	SWIVEL BUSHING	1
	2	20014	3" PINTEL HITCH	OPT.
	3	46041	DRIP PAN, EZ SERIES II	1
	4	52200	48" WAND ASSEMBLY	1
	5	43768	WAND HANDLE	1
	6	29195	¼" BALL VALVE	1
	7	47345N	FILTER ASSEMBLY	1
	8	46172	PASSENGER SIDE FENDER	1
	9	25289	RECORD BOX	1
	10	44832	PUMP / AGITATOR MOTOR ASSEMBLY	1
	11	43727	CHAIN GUARD ASSEMBLY	2
	12	39608	LID SWITCH	1
	13	47411	MOUNT, HYDRAULIC VALVE	1
	14	44797	LED LICENSE PLATE LAMP	1
	15	47532N	WAND LOWER EDGE TRIM	1
	16	47531N	WAND UPPER EDGE TRIM	1
	17	47632N	SUPPORT, REAR-COLD AIR LANCE	1
	18	47483N	COLD AIR LANCE HIGH OUTPUT	1
	19	46182	DRIVER SIDE FENDER	1
	20	47562	LARGE HYDRAULIC COOLER	1
	21	47631N	SUPPORT, FRONT-COLD AIR LANCE	1
	22	47480N	COMPRESSOR ASSEMBLY 100 CFM	1
	23	47644N	COMPRESSOR SHROUD, 100CFM	1
	24	47478N	DEFLECTOR COMPRESSOR	1
	25	44817	FITTING, SIGHT GAUGE ELBOW	2
	26	44818	TUBING, FUEL SIGHT GAUGE	1
	27	47060N	30 GALLON DIESEL TANK ASSEMBLY	1
	28	47485N	RACK ASSY, ¾" AIR HOSE	1
	29	47482N	HOSE, ¾" X 50' AIR	1
	30	23082	TONGUE JACK	1

Chapter 10 Illustrated Parts List

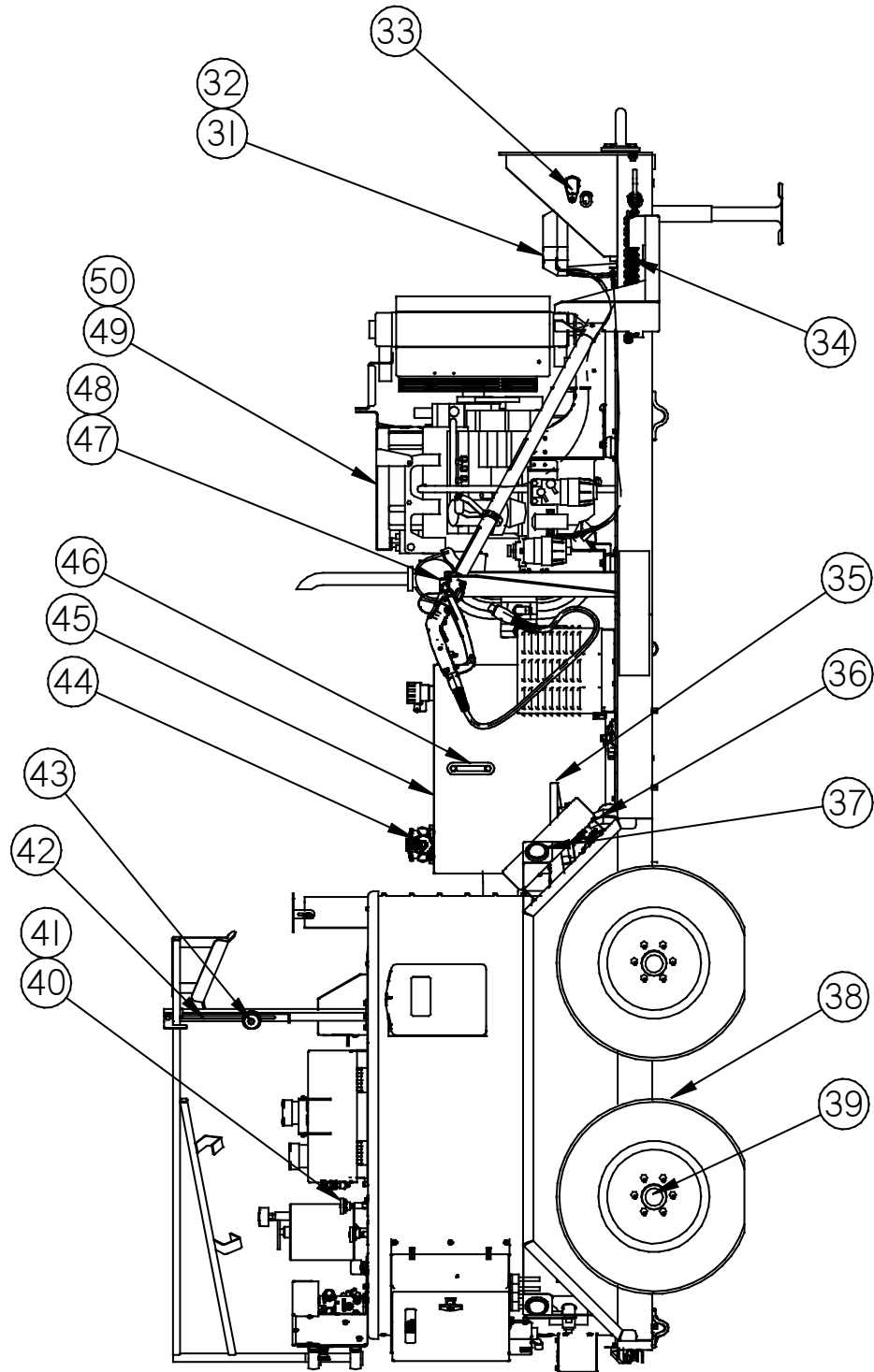


Fig. 10-5 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N (continued)

Chapter 10 Illustrated Parts List

Table 10-5 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N (continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-5	31	24002	BATTERY BOX	1
	32	24000	12V BATTERY	1
	33	23117	BREAKAWAY SWITCH	1
	34	20130	48" SAFETY CHAIN	2
	35	43114	COVER, BURNER	1
	36	46380	14 VOLT BURNER	1
	37	32365	YELLOW LED CLEARANCE MARKER	2
	38	44341	TIRE AND WHEEL ASSEMBLY	4
	39	46115	TORSIONAL AXLE	2
	40	43465	RTD SENSOR	2
	41	51065	CORD GRIP	2
	42	47914N	BOOM LOCK ASSEMBLY	1
	43	46306	KNOB, THREADED BOOM LOCK	1
	44	45498	HYDRAULIC FILTER ASSEMBLY	1
	44a	45438	HYDRAULIC FILTER ELEMENT	-
	44b	45440	O-RING, HYDRAULIC FILTER	-
	44c	45497	GASKET, HYDRAULIC FILTER	-
	44d	45437	GAUGE, HYDRAULIC FILTER	-
	45	43590	HYDRAULIC TANK ASSEMBLY	1
	46	45415	SIGHT GAUGE, HYDRAULIC	1
	47	45559	LOCKING ARM, WAND SUPPORT	1
	48	26104	QUICK RELEASE PIN ¼" X 2.5	1
	49	47111N	4LE2T ENGINE	1
	50	46473	ISOMOUNT (ENGINE TO FRAME- NOT SHOWN)	4

Chapter 10 Illustrated Parts List

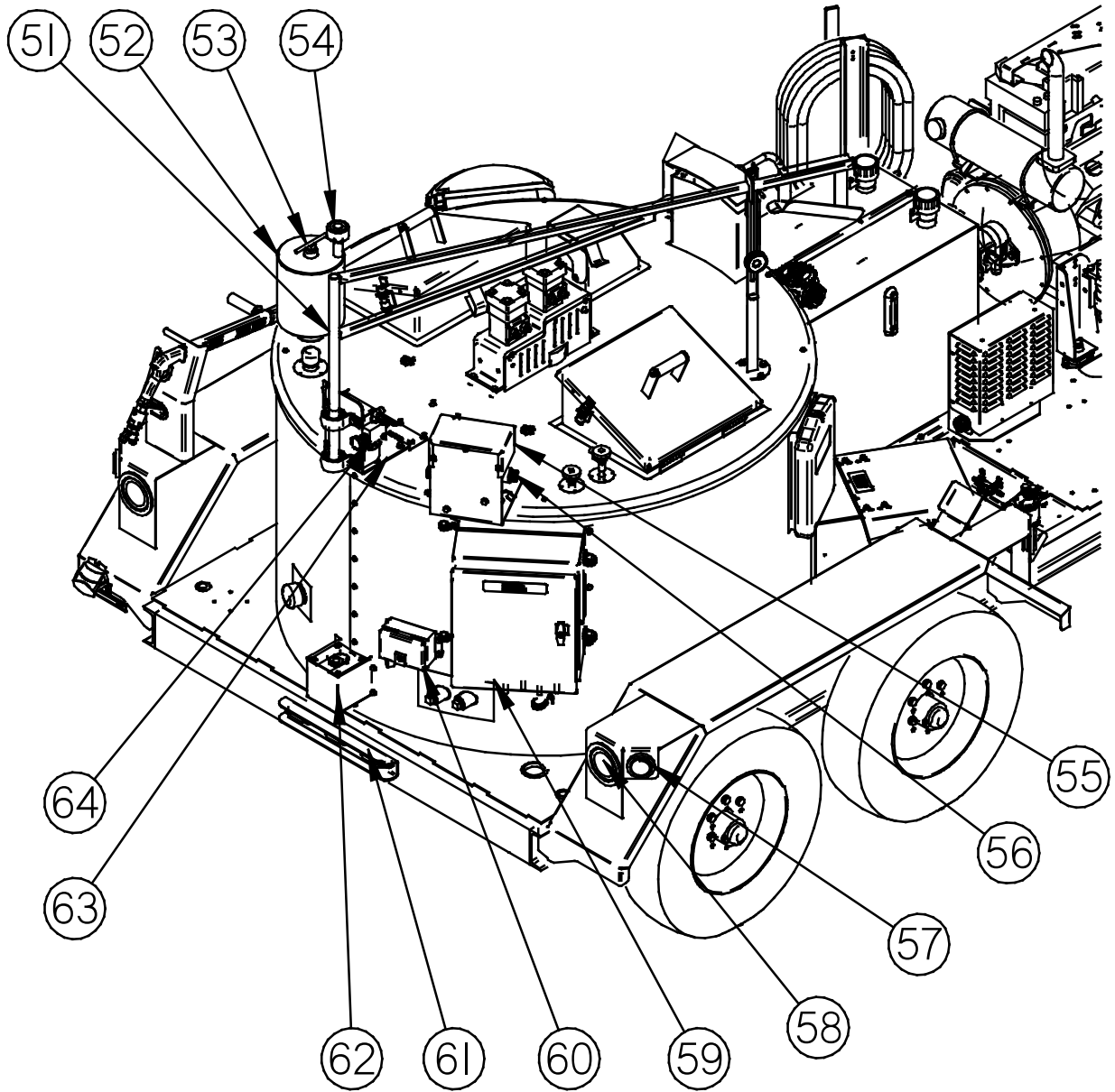


Fig. 10-6 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N (continued)

Chapter 10 Illustrated Parts List

Table 10-6 Super Shot 250 Diesel Melter Comp. 100 CFM PN 47900N (continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-6	51	45550	HOSE BOOM	1
	52	47917N	DIP STICK, SS250	1
	55	26025	AIR BREATHER, HEAT TRANSFER OIL	1
	54	43355	OVERFLOW TANK	1
	55	44882	COVER, HYDRAULIC VALVE	1
	56	45420	HYDRAULIC VALVE ASSEMBLY	1
	57	32364	2 ½" RED LED SIDE MARKER	2
	58	32363	4" RED LED STOP, TURN AND TAIL LIGHT	2
	59	47225N	CONTROL BOX ASSEMBLY	1
	60	44027	JUNCTION BOX ASSEMBLY	1
	61	32371	6" RED CENTER LED KIT	1
	62	43821	HEAT GUARD	1
	63	45579	BOOM BASE	1
	64	46060	FLOW CONTROL VALVE	1
	65	52405	18' ELECTRIC HEATED HOSE (NOT SHOWN)	1
	66	27170	3/8" ROUND SEALING TIP	NS
	67	27171	½" ROUND SEALING TIP	NS
	68	27173	¾" SEALING SHOE	NS
	69	27146	¼" ELONGATED SEALING TIP	NS
	70	31512	30 AMP CIRCUIT BREAKER (NOT SHOWN)	2
	71	24190	OVERNIGHT HEATER ROD	NS
	72	43549	SPARE TIRE WITH MOUNT	NS
	73	51756	DUCKBILL TIP (NOT SHOWN)	1
	74	27162R	3" DISK WITH RESTRICTOR	NS
	75	27163R	4" DISK WITH RESTRICTOR	NS

Chapter 10 Illustrated Parts List

10.4 Tank Assembly, All Models

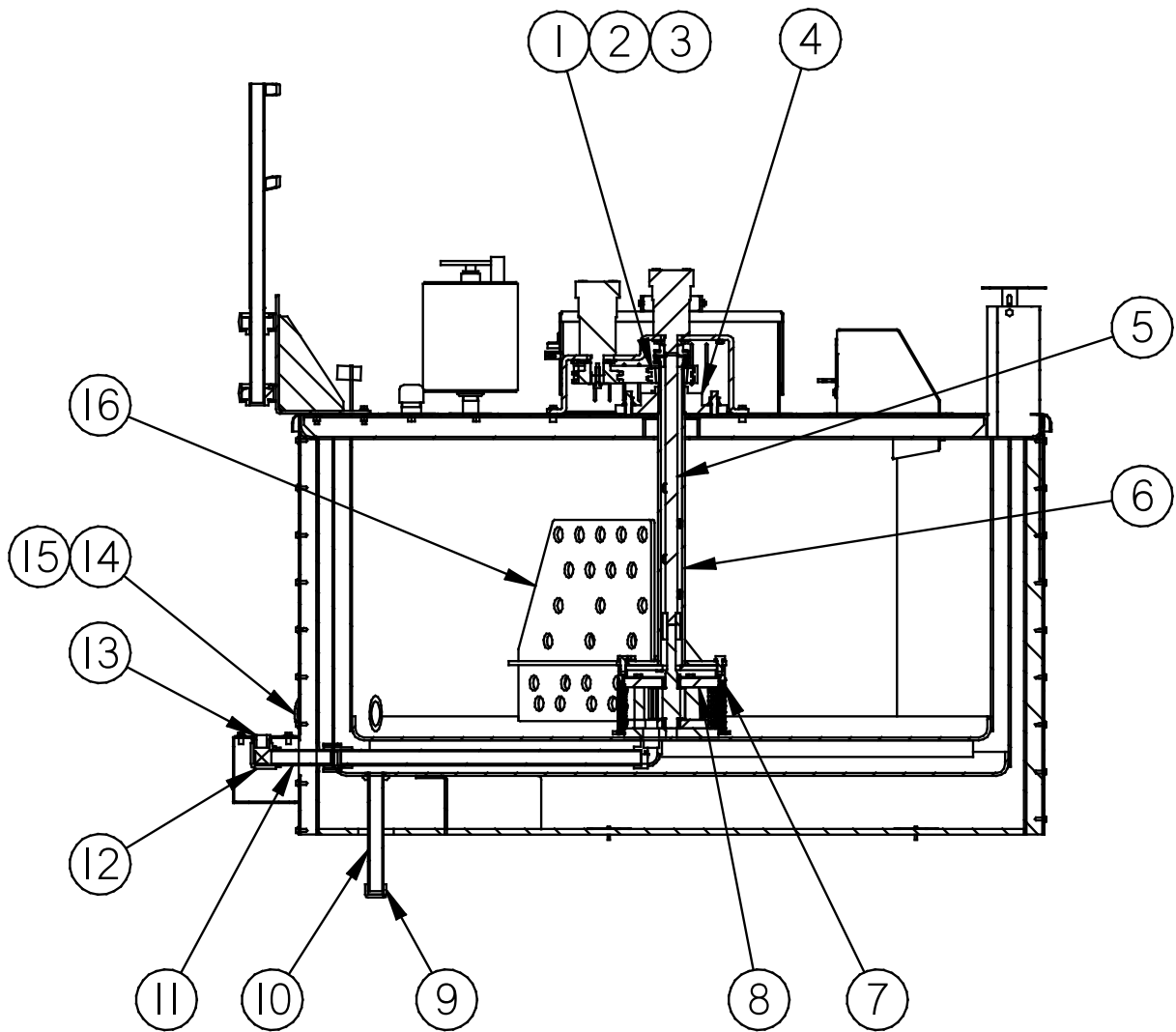


Fig. 10-7 Tank Assembly, All Models

Chapter 10 Illustrated Parts List

Table 10-7 Tank Assembly: All Models

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-7	1	44165	SPROCKET DRIVEN	1
	2	43321	CHAIN DRIVE	1
	3	44163	KEY, SPROCKET	1
	4	43760	BEARING, FLANGED	1
	5	47918N	SHAFT, DRIVE PUMP	1
	6	47920N	SHAFT AGITATOR	1
	7	43655	SCREEN PUMP	1
	8	44850	PUMP, MATERIAL	1
	9	28270	1" PIPE CAP	1
	10	28132	1" X 10" LONG PIPE NIPPLE	1
	11	28055	1" X 5" LONG PIPE NIPPLE	1
	12	28210	1" PIPE ELBOW	1
	13	28351	1" X 3/4" REDUCER BUSHING	1
	14	28046	2" X 4" LONG PIPE NIPPLE	1
	15	28273	2" PIPE CAP	1
	16	44146	PADDLE AGITATOR	2

Chapter 10 Illustrated Parts List

10.5 Control Box Assembly, 44100

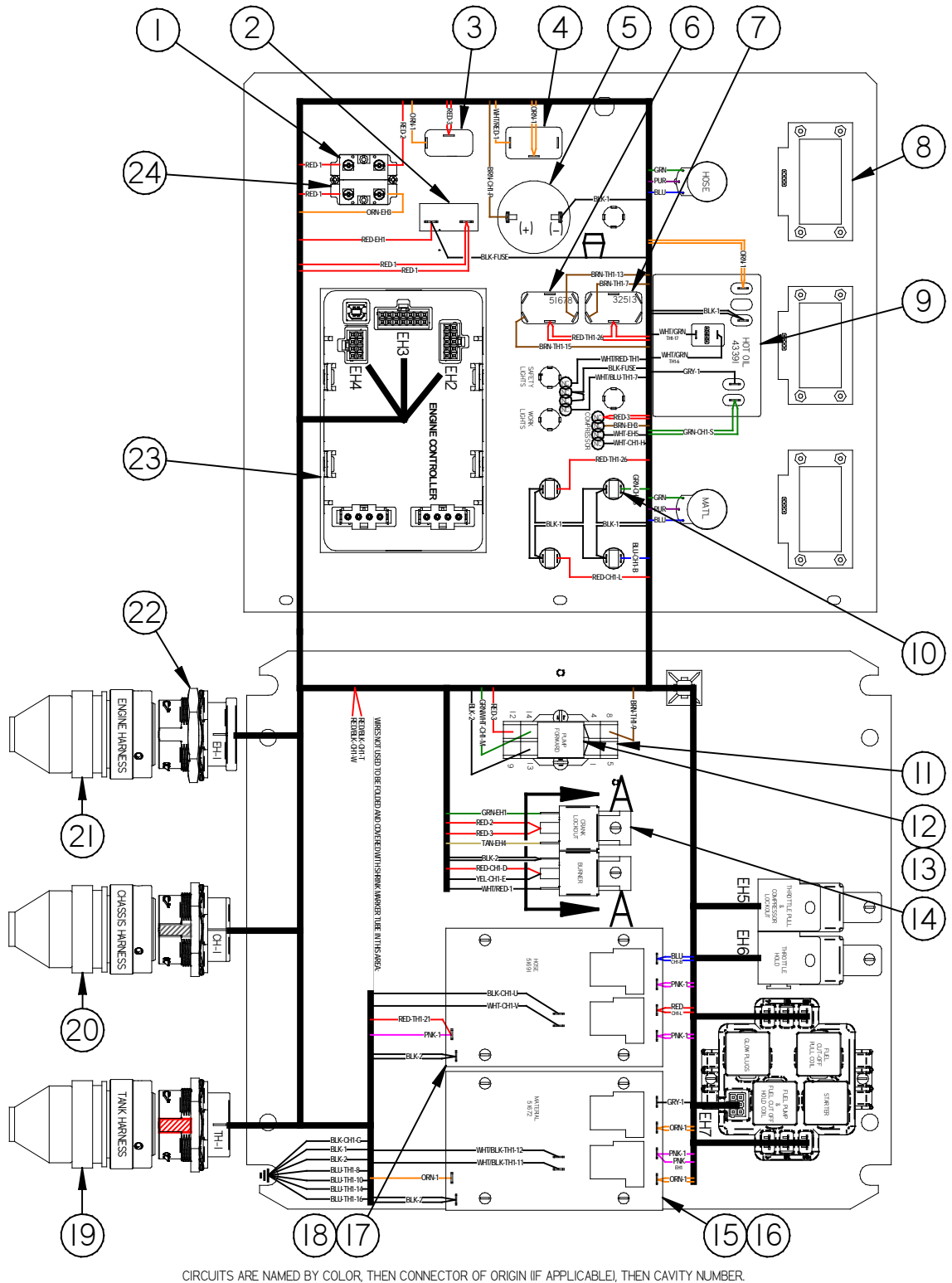


Fig. 10-8 Control Box Assembly: 44100

Chapter 10 Illustrated Parts List

Table 10-8 Control Box Assembly: 44100

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-8	1	51852	CONTACT BLOCK, N.O.	2
	2	51665	CIRCUIT BREAKER, 15 AMP	1
	3	50719	TOGGLE SWITCH, SPST ON-OFF	1
	4	52338	TOGGLE SWITCH, SPDT ON-(ON)	1
	5	46494	ALARM, PIEZO	1
	6	51678	TOGGLE SWITCH, SPDT ON-OFF-(ON)	1
	7	32513	TOGGLE SWITCH, DPDT (ON)-OFF(ON)	1
	8	50251	DIGITAL READOUT	3
	9	43391	TEMPERATURE CONTROLLER, 150F-550F	1
	10	51651	LIGHT, 12VDC	4
	11	51662	SOCKET, RELAY	1
	12	51661	RELAY, DPDT	1
	13	51663	SPRING, RELAY HOLD DOWN	1
	14	51673	RELAY, SPDT	2
	15	51670	SPACER, CONTROLLER	4
	16	51672	TEMPERATURE CONTROLLER, 400F/275F	1
	17	51670	SPACER, CONTROLLER	4
	18	51691	TEMPERATURE CONTROLLER, 400F/325F	1
	19	38305N	HARNESS, TANK	1
	20	38205N	HARNESS, CHASSIS	1
	21	45970	HARNESS, ENGINE CONTROL	1
	22	45954	PANEL NUT	3
	23	38090N	ENGINE CONTROLLER, D.E.C.	1
	24	46239	SWITCH, ON-OFF W/KEY (FRONT PANEL)	1
	25	50593	KNOB, TEMP CONTROL (FRONT PANEL)	3
	26	38050N	ENCLOSURE, CONTROL BOX (NOT SHOWN)	1
	27	51684	RIBBON CABLE, 36" (NOT SHOWN)	2
	28	51698	RIBBON CABLE, 5" (NOT SHOWN)	1

Chapter 10 Illustrated Parts List

10.6 Control Box Assembly, 47900N

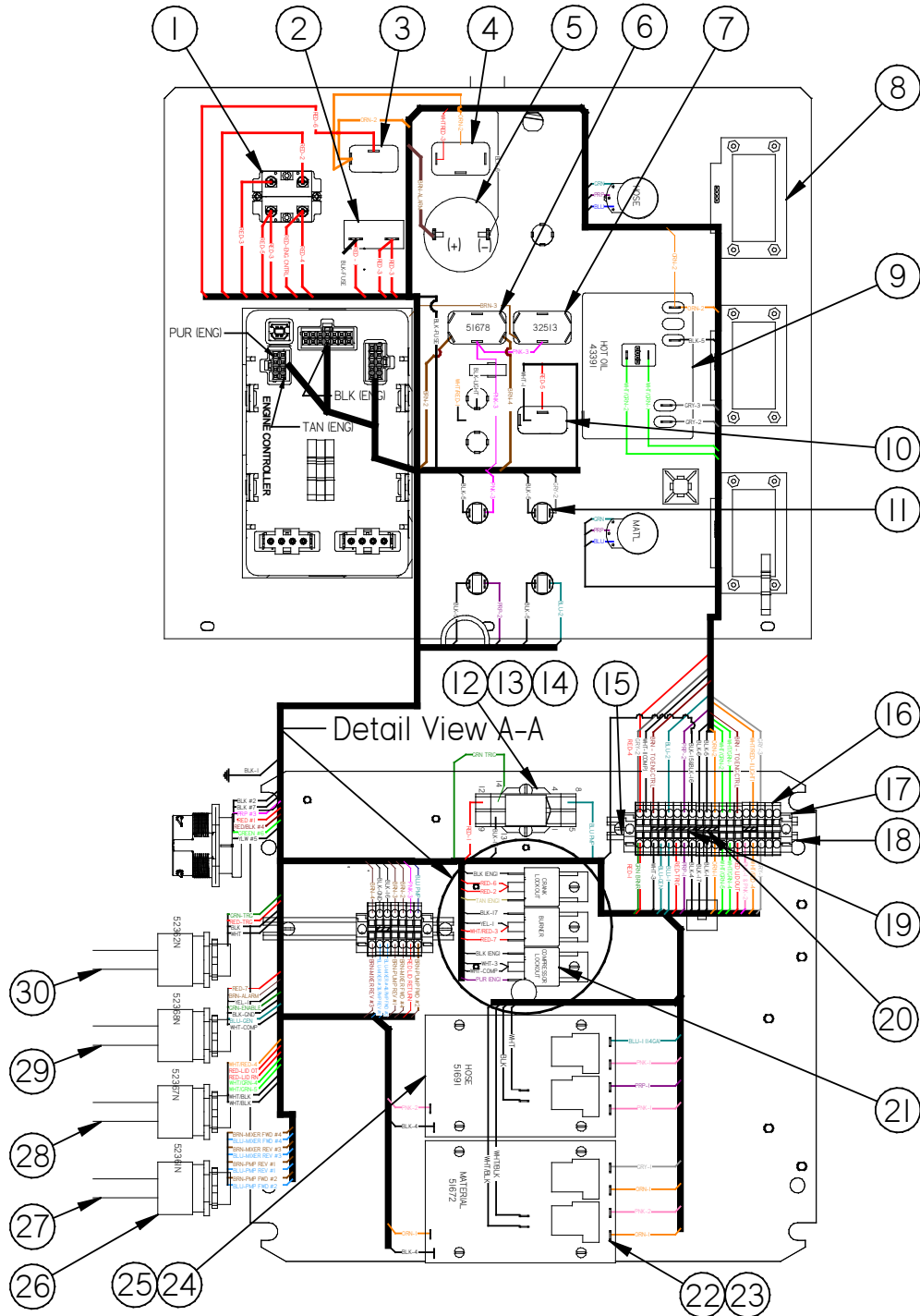


Fig. 10-9 Control Box Assembly: 47900N

Chapter 10 Illustrated Parts List

Table 10-9 Control Box Assembly: 47900N

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-9	1	51852	CONTACT BLOCK, N.O.	2
	2	51665	CIRCUIT BREAKER, 15 AMP	1
	3	50719	TOGGLE SWITCH	1
	4	52338	SWITCH, SPDT ON (ON)	1
	5	46494	ALARM, PIEZO	1
	6	51678	SWITCH SPDT	1
	7	32513	TOGGLE SWITCH	1
	8	50251	DIGITAL READOUT	3
	9	43391	TEMPERATURE CONTROLLER, 150°F – 550°F	1
	10	50719	TOGGLE SWITCH	1
	11	51651	LIGHT, 12VDC	4
	12	51662	SOCKET RELAY	1
	13	51661	RELAY	1
	14	51663	HOLD DOWN SPRING	1
	15	51802	END BRACKET, TENSION CLAMP	1
	16	51800	FEED THROUGH TERMINAL	26
	17	51805	BRACKET, END	2
	18	51803	MOUNTING RAIL, TENSION CLAMP	1
	19	51801	2-POLE JUMPER	1
	20	51804	3-POLE JUMPER	1
	21	51673	RELAY	3
	22	51670	SPACER, CONTROLLER	4
	23	51672	TEMPERATURE CONTROLLER 400°F / 275°F	1
	24	51670	SPACER, CONTROLLER	4
	25	51691	TEMPERATURE CONTROLLER 400°F / 325°F	1
	26	24021	CORD GRIP CONNECTOR ½"	4
	27	52361N	CABLE ASSEMBLY, DIN PLUG	1
	28	52367N	CABLE ASSEMBLY, SENSOR	1
	29	52368N	CABLE, CHASSIS, SS NO SOLENOID	1
	30	52362N	CABLE, TRIGGER/SENSOR	1

Chapter 10 Illustrated Parts List

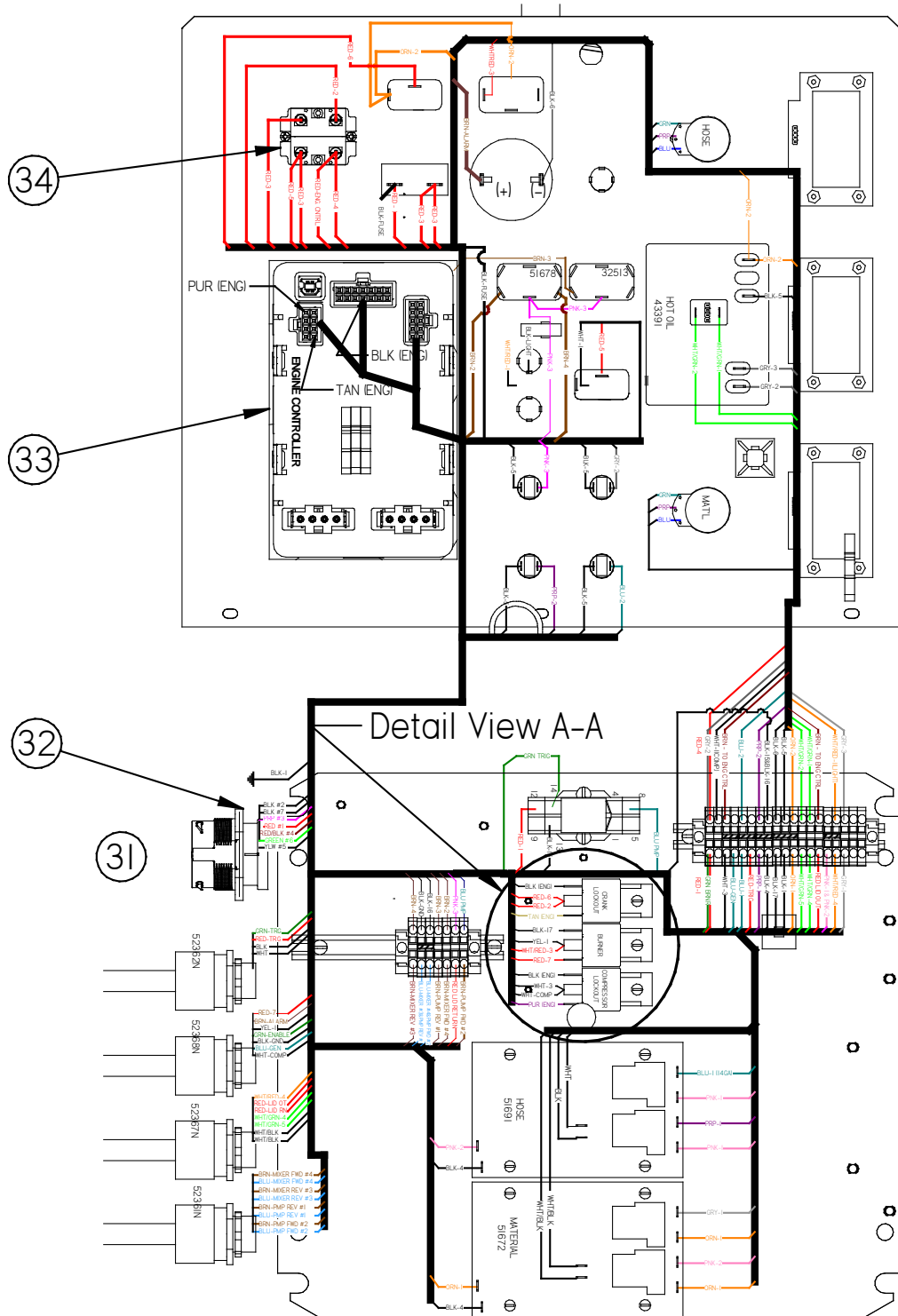


Fig. 10-10 Control Box Assembly : 47900N (continued)

Chapter 10 Illustrated Parts List

Table 10-10 Control Box Assembly : 47900N (continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-10	31	47211N	HARNESS, CONTROLLER	1
	32	45954	PANEL NUT	1
	33	47209	ENGINE CONTROLLER	1
	34	46239	SWITCH ON/OFF W/ KEY (FRONT PANEL)	1
	35	50593	KNOB, TEMP CONTROL (FRONT PANEL)(NOT SHOWN)	3
	36	47203	ENCLOSURE, CONTROL BOX (NOT SHOWN)	1
	37	51684	RIBBON CABLE, 36" (NOT SHOWN)	2
	38	51698	RIBBON CABLE, 5" (NOT SHOWN)	1

Chapter 10 Illustrated Parts List

10.7 Engine Assembly: PN 44100

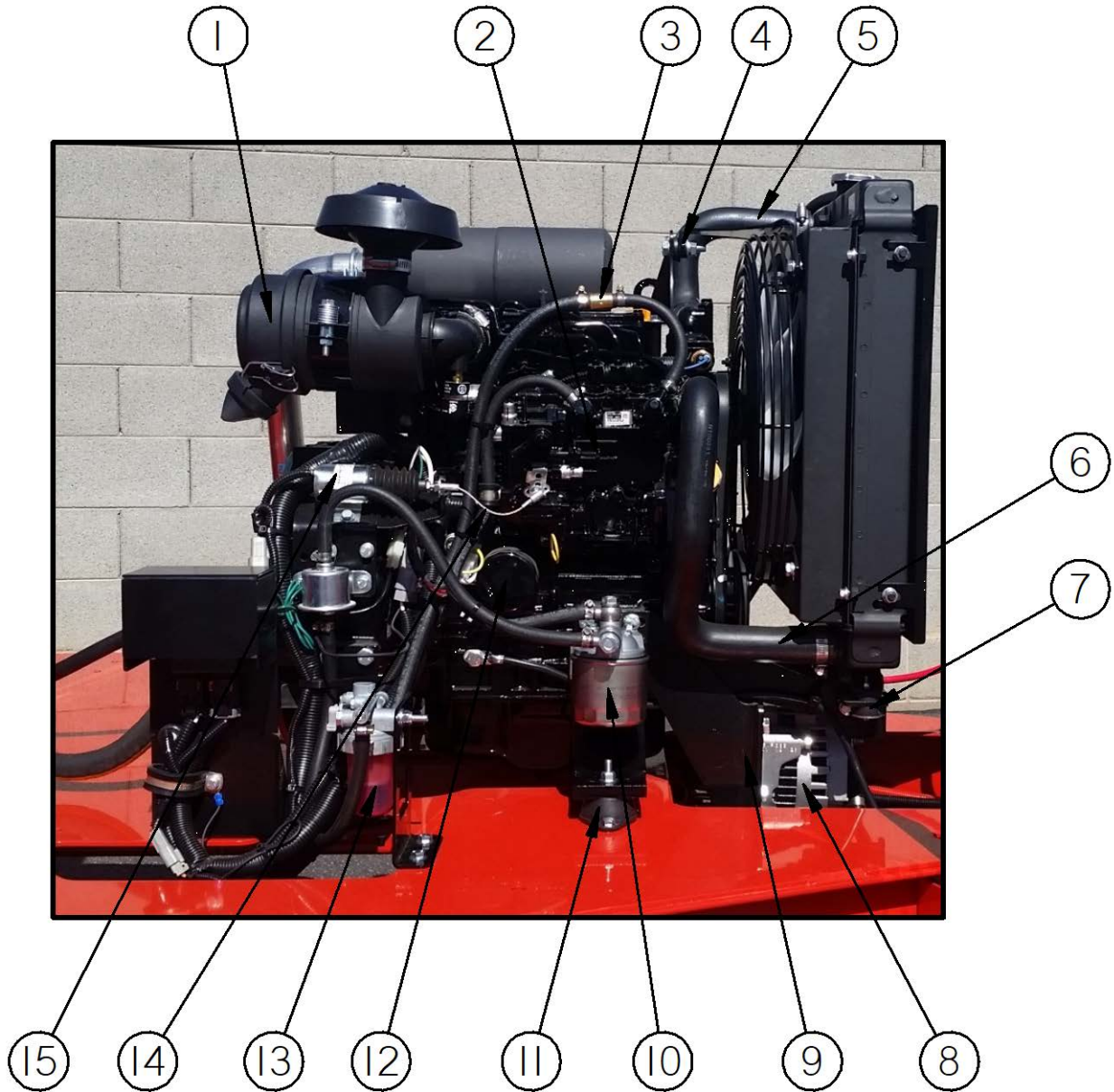


Fig. 10-11 Engine Assembly: 44100

Chapter 10 Illustrated Parts List

Table 10-11 Engine Assembly: PN 44100

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-11	1	45391	AIR FILTER ELEMENT	1
	2	47125N	ENGINE, 23 HP 3CH1	1
	3	47149N	VALVE – CHECK INLINE 5/16 BARB	1
	4	47138N	UPPER RADIATOR ISO MOUNT	1
	5	45444U	UPPER RADIATOR HOSE	1
	6	45444L	LOWER RADIATOR HOSE	1
	7	41872	LOWER RADIATOR ISO MOUNT	2
	8	43612	GENERATOR. 24VAC	1
	9	45748	DRIVE BELT, GENERATOR	1
	10	41867	FUEL FILTER	1
	11	29399	ISOMOUNTS	4
	12	45389	OIL FILTER	1
	13	47150	WATER SEPARATOR (NOT SHOWN)	1
	14	N/A	THROTTLE CABLE ASSEMBLY	1
	15	N/A	THROTTLE SOLENOID	1
	16	45402	HYDRAULIC PUMP (NOT SHOWN)	1
	17	45443N	RADIATOR KIT (RADIATOR, SHROUD, FINGER GUARD, CAP, NOT SHOWN)	1
	18	47155N	RADIATOR OVERFLOW BOTTLE KIT (NOT SHOWN)	1

Chapter 10 Illustrated Parts List

10.8 Engine Assembly: PN 47900N

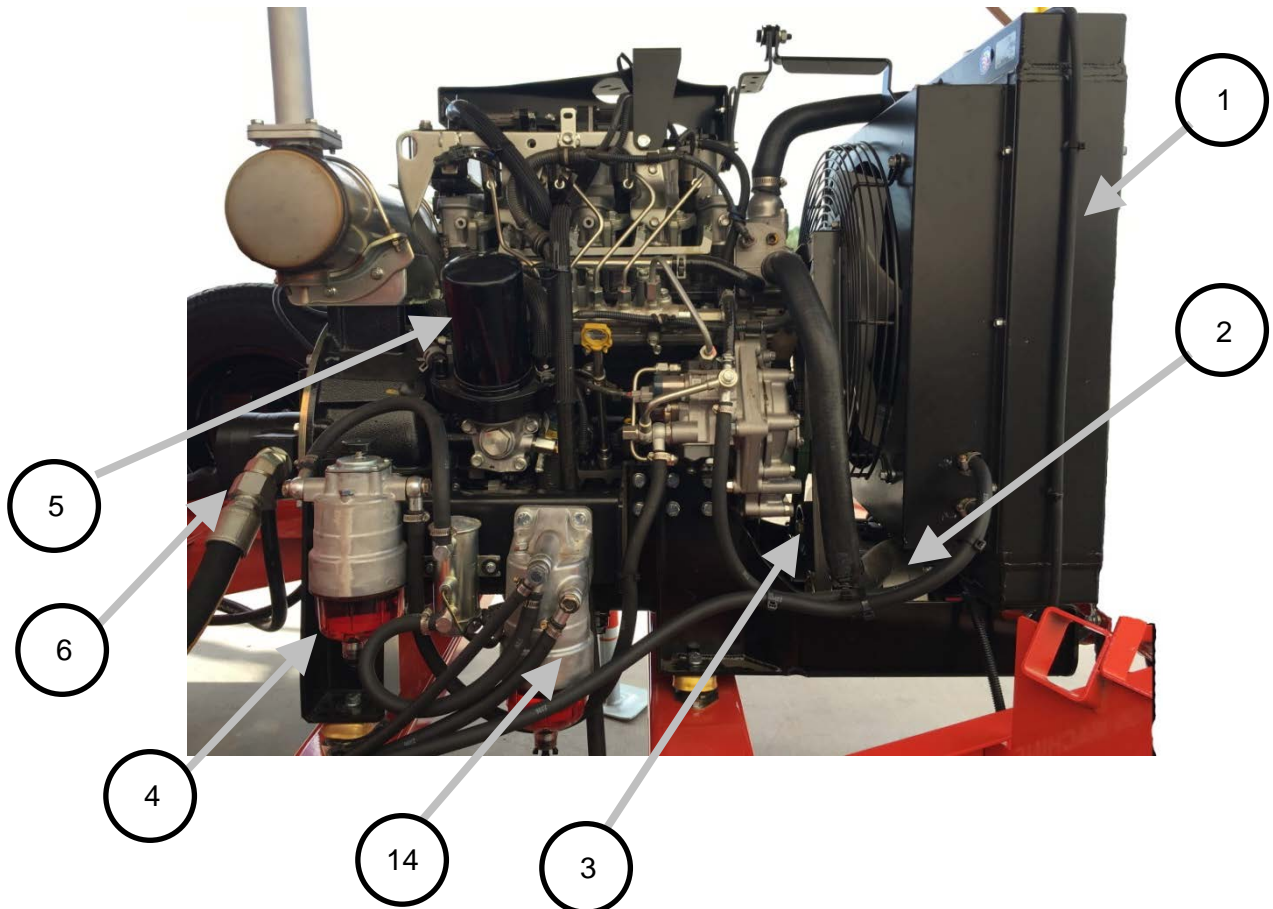


Fig.10-12 Engine Assembly – 47900N

Chapter 10 Illustrated Parts List

Table 10-12 Engine Assembly: PN 47900N

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig.10-12	1	47111N	ENGINE, 4LE2T – SINGLE. GEN, ELEC HOSE	1
	2	46322	GENERATOR, 24VAC	1
	3	47183N	BELT, DRIVE – GENERATOR	1
	3a	47170N	TENSIONER, BELT (NOT SHOWN)	1
	4	47167N	FUEL FILTER	1
	5	47168N	OIL FILTER	1
	6	45491N	HYDRAULIC PUMP	1
	7	47173N	WORKSHOP MANUAL	OPT.
	8	47171N	MANUAL, PARTS	OPT.
	9	47172N	OWNERS MANUAL	1
	10	47177N	BELT, ENGINE FAN (Not Shown)	1
	11	47181N	THERMOSTAT (Not Shown)	1
	12	47182N	PUMP, WATER (Not Shown)	1
	13	47185N	FUEL PUMP (Not Shown)	1
14	47176N	FILTER, FUEL PRE	1	

Chapter 10 Illustrated Parts List

10.9 Engine Assembly: PN 47900N Air Filter Side

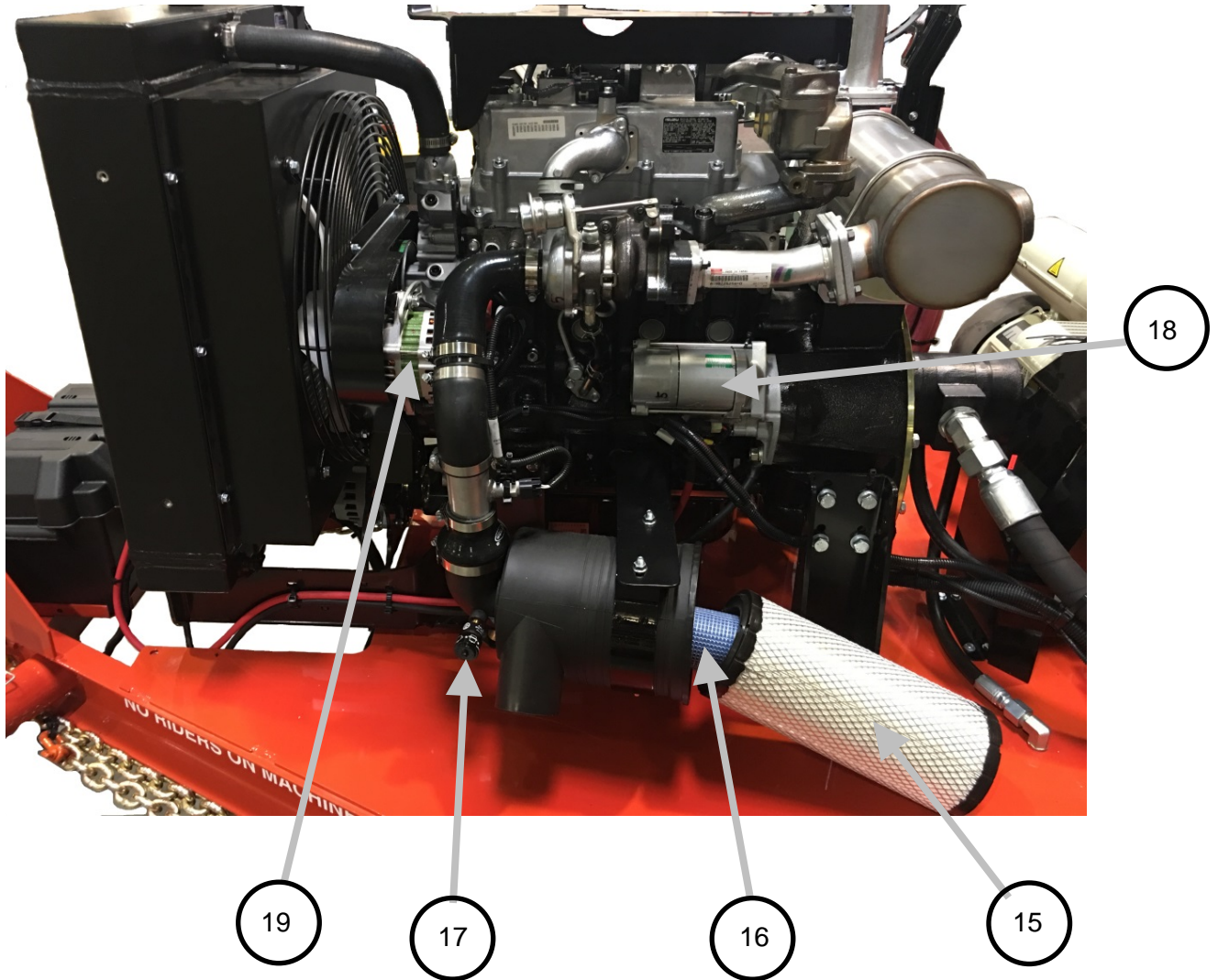


Fig. 10-13 Engine Assembly: 47900N Air Filter Side

Chapter 10 Illustrated Parts List

Table 10-13 Engine Assembly: PN 47900N Air Filter Side

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-13	15	47169N	AIR FILTER ELEMENT	1
	16	47186N	SAFETY ELEMENT	1
	17	47175N	RESTRICTION INDICATOR	1
	18	47179N	STARTER	1
	19	47180N	ALTERNATOR, ENGINE	1

Chapter 10 Illustrated Parts List

10.10 Hydraulic Control Valve Assembly: PN 45420 All Models

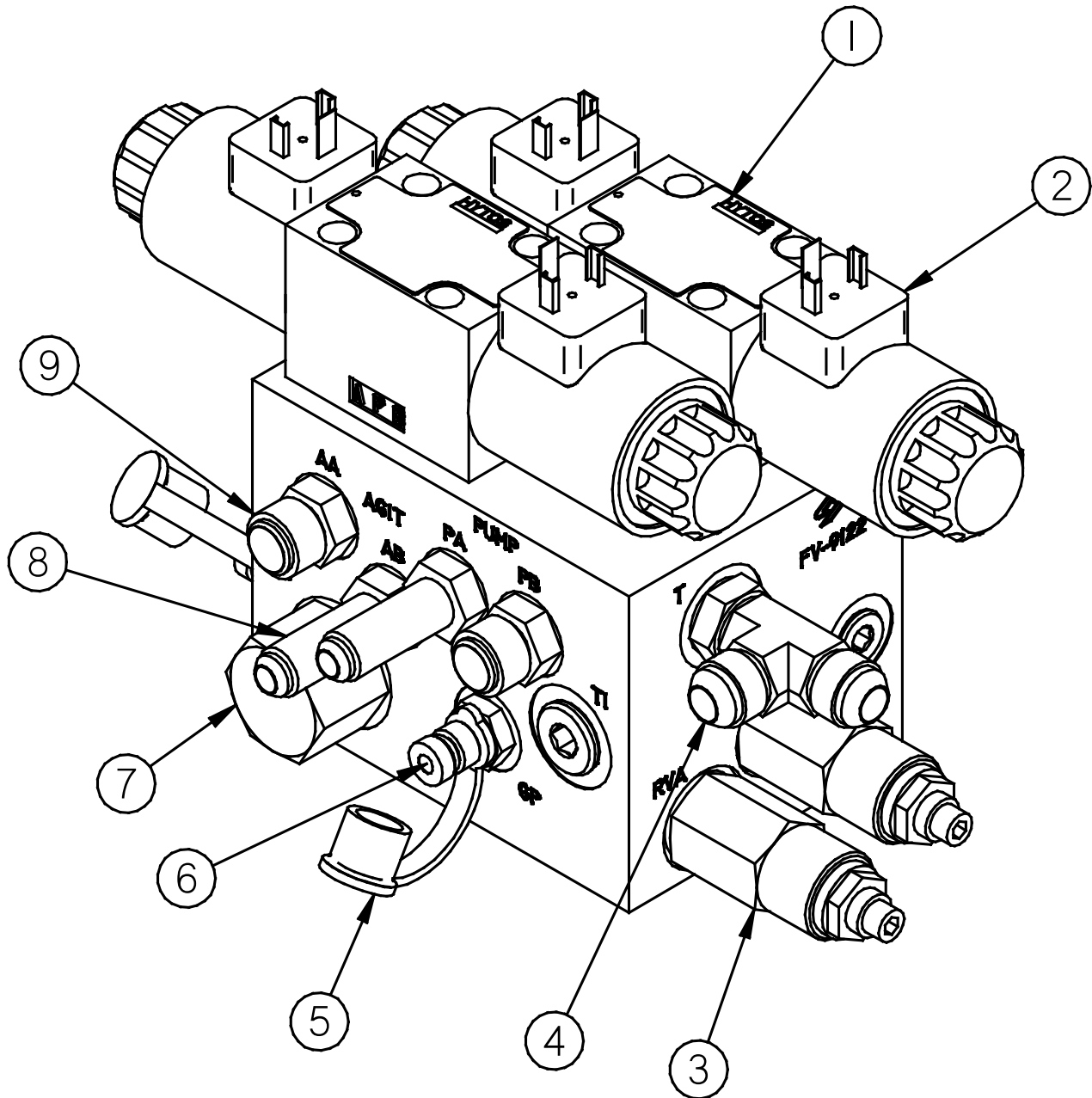


Fig. 10-14 Hydraulic Control Valve Assembly: PN 45420 All Models

Chapter 10 Illustrated Parts List

Table 10-14 Hydraulic Control Valve Assembly: PN 45420 All Models

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-14	1	45418	VALVE, DIRECTIONAL REXROTH	2
	2	45436	COIL, DIRECTIONAL VALVE REXROTH	4
	3	45417	VALVE RELIEF	2
	4	29897	FITTING, #8 ORB X #8 MALE JIC STR	1
	5	45413	DUST CAP	2
	6	45414	FITTING, TEST PORT	2
	7	45416	FLOW CONTROL, PRIORITY	1
	8	40308	FITTING, #6 ORB X #6 MALE JIC STR	2
	9	29919	FITTING, #6 ORB X #8 MALE JIC STR	2

Chapter 10 Illustrated Parts List

10.11 Material Flow Control Assembly: PN 46060 All Models

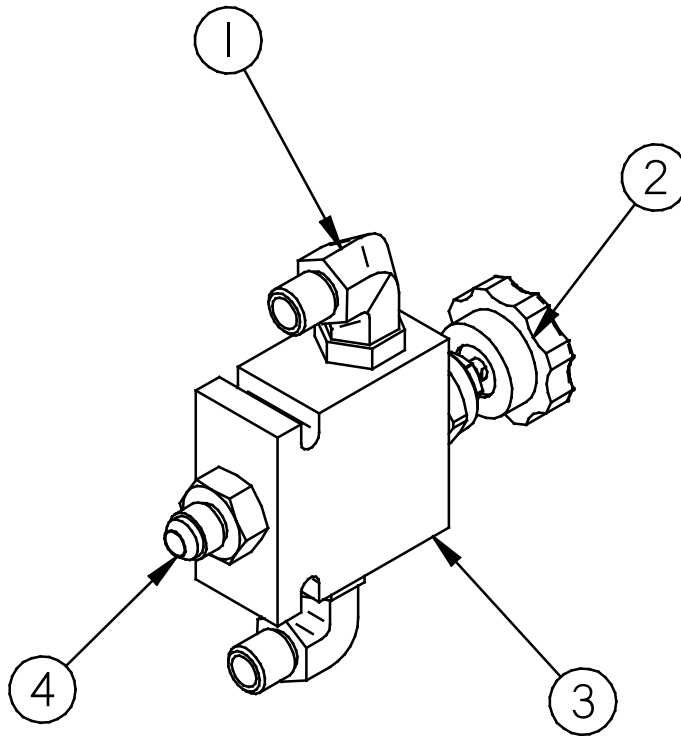


Fig. 10-15 Material Flow Control Assembly: PN 46060 All Models

Chapter 10 Illustrated Parts List

Table 10-15 Material Flow Control Assembly: PN 46060 All Models

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-15	1	29869	3/8" TUBE X 1/2" O-RING ELBOW	2
	2	46077	KNOB ONLY	1
	3	46060	HYDRAULIC FLOW CONTROL (NO FITTINGS)	1
	4	29998	3/8" TUBE X 1/2" O-RING ADAPTOR	1

Chapter 10 Illustrated Parts List

10.12 Pump/Mixer Motor Assembly: PN 44832 All Models

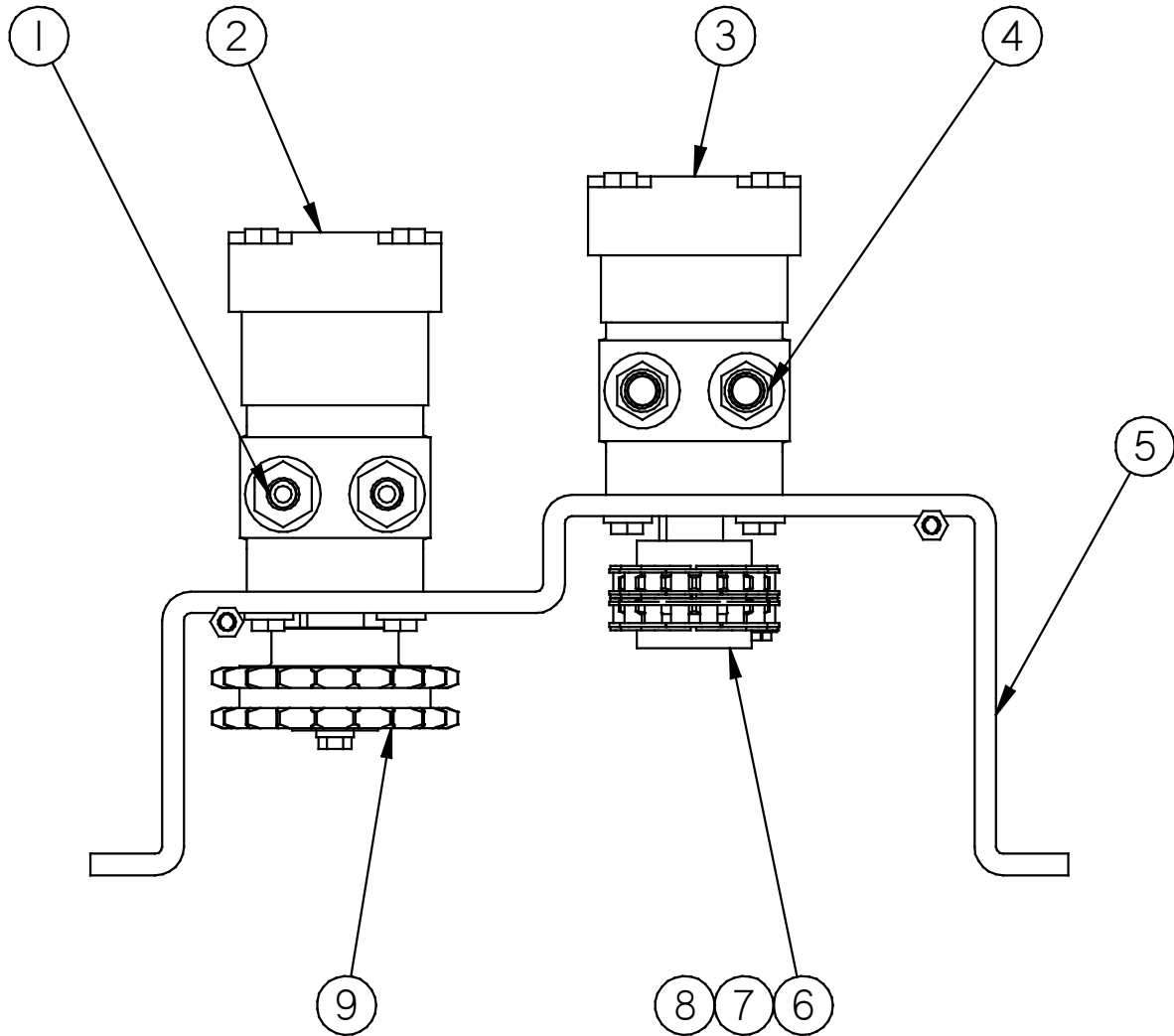


Fig. 10-16 Pump/Mixer Motor Assembly: PN 44832 All Models

Chapter 10 Illustrated Parts List

Table 10-16 Pump/Mixer Motor Assembly: PN 44832 All Models

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-16	1	22029	3/8" TUBE X 5/8" O-RING ADAPTOR	2
	2	22027	HYDRAULIC MOTOR, MIXER	1
	3	44809	HYDRAULIC MOTOR, PUMP	1
	4	29913	1/2" TUBE X 5/8" O-RING ADAPTOR	2
	5	43345	MOUNTING BRACKET MOTORS	1
	6	26002	SPROCKET CHAIN COUPLING	2
	7	26016	CHAIN COUPLING	1
	8	26030	CONNECTING LINK CHAIN	1
	9	43323	SPROCKET MIXER DRIVE	1

Chapter 10 Illustrated Parts List

10.13 Diesel Burner Assembly: PN 46380 All Models

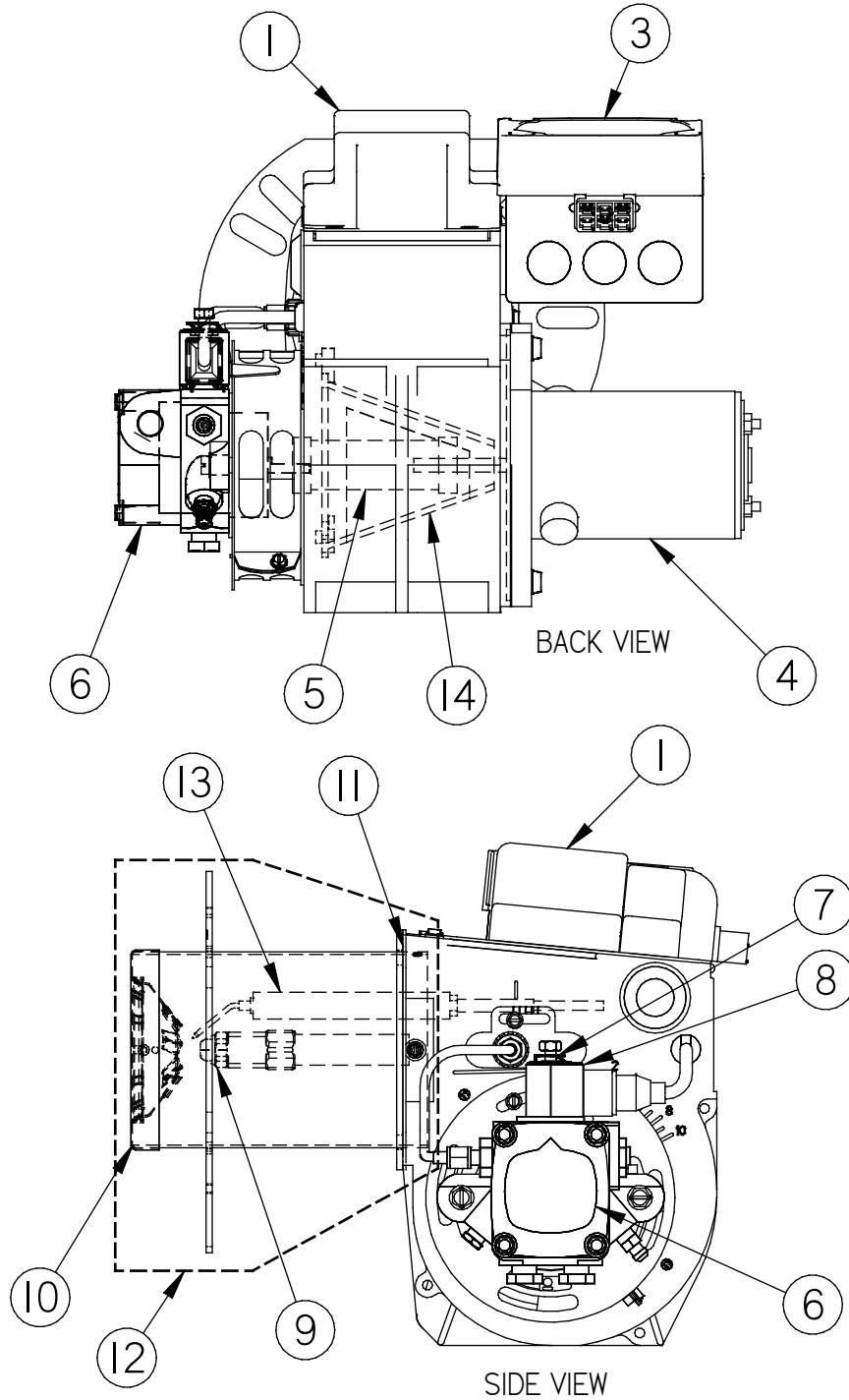


Fig. 10-17 Diesel Burner Assembly: PN 46380 All Models

Chapter 10 Illustrated Parts List

Table 10-17 Diesel Burner Assembly: PN 46380 All Models

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-17	1	41949	IGNITION TRANSFORMER	1
	2	41870	CAD EYE (NOT SHOWN)	1
	3	42335	DC CONTROLLER	1
	4	41890	BLOWER MOTOR	1
	5	41970	COUPLING, FUEL PUMP	1
	6	41892	PUMP, FUEL	1
	7	41932	VALVE STEM, FUEL SOLENOID	1
	8	41933	COIL, FUEL SOLENOID	1
	9	41881	NOZZLE 1.65X80B	1
	10	41953N	STD HEAD, F22, BURNER	1
	11	41964N	GASKET, AIR TUBE TO HOUSING	1
	12	46381N	AIR TUBE W/ HEAD & ELECTRODE MOUNT	1
	13	41993	ELECTRODE ASSY (COMES WITH 2)	1
	14	41966N	AIR GUIDE, BURNER	1

Chapter 10 Illustrated Parts List

10.14 Hydraulic Diagram: PN 26690 (44100)

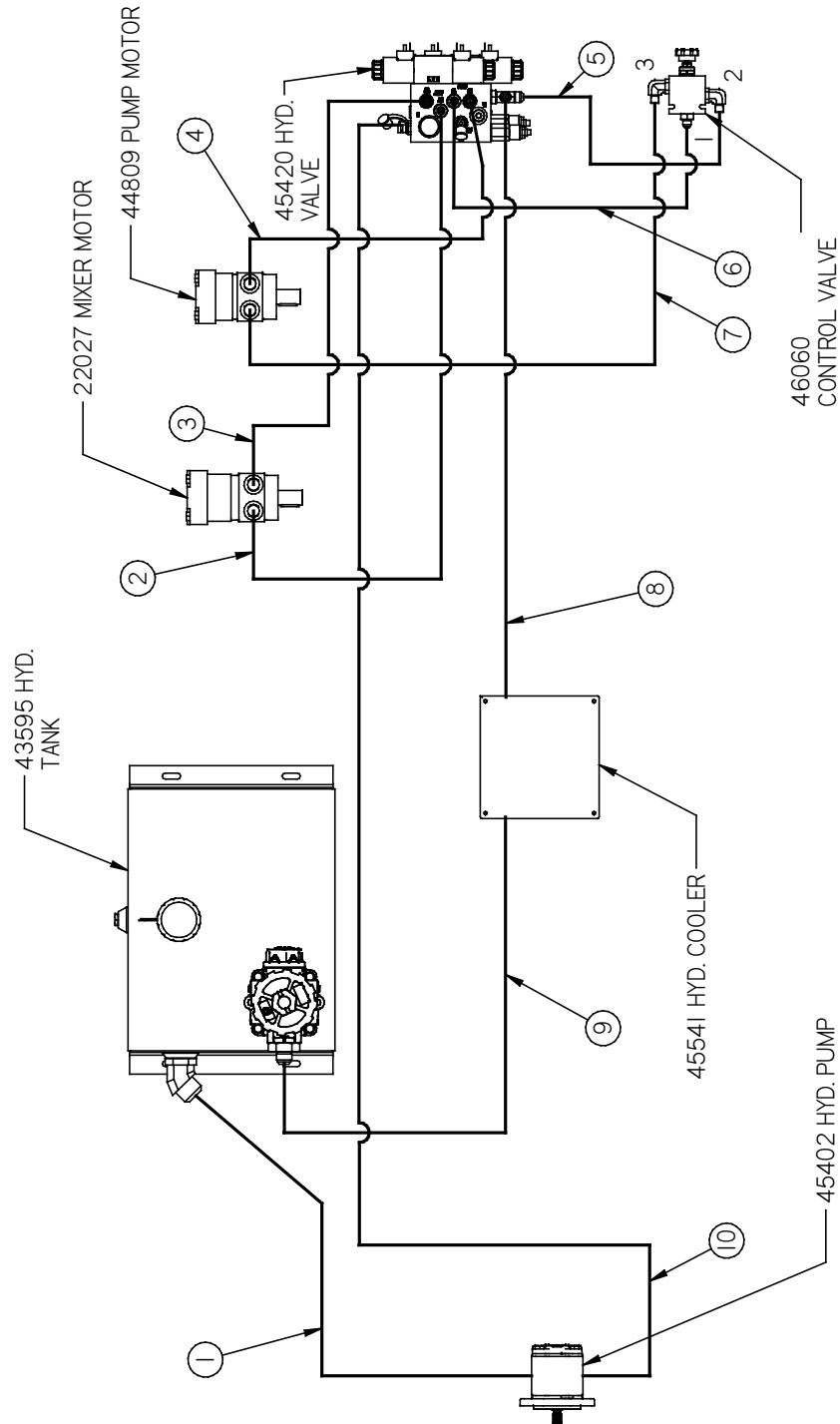


Fig. 10-18 Hydraulic Diagram: PN 26690 (44100)

Chapter 10 Illustrated Parts List

Table 10-18 Hydraulic Diagram: PN 26690 (44100)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY
Fig. 10-18	1	HYDRAULIC RESERVOIR TO HYDRAULIC PUMP SUCTION PORT		
		29898	FITTING, #20 ORB X #16 JIC 45°	REF
		12G4H 12G-16FJX 12G-12FJX 20	HYDRAULIC HOSE	1
		29802	FITTING, #12 ORB X #12 JIC 45°	REF
	2	MIXER MOTOR TO HYDRAULIC VALVE "AB" PORT		
		22029	FITTING, #10 ORB X #6 JIC	REF
		6M3K 6G-6FJX 6G-6FJX90L 36	HYDRAULIC HOSE	1
		40311	FITTING, #6 ORB X #6 JIC	REF
	3	HYDRAULIC VALVE "AA" PORT TO MIXER MOTOR		
		29919	FITTING, #6 ORB X #8 JIC	REF
		6M3K 6G-8FJX 6G-6FJX90S 34	HYDRAULIC HOSE	1
		22029	FITTING, #10 ORB X #6 JIC	REF
	4	HYDRAULIC VALVE "PB" PORT TO MATERIAL PUMP MOTOR		
		29919	FITTING, #6 ORB X #8 JIC	REF
		8M3K 8G-8FJX 8G-8FJX90S 28	HYDRAULIC HOSE	1
		29913	FITTING, #10 ORB X #8 JIC	REF
	5	FLOW CONTROL VALVE "2" TO HYDRAULIC VALVE "T" PORT		
		29896	FITTING, #8 ORB X #8 JIC ELBOW	REF
		8M3K 8G-8FJX 8G-8FJX90S 22	HYDRAULIC HOSE	1
		29932	FITTING, #8 ORB X #8 JIC RUN TEE	REF
	6	FLOW CONTROL VALVE "1" TO HYDRAULIC VALVE "PA" PORT		
		29998	FITTING, #8 ORB X #8 JIC	REF
		8M3K 8G-8FJX 8G-6FJX 16	HYDRAULIC HOSE	1
		40311	FITTING, #6 ORB X #6 JIC	REF

Chapter 10 Illustrated Parts List

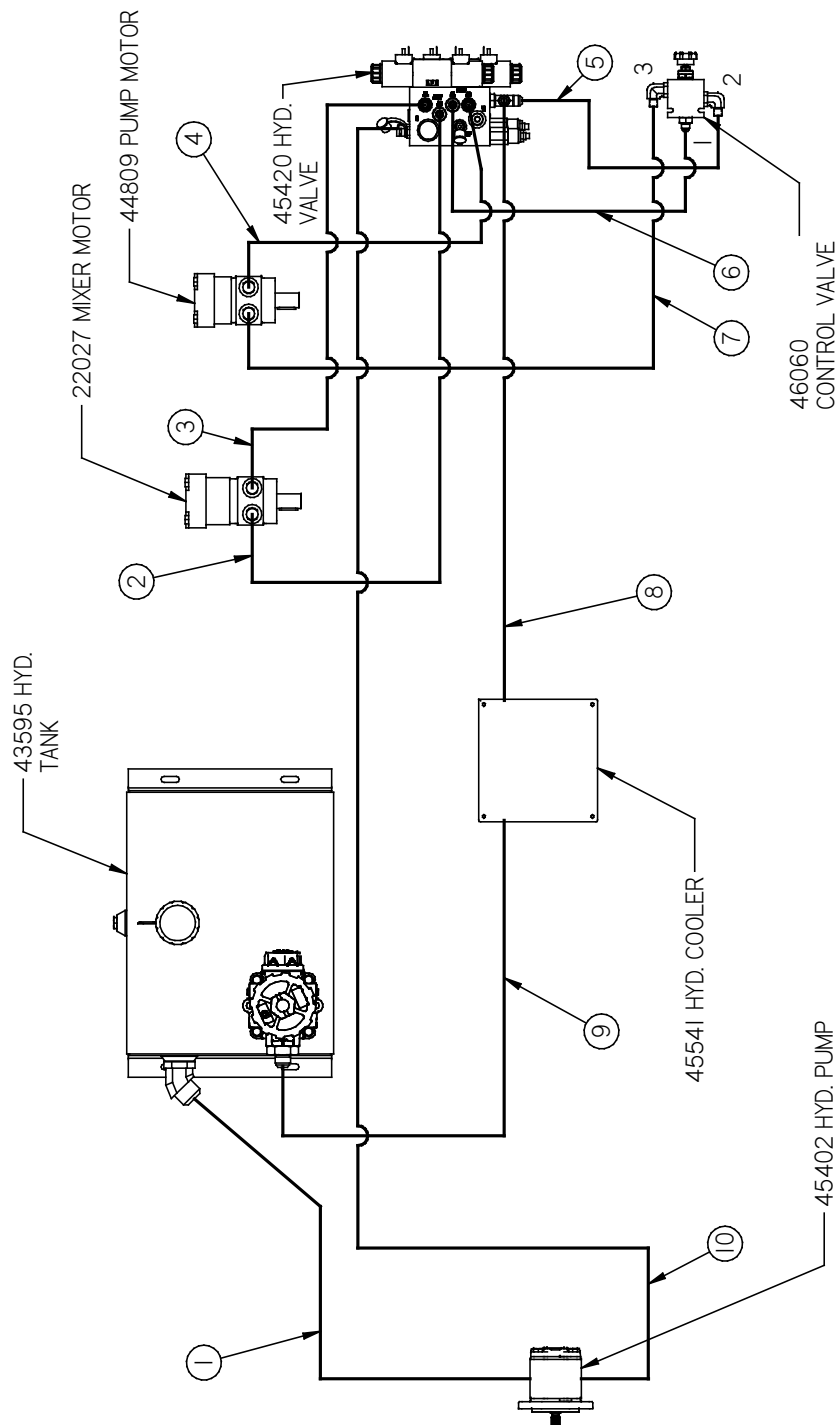


Fig. 10-19 Hydraulic Diagram: PN 2690 (44100) continued

Chapter 10 Illustrated Parts List

Table 10-19 Hydraulic Diagram: PN 26690 (44100 continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY
Fig. 10-19	7	FLOW CONTROL VALVE "3" TO MATERIAL PUMP MOTOR		
		29896	FITTING, #8 ORB X #8 JIC ELBOW	REF
		8M3K 8G-8FJX 8G-8FJX90L 30	HYDRAULIC HOSE	1
		29913	FITTING, #10 ORB X #8 JIC	REF
	8	HYDRAULIC VALVE "T" PORT TO HYDRAULIC COOLER		
		29932	FITTING, #8 ORB X #8 JIC RUN TEE	REF
		8M3K 8G-8FJX 8G-12FJX 60	HYDRAULIC HOSE	1
		29916	FITTING, #12 ORB X #12 JIC ELBOW	REF
	9	HYDRAULIC COOLER TO HYDRAULIC FILTER RETURN		
		29916	FITTING, #12 ORB X #12 JIC ELBOW	REF
		12M3K 12G-12FJX 12G-12FJX90S 38	HYDRAULIC HOSE	1
		29929	FITTING, #16 ORB X #12 JIC	REF
	10	HYDRAULIC PUMP PRESSURE PORT TO HYDRAULIC VALVE "P" PORT		
		29862	FITTING, #10 ORB X #10 JIC	REF
		8M3K 8G-10FJX 8G-8FJX90L 110	HYDRAULIC HOSE	1
		29897	FITTING, #8 ORB X #8 JIC	REF

Chapter 10 Illustrated Parts List

10.15 Hydraulic Diagram: PN 26659N (47900N)

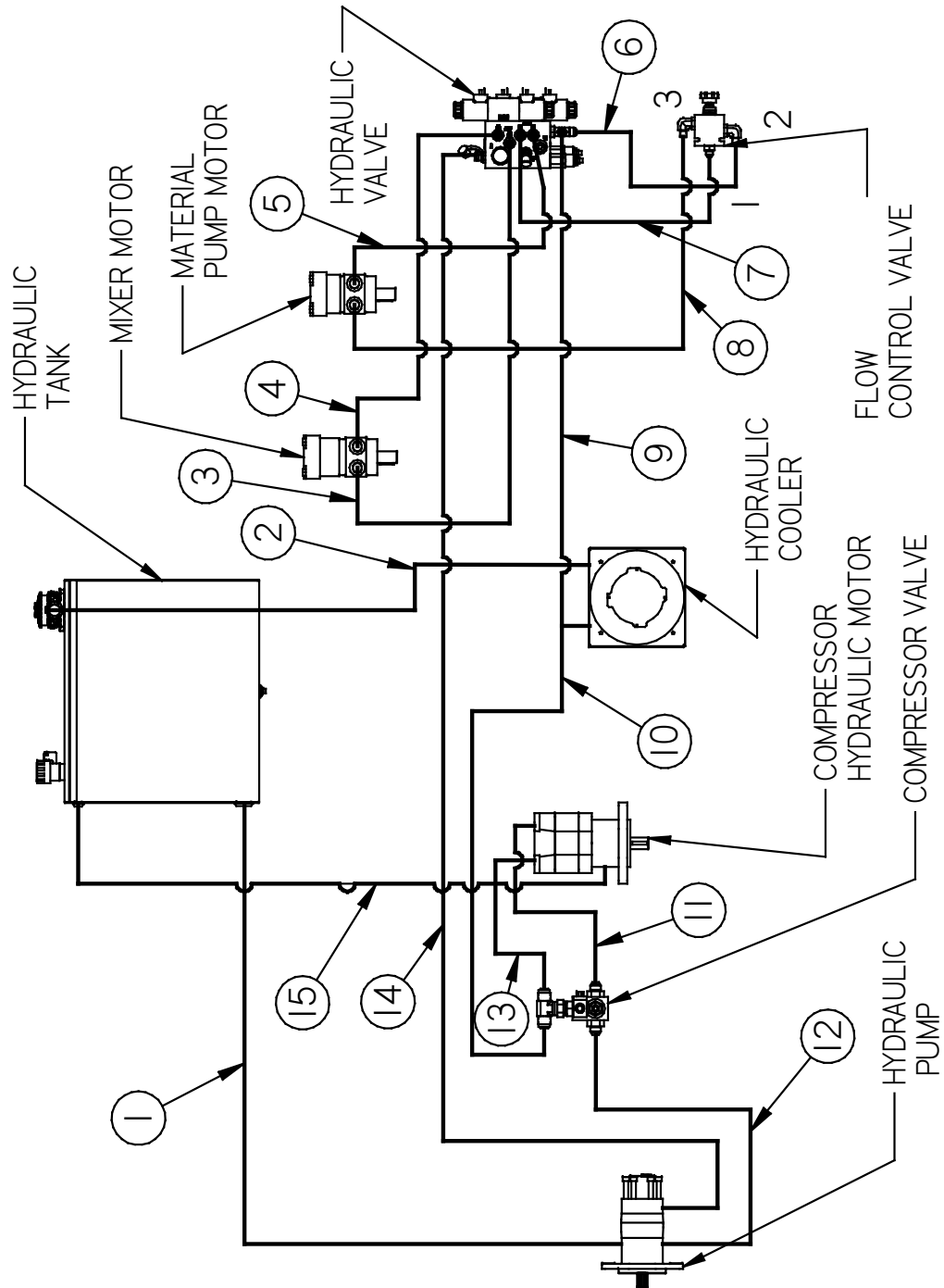


Fig. 10-20 Hydraulic Diagram: PN 26659N (47900N)

Chapter 10 Illustrated Parts List

Table 10-20 Hydraulic Diagram: PN 26659N (47900N)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY
Fig. 10-20	1	HYDRAULIC RESERVOIR TO HYDRAULIC PUMP SUCTION PORT		
		29885	FITTING, #20 ORB X #20 JIC	REF
		20GMVPLUS 20G-20FJX90M 20G-20FJX 24	HYDRAULIC HOSE	1
		29888	FITTING, #20 ORB X #20 JIC 45°	REF
	2	HYDRAULIC COOLER CURBSIDE TO HYDRAULIC RETURN FILTER		
		29824	FITTING, #16 ORB X #16 JIC ELBOW	REF
		16M3K 16G-16FJX 16G-16FJX 32	HYDRAULIC HOSE	1
		29818	FITTING, #20 ORB X #16 JIC	REF
	3	MIXER MOTOR TO HYDRAULIC VALVE "AB" PORT		
		22029	FITTING, #10 ORB X #6 JIC	REF
		6M3K 6G-6FJX 6G-6FJX90S 25	HYDRAULIC HOSE	1
		40311	FITTING, #6 ORB X #6 JIC	REF
	4	HYDRAULIC VALVE "AA" PORT TO MIXER MOTOR		
		29919	FITTING, #6 ORB X #8 JIC	REF
		6M3K 6G-8FJX 6G-6FJX90L 27.5	HYDRAULIC HOSE	1
		22029	FITTING, #10 ORB X #6 JIC	REF
	5	HYDRAULIC VALVE "PB" PORT TO MATERIAL PUMP MOTOR		
		29919	FITTING, #6 ORB X #8 JIC	REF
		8M3K 8G-8FJX 8G-8FJX90L 30.5	HYDRAULIC HOSE	1
		29913	FITTING, #10 ORB X #8 JIC	REF
	6	FLOW CONTROL VALVE "2" TO HYDRAULIC VALVE "T" PORT		
		29896	FITTING, #8 ORB X #8 JIC ELBOW	REF
		8M3K 8G-8FJX 8G-8FJX90S 25	HYDRAULIC HOSE	1
		29932	FITTING, #8 ORB X #8 JIC RUN TEE	REF

Chapter 10 Illustrated Parts List

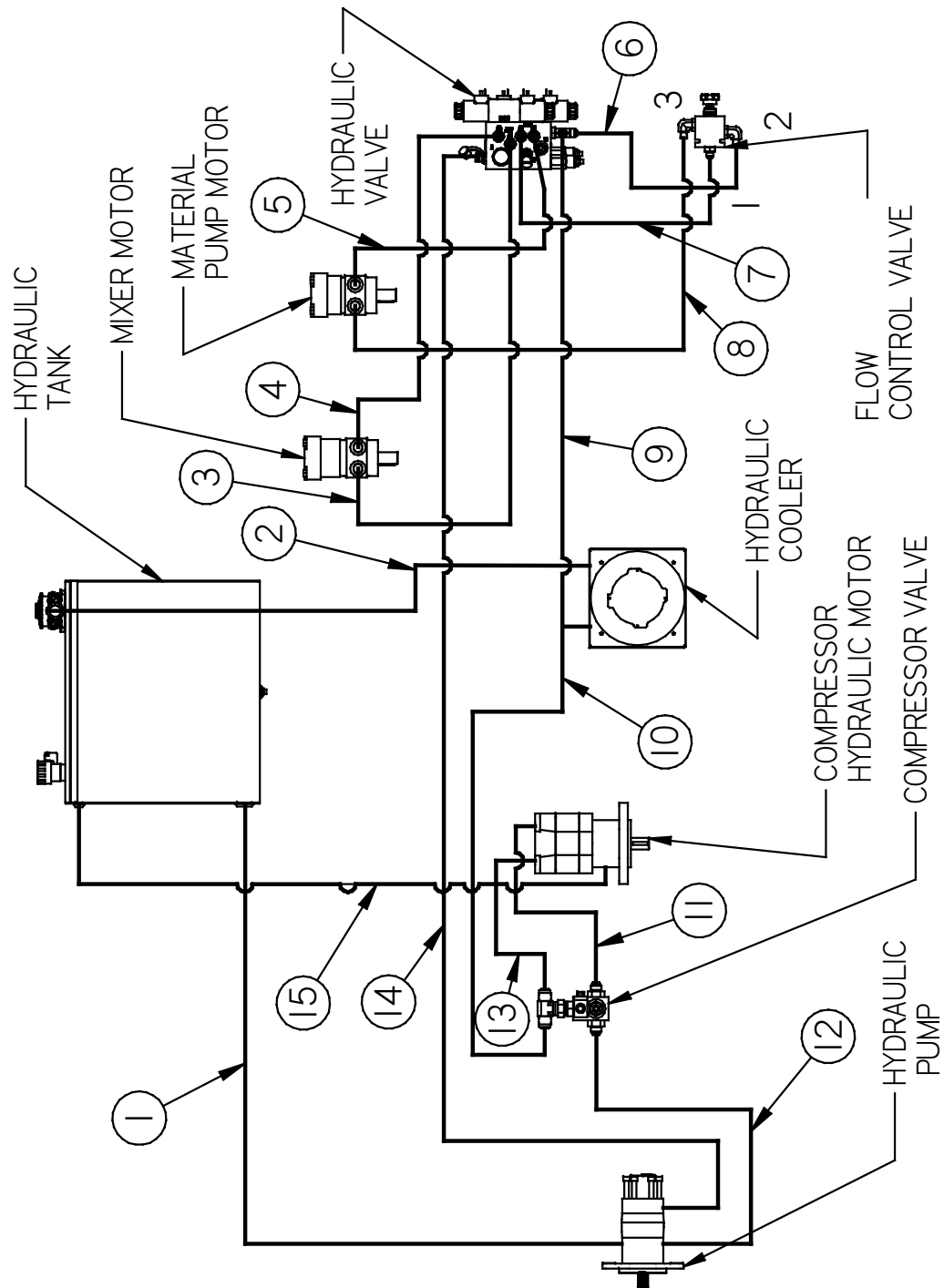


Fig. 10-21 Hydraulic Diagram: PN 26659N (47900N) continued

Chapter 10 Illustrated Parts List

Table 10-21 Hydraulic Diagram: PN 26659N (47900N continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY
Fig. 10-21	7	FLOW CONTROL VALVE "1" TO HYDRAULIC VALVE "PA" PORT		
		29897	FITTING, #8 ORB X #8 JIC	REF
		8M3K 8G-6FJX 8G-8FJX 24	HYDRAULIC HOSE	1
		40311	FITTING, #6 ORB X #6 JIC	REF
	8	FLOW CONTROL VALVE "3" TO MATERIAL PUMP MOTOR		
		29896	FITTING, #8 ORB X #8 JIC	REF
		8M3K 8G-8FJX 8G-8FJX90S 34.5	HYDRAULIC HOSE	1
		29913	FITTING, #10 ORB X #8 JIC	REF
	9	HYDRAULIC VALVE "T" PORT TO HYDRAULIC COOLER CURBSIDE		
		29896	FITTING, #8 ORB X #8 JIC	REF
		8M3K 8G-8FJX 8G-10FJX 61.25	HYDRAULIC HOSE	1
		29806	#10 JIC X #10 JIC BKHEAD ELBOW	REF
		8M3K 8G-10FJX90S 8G-10FJX 80.5	HYDRAULIC HOSE	1
		29806	#10 JIC X #10 JIC BKHEAD ELBOW	REF
		8M3K 8G-10FJX 8G-12FJX90S 29	HYDRAULIC HOSE	1
		27692	#16 FEMALE TUBE X #12 JIC	REF
		29977	#16 O-RING BRANCH TEE	REF
	10	COMPRESSOR VALVE "2" PORT TO HYDRAULIC COOLER ROADSIDE		
		29900	#12 O-RING RUN TEE	REF
		16M3K 16G-12FJX 16G-16FJX90S 72	HYDRAULIC HOSE	1
		29951	#16 O-RING RUN TEE	REF

Chapter 10 Illustrated Parts List

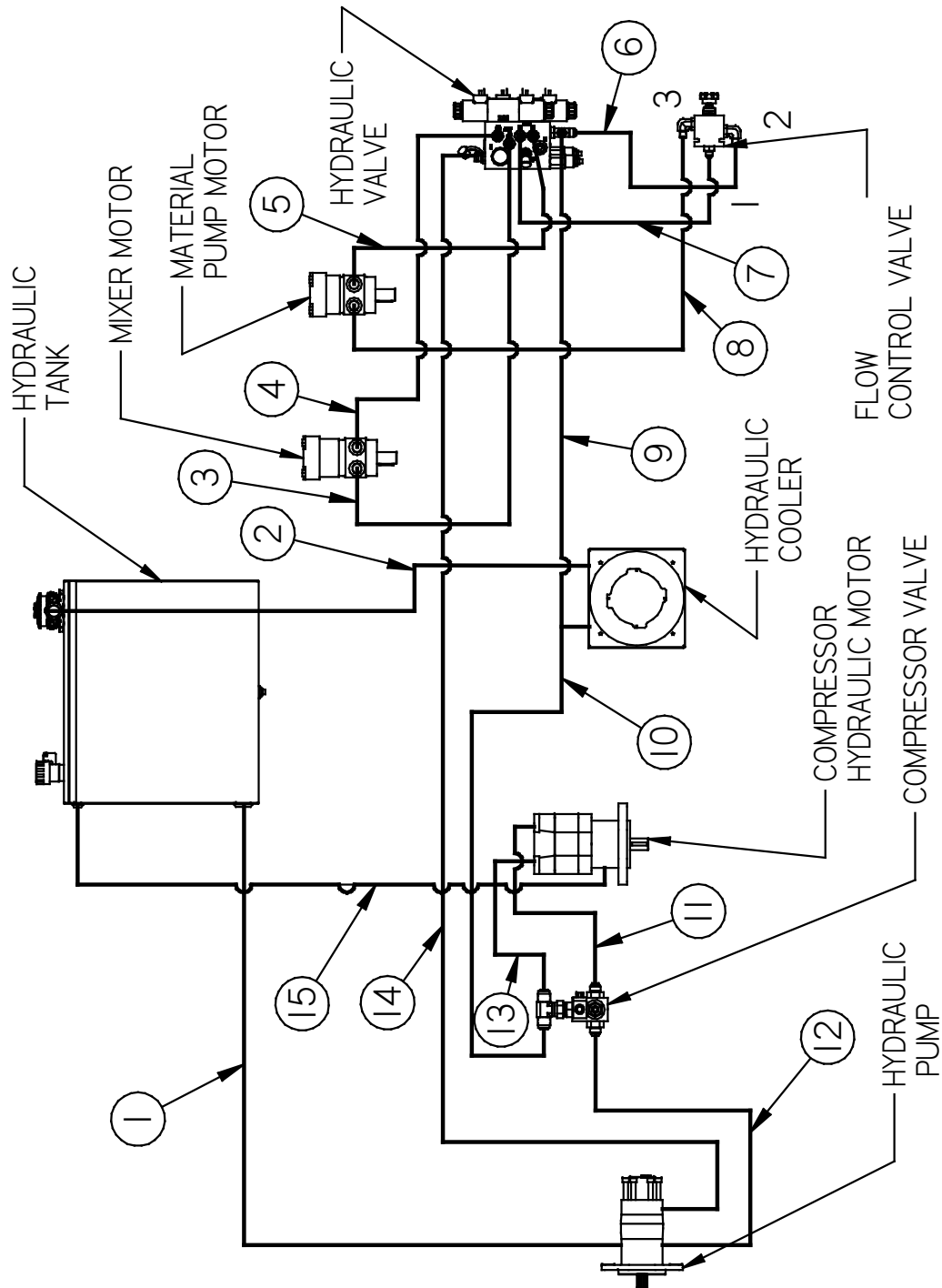


Fig. 10-22 Hydraulic Diagram: PN 26659N (47900N) continued

Chapter 10 Illustrated Parts List

Table 10-22 Hydraulic Diagram: PN 26659N (47900N continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY
Fig. 10-22	11	COMPRESSOR VALVE "1" PORT TO COMPRESSOR MOTOR		
		29821	FITTING, #12 ORB X #10 JIC	REF
		45475	COMPRESSOR SUPPLY LINE	REF
		29819	FITTING, #12 ORB X #12 JIC	REF
	12	HYDRAULIC PUMP PRESSURE TO COMPRESSOR VALVE "1" PORT		
		29978	FITTING, #16 ORB X #12 JIC	REF
		10M3K 10G-12FJX 10G-10FJX90S 54	HYDRAULIC HOSE	1
		29821	FITTING, #12 ORB X #10 JIC	REF
	13	COMPRESSOR MOTOR TO COMPRESSOR VALVE "2" PORT		
		29819	FITTING, #12 ORB X #12 JIC	REF
		45476	COMPRESSOR RETURN LINE	REF
		29900	#12 ORB X #12 JIC RUN TEE	REF
	14	HYDRAULIC PRESSURE PORT REAR PORT TO HYDRAULIC VALVE "P" PORT		
		29821	FITTING, #12 ORB X #10 JIC	REF
		8M3K 8G-10FJX 8G-10FJX90S 25	HYDRAULIC HOSE	1
		29806	#10 JIC X #10 JIC BKHEAD ELBOW	REF
		8M3K 8G-10FJX 8G-10FJX90S 118.5	HYDRAULIC HOSE	1
		29806	#10 JIC X #10 JIC BKHEAD ELBOW	REF
		8M3K 8G-10FJX 8G-8FJX 46.75	HYDRAULIC HOSE	1
		29897	#8 TUBE X #8 JIC FITTING	REF
	15	COMPRESSOR HYDRAULIC MOTOR TO HYDRAULIC TANK		
		29881	#6 JIC X #4 MALE PIPE ADAPTER	REF
		6M3K 6G-6FJX 6G-6FJX90S 56	HYDRAULIC HOSE	1
		29848	FITTING, #6 ORB X #6 JIC ELBOW	REF

Chapter 10 Illustrated Parts List

10.16 Diesel Fuel Line Schematic – 44100

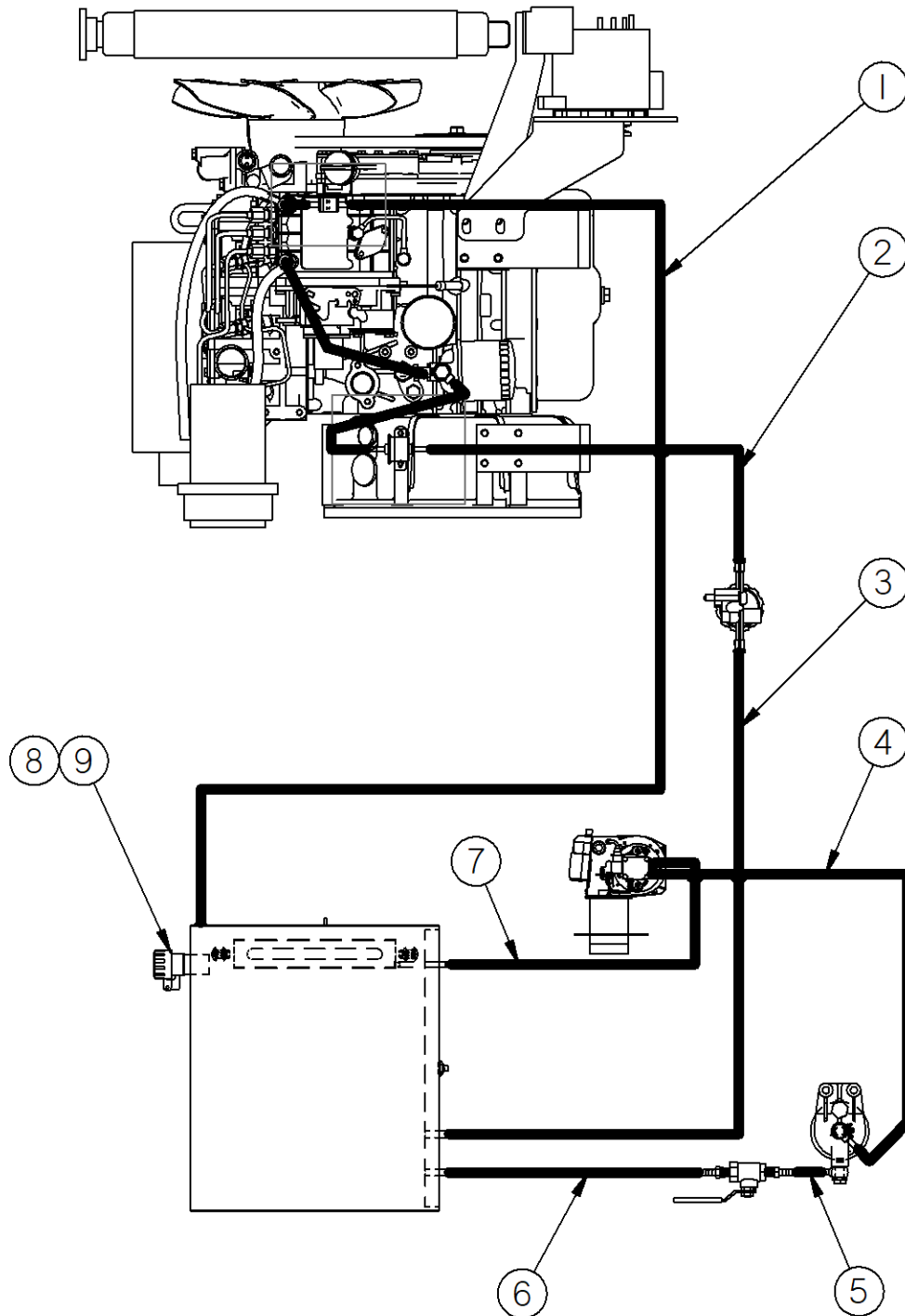


Fig. 10-23 Diesel Fuel Line Schematic – 44100

Chapter 10 Illustrated Parts List

Table 10-23 Diesel Fuel Line Schematic – 44100

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-23	1. ENGINE RETURN LINE TO DIESEL FUEL TANK			
		-	ENG INJECTOR. HOUSING, #6 HOSE PUSH-ON	REF.
		-	HOSE, 5/16	REF.
		47149N	VALVE -CHECK INLINE 5/16 BARB	1
		47663N	HOSE, 5/16 x 107" FUEL LINE	1
		26754	FITTING, #6 HOSE PUSH-ON	1
		26753	FITTING, 1/4 MPT X 3/8 JIC ELBOW	1
		26080	CLAMP, GEAR	2
	2. WATER SEPARATOR FUEL LINE TO LIFT PUMP			
		-	WATER SEP. HOUSING, #6 HOSE PUSH-ON	REF.
		47661N	HOSE, 5/16 x 15" FUEL LINE	1
		-	LIFT PUMP. HOUSING, #6 HOSE PUSH-ON	REF.
		26080	CLAMP, GEAR	2
	3. DIESEL FUEL TANK TO WATER SEPARATOR			
		26782	FITTING, 1/4" MPT X 5/16 JIC ELBOW	1
		26767	FITTING, #5 HOSE PUSH-ON	1
		47662N	HOSE, 5/16 x 92" FUEL LINE	1
		-	WATER SEP. HOUSING, #6 HOSE PUSH-ON	REF.
	4. BURNER FUEL FILTER TO BURNER INLET			
		-	BANJO FITTING	REF.
		29664N	HOSE ASSEMBLY, 5/16 X 22" FUEL LINE	1
		26767	FITTING, #5 HOSE PUSH-ON	1
		26756N	ADAPTER, 5/16 JIC X 1/4NPT	1

Chapter 10 Illustrated Parts List

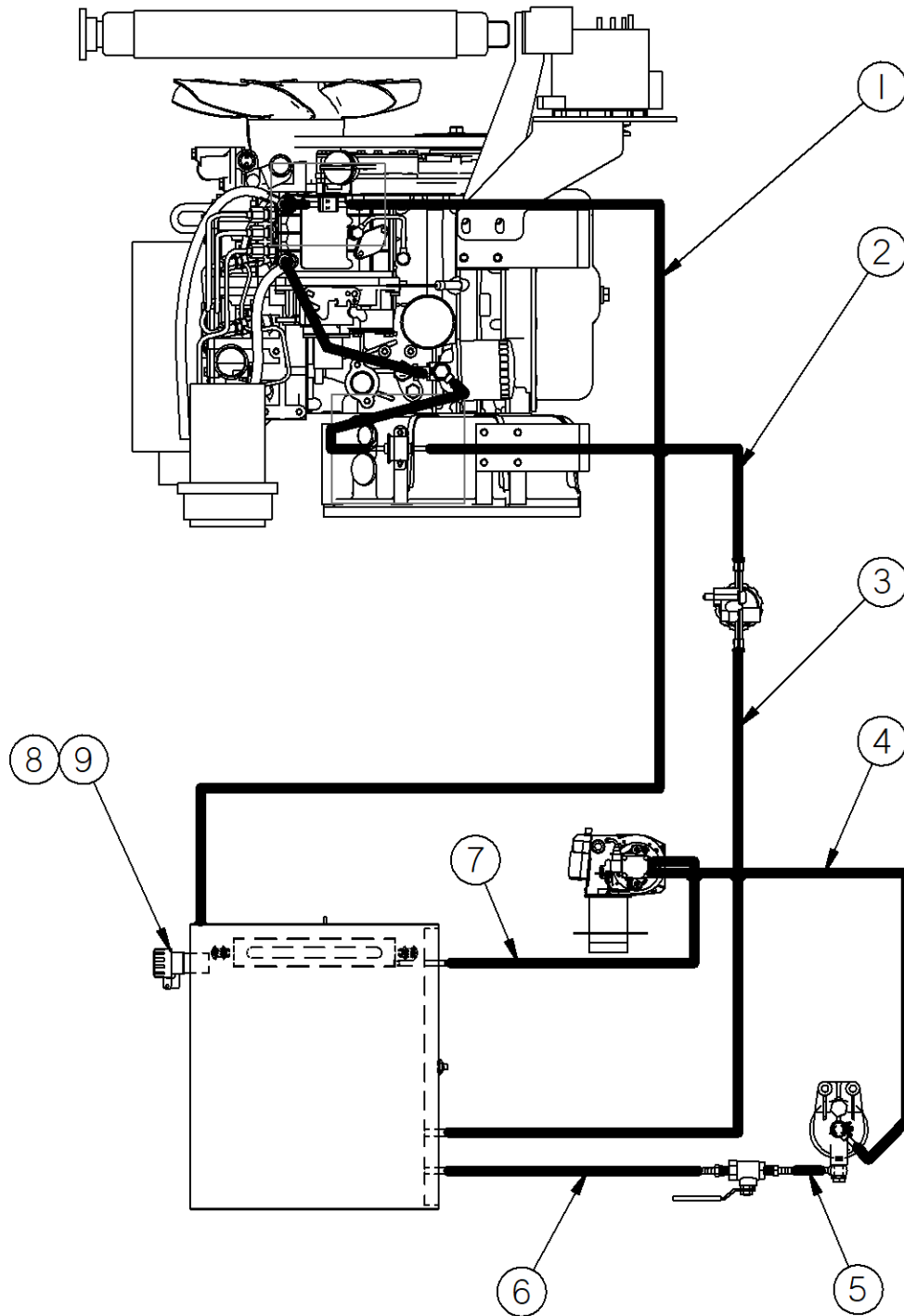


Fig. 10-24 Diesel Fuel Line Schematic – 44100 continued

Chapter 10 Illustrated Parts List

Table 10-24 Diesel Fuel Line Schematic – 44100 (continued)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-24	5. BALL VALVE TO BURNER FUEL FILTER			
		29984	HOSE BARB, 1/4MPT X 5/16 HOSE	1
		29648N	HOSE ASSEMBLY, 5/16 X 10" FUEL LINE	1
		47345N	FILTER ASSEMBLY	1
	6. DIESEL TANK TO BALL VALVE			
		26782	FITTING, 1/4" MPT X 5/16 JIC ELBOW	1
		26767	FITTING, #5 HOSE PUSH-ON	1
		29650N	HOSE ASSEMBLY, 5/16 X 55" FUEL LINE	1
		29984	HOSE BARB, 1/4MPT X 5/16 HOSE	1
	7. BURNER RETURN TO DIESEL TANK			
		26756N	ADAPTER, 5/16 JIC X 1/4NPT	1
		26767	FITTING, #5 HOSE PUSH-ON	1
		29651N	HOSE ASSEMBLY, 5/16 X 65" FUEL LINE	1
		47497N	¼ FEMALE NPT X 5/16 JIC ELBOW	1
		29651N	HOSE ASSEMBLY, 5/16 X 65" FUEL LINE	1
	8	43758N	FILLER CAP, RPLCMNT, FUEL-HYD TANKS	1
	9	43723N	GASKET, NARROW STYLE, FOR FILLER CAP	1

Chapter 10 Illustrated Parts List

10.17 Diesel Fuel Line Schematic – 47900N

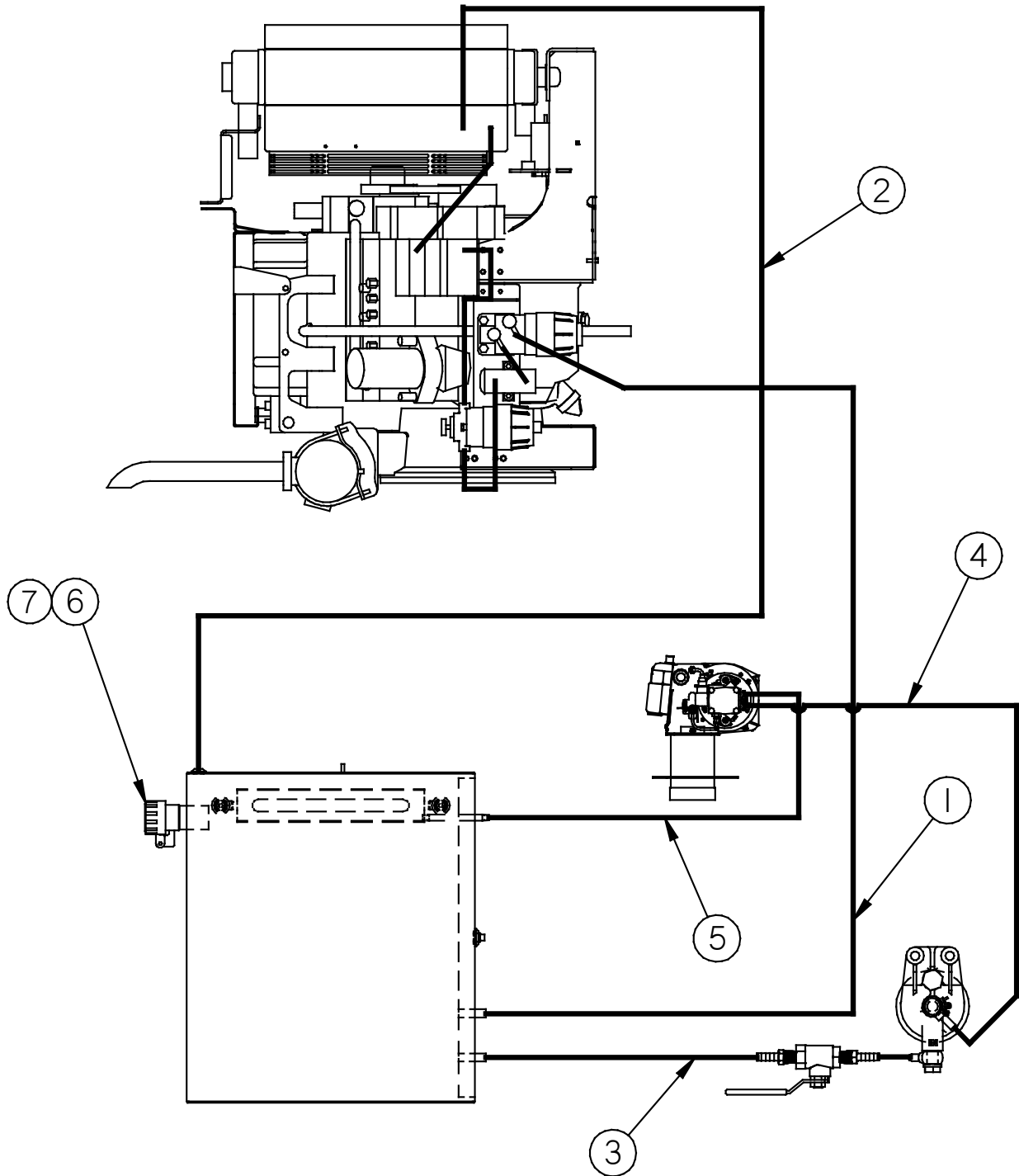


Fig. 10-25 Diesel Fuel Line Schematic – 47900N

Chapter 10 Illustrated Parts List

Table 10-25 Diesel Fuel Line Schematic – 47900N

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-25	1. DIESEL FUEL TANK TO ENGINE FUEL FILTER "IN" PORT			
		26753	FITTING, 1/4 MPT X 3/8 JIC ELBOW	1
		26754	FITTING, #6 HOSE PUSH-ON	1
		29646N	HOSE, 3/8 x 51" FUEL LINE	1
		26080	CLAMP, GEAR	2
		-	BANJO FITTING	REF.
	2. ENGINE RETURN LINE TO DIESEL FUEL TANK			
		29647N	HOSE, 3/8 x 96" FUEL LINE	1
		26754	FITTING, #6 HOSE PUSH-ON	1
		26753	FITTING, 1/4 MPT X 3/8 JIC ELBOW	1
		26080	CLAMP, GEAR	2
	3. DIESEL FUEL TANK TO BURNER FUEL FILTER			
		26782	FITTING, 1/4" MPT X 5/16 JIC ELBOW	1
		26767	FITTING, #5 HOSE PUSH-ON	1
		29650N	HOSE, 5/16 x 51.5" FUEL LINE	1
		29984	HOSE BARB, 1/4MPT X 5/16 HOSE	1
		29195	BALL VALVE, 1/4 NPT	1
		29984	HOSE BARB, 1/4MPT X 5/16 HOSE	1
		29648N	HOSE ASSEMBLY, 5/16 X 10"	1
		47345N	FILTER ASSEMBLY	1
	4. BURNER FUEL FILTER TO BURNER INLET			
		29649N	HOSE ASSEMBLY, 5/16 X 22"	1
		26767	FITTING, #5 HOSE PUSH-ON	1
		26756N	ADAPTER, 5/16 JIC X 1/4NPT	1
	5. BURNER RETURN LINE TO DIESEL TANK			
		26756N	ADAPTER, 5/16 JIC X 1/4NPT	1
		26767	FITTING, #5 HOSE PUSH-ON	1
		29651N	HOSE ASSEMBLY, 5/16 X 65.5"	1
		26767	FITTING, #5 HOSE PUSH-ON	1
		29891	FITTING, 1/4" FPT X 5/16 JIC ELBOW	1
	6	43758N	FILLER CAP, RPLCMNT, FUEL-HYD TANKS	1
	7	43723N	GASKET, NARROW STYLE, FOR FILLER CAP	1

Chapter 10 Illustrated Parts List

10.18 Electrical Schematic: PN 44100

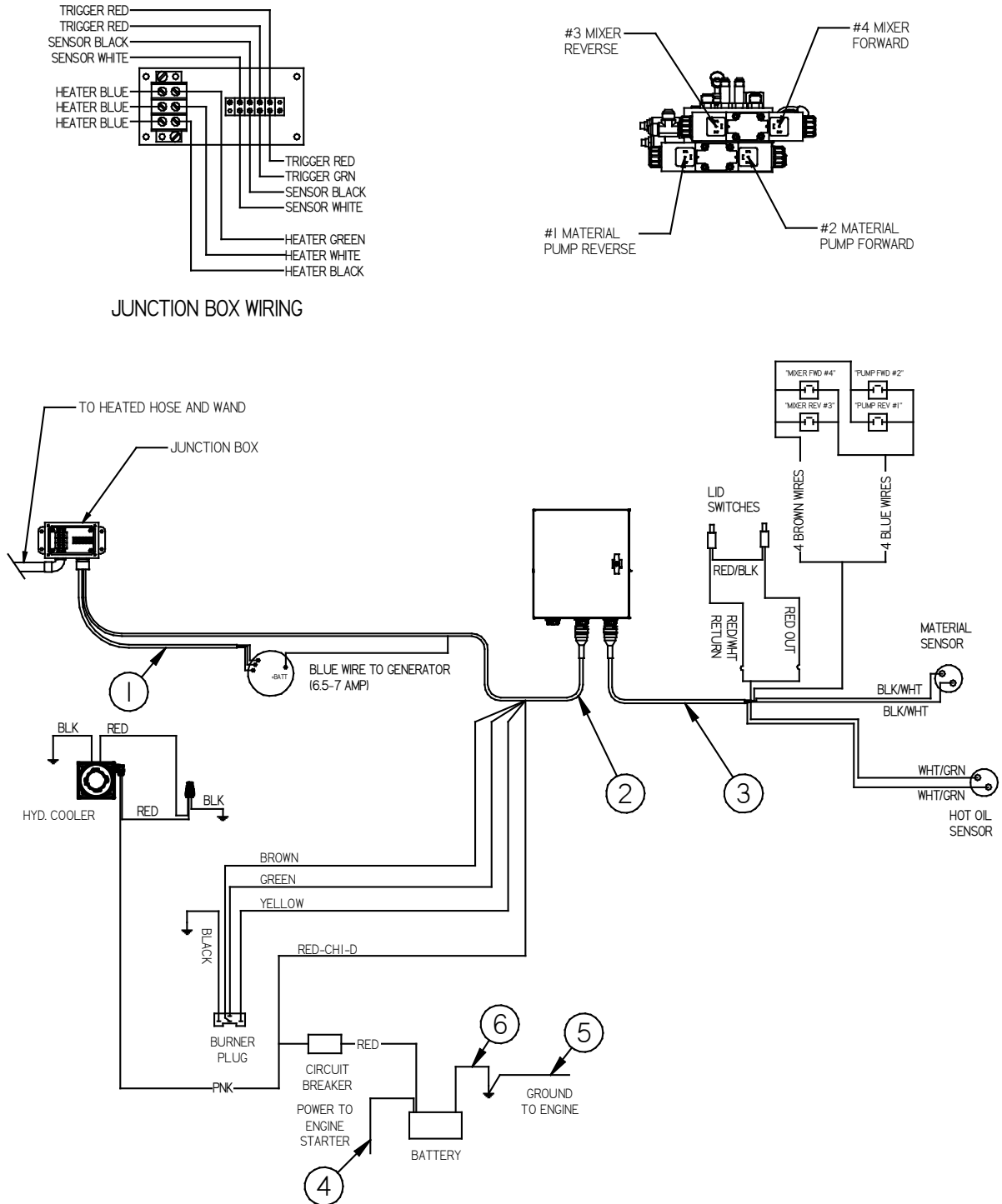


Fig. 10-26 Electrical Schematic: PN 44100

Chapter 10 Illustrated Parts List

Table 10-26 Electrical Schematic: PN 44100

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-26	1	52364N	CABLE ASSEMBLY, HOSE	1
	2	38205N	HARNESS, CHASSIS	1
	3	38305N	HARNESS, TANK	1
	4	24015	BATTERY CABLE, POSITIVE TO ENGINE	1
	5	27174	BATTERY CABLE, ENGINE TO GROUND LUG	1
	6	24010	BATTERY CABLE, NEGATIVE TO GROUND LUG	1

Chapter 10 Illustrated Parts List

10.19 Electrical Schematic: PN 47900N

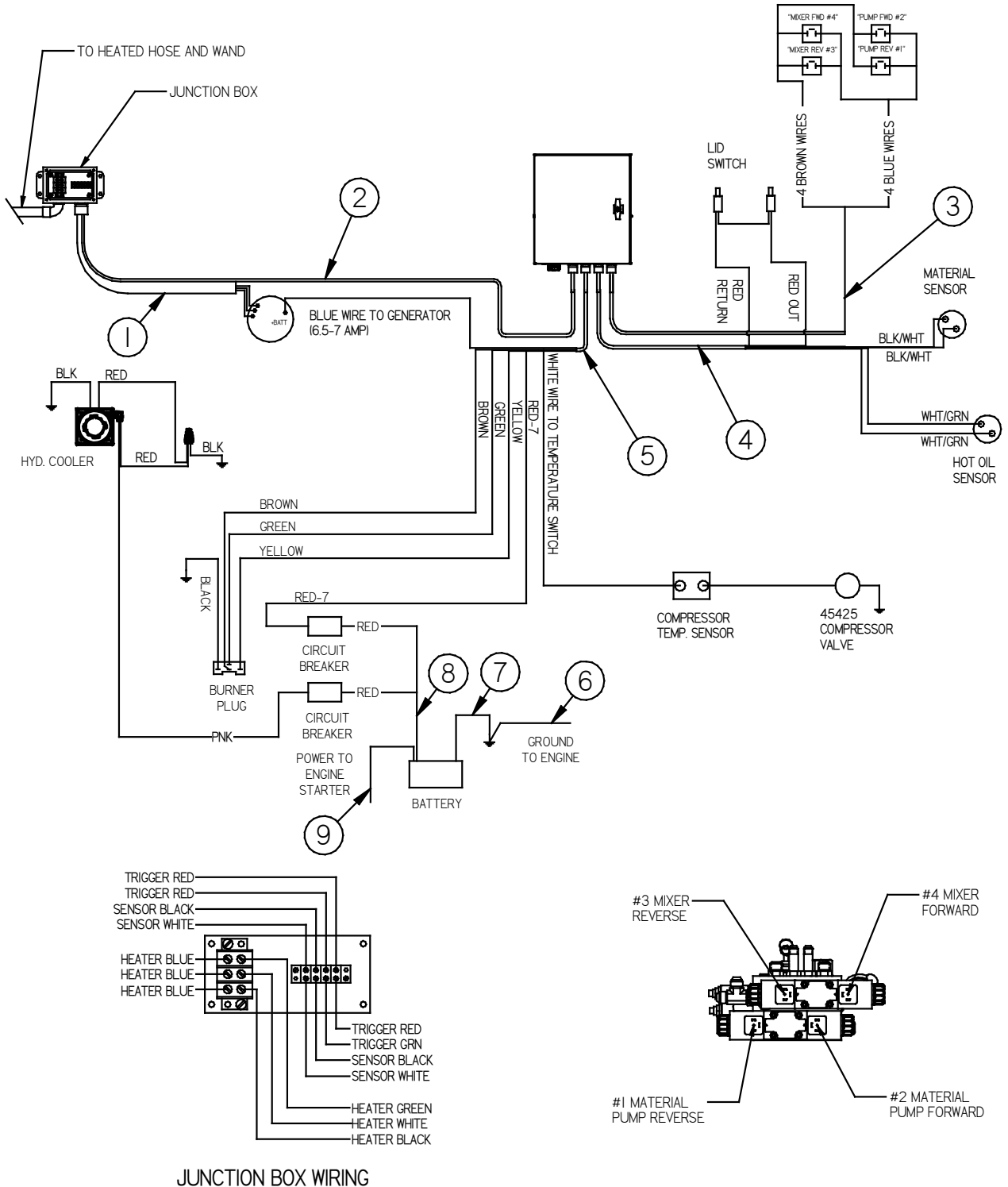


Fig. 10-27 Electrical Schematic: PN 47900N

Chapter 10 Illustrated Parts List

Table 10-27 Electrical Schematic: PN 47900N

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-27	1	52364N	CABLE ASSEMBLY, HOSE	1
	2	52362N	CABLE ASSEMBLY. TRIGGER/SENSOR	1
	3	52361N	CABLE ASSEMBLY, HYDRAULIC VALVE	1
	4	52367N	CABLE ASSEMBLY, SENSOR	1
	5	52368N	CABLE ASSEMBLY, CHASSIS SS250DC100	1
	6	52348N	BATTERY CABLE, ENGINE TO GROUND LUG	1
	7	52354N	BATTERY CABLE, NEGATIVE TO GROUND LUG	1
	8	52347N	WIRE ASSY, CIRCUIT BREAKER TO BATTERY	1
	9	52352N	BATTERY CABLE, POSITIVE TO ENGINE	1

Chapter 10 Illustrated Parts List

10.20 Air Compressor Assembly: PN 47480N (47900N)

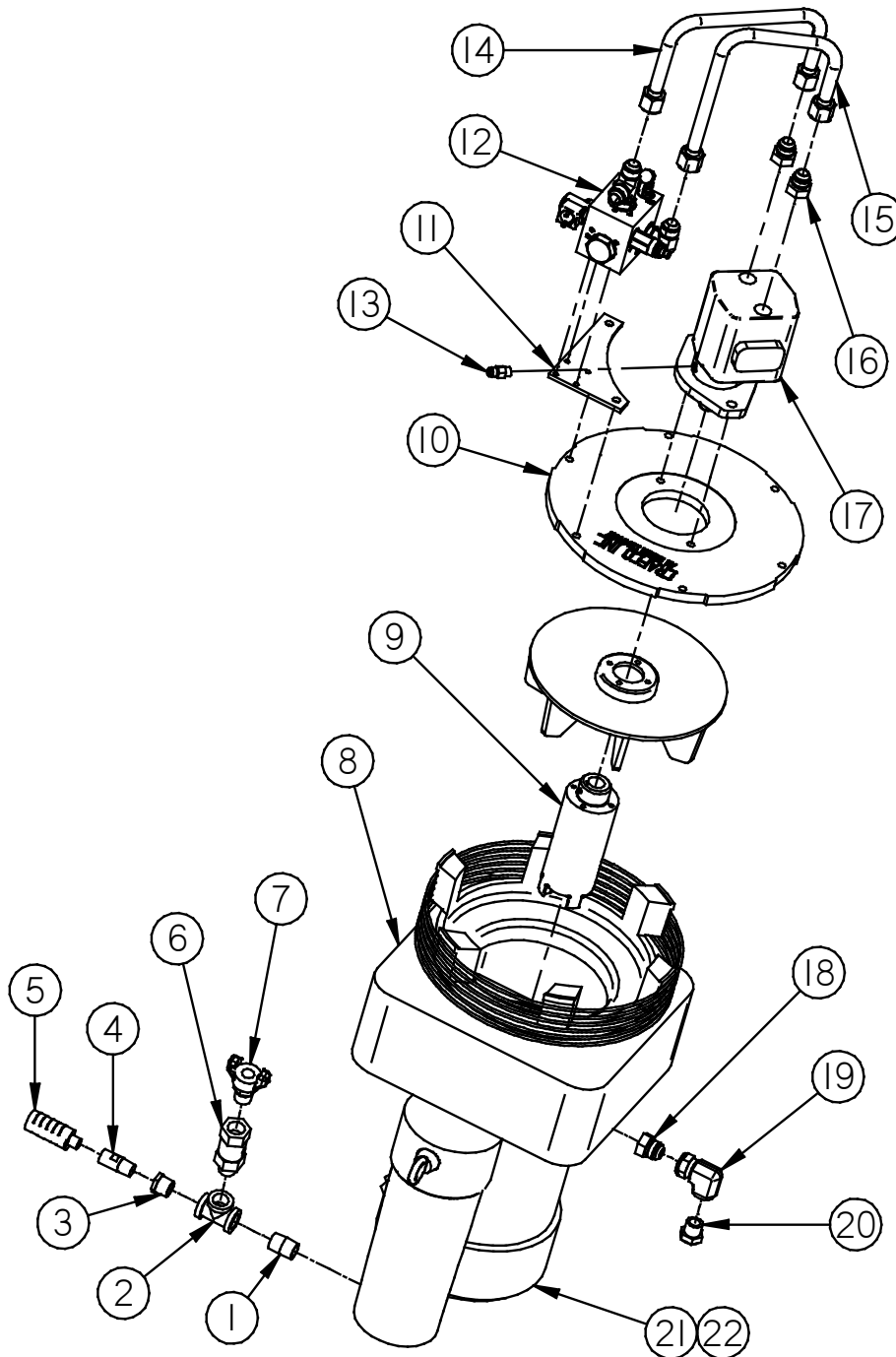


Fig. 10-28 Air Compressor Assembly: PN 47480N (47900N)

Chapter 10 Illustrated Parts List

Table 10-28 Air Compressor Assembly: PN 47480N (47900N)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-28	1	28004	NIPPLE, 3/4" NPT HEX	1
	2	28254	TEE, 3/4" NPT PIPE	1
	3	28348	BUSHING, 3/4" NPT X 1/2" NPT	1
	4	45564	NIPPLE, RESTRICTOR	1
	5	50267	MUFFLER, AIR	1
	6	47648N	3/4" PRESSURE SAFETY VALVE	1
	7	42643	FITTING, 1/2" NPT AIR HOSE	1
	8	47481N	COMPRESSOR, ROTARY VANE	1
	9	45347	SHAFT, COMPRESSOR DRIVE	1
	10	45346	PLATE, MOTOR ADAPTER	1
	11	45327	MOUNTING PLATE, VALVE	1
	12	45425	VALVE, HYDRAULIC	1
	13	29881	6MJ X 4MP FITTING	1
	14	45476	RETURN LINE, COMPRESSOR	1
	15	45475	SUPPLY LINE, COMPRESSOR	1
	16	29819	FITTING, #12 ORB X #12 JIC STRAIGHT	2
	17	43874	MOTOR, HYDRAULIC	1
	18	45326	FITTING, #12 BSPP X ##12 JIC STRAIGHT	1
	19	29773	ADAPTER, #12 JIC X 3/4 FPT 90°	1
	20	N/A	SIGHT GAUGE – 45320, ORIGINAL COMPRESSOR PART	1
	N/A	47484N	SWITCH, TEMP 130C, COMP. (NOT SHOWN)	1
	21	45361	AIR CLEANER COVER	1
22	45323	INTAKE AIR FILTER (NOT SHOWN)	1	
21	47649N	SAFETY VALVE DECAL (NOT SHOWN)	1	

Chapter 10 Illustrated Parts List

10.21 Hydraulic Compressor Valve Assembly: PN 45425 (47900N)

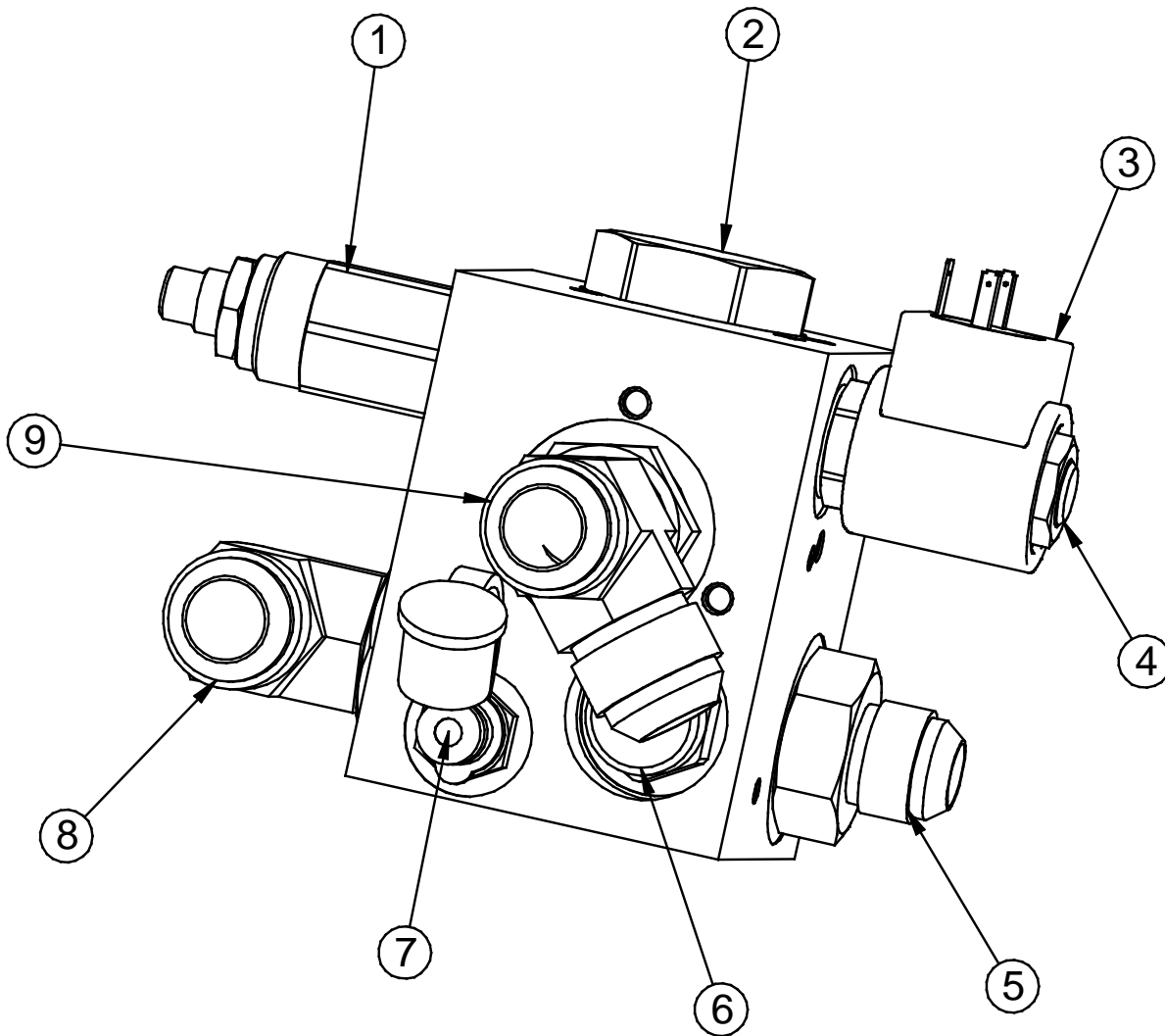


Fig. 10-29 Hydraulic Compressor Valve Assembly: PN 45425 (47900N)

Chapter 10 Illustrated Parts List

Table 10-29 Hydraulic Compressor Valve Assembly: PN 45425 (47900N)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-29	1	45417	VALVE, RELIEF	1
	2	45429	VALVE, LOGIC RELIEF	1
	3	45426	COIL, SOLENOID VALVE	1
	4	45424	VALVE, SOLENOID	1
	5	-	FITTING, #12 ORB X #10 JIC STRAIGHT	2
	6	45436	FLOW CONTROL, PRESSURE COMP.	1
	7	45414	FITTING, TEST POINT	1
	8	45413	CAP, DUST	1
	9	-	TEE, #12 ORB X #12 JIC RUN	1

Chapter 10 Illustrated Parts List

10.22 High Output Air Lance Assembly

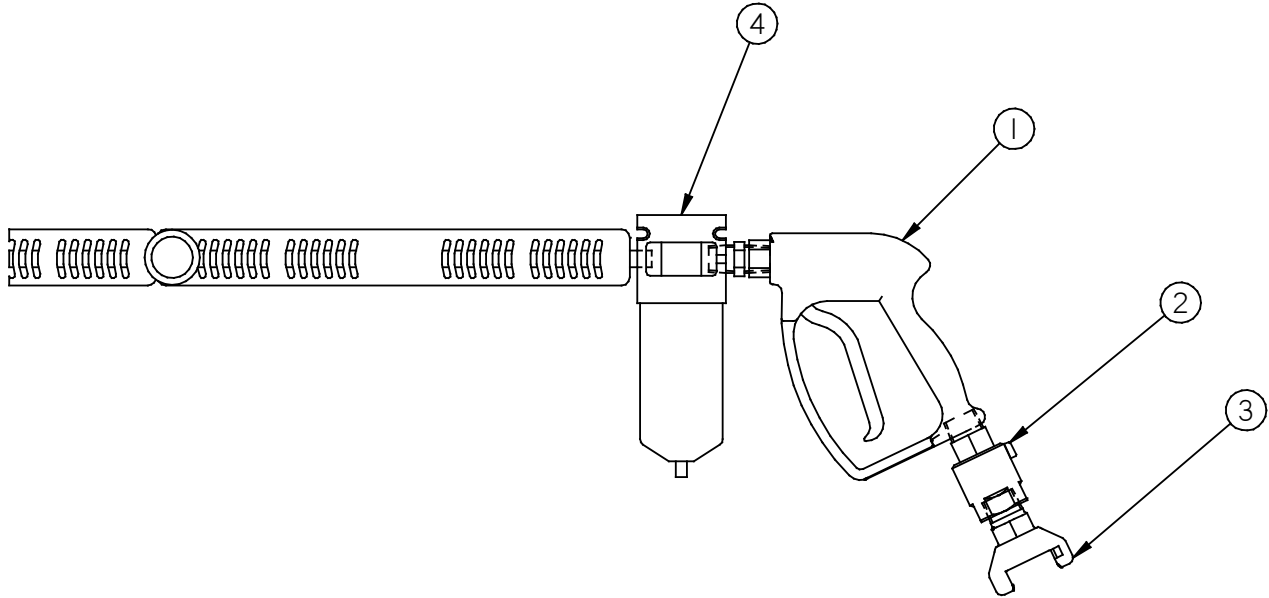


Fig. 10-30 High Output Air Lance Assembly

Table 10-30 High Output Air Lance Assembly

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-30	1	47483N	LANCE, AIR, HIGH OUTPUT WITH SWVL & CPLR	1
	2	70250	3/4" SWIVEL	1
	3	47488N	FITTING, 3/4" AIR HOSE	1
	4	47491S	OPTIONAL WATER SEPARATOR KIT	1
	N/S	47491N	HIGH VLCTY AIR LANCE W/ WTR SPRTR INSTLLD	1
	N/S	47482N	3/4" X 50 FT AIR HOSE	1

Chapter 10 Illustrated Parts List

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Chapter 10 Illustrated Parts List

10.23 Wand Assembly PN 52200

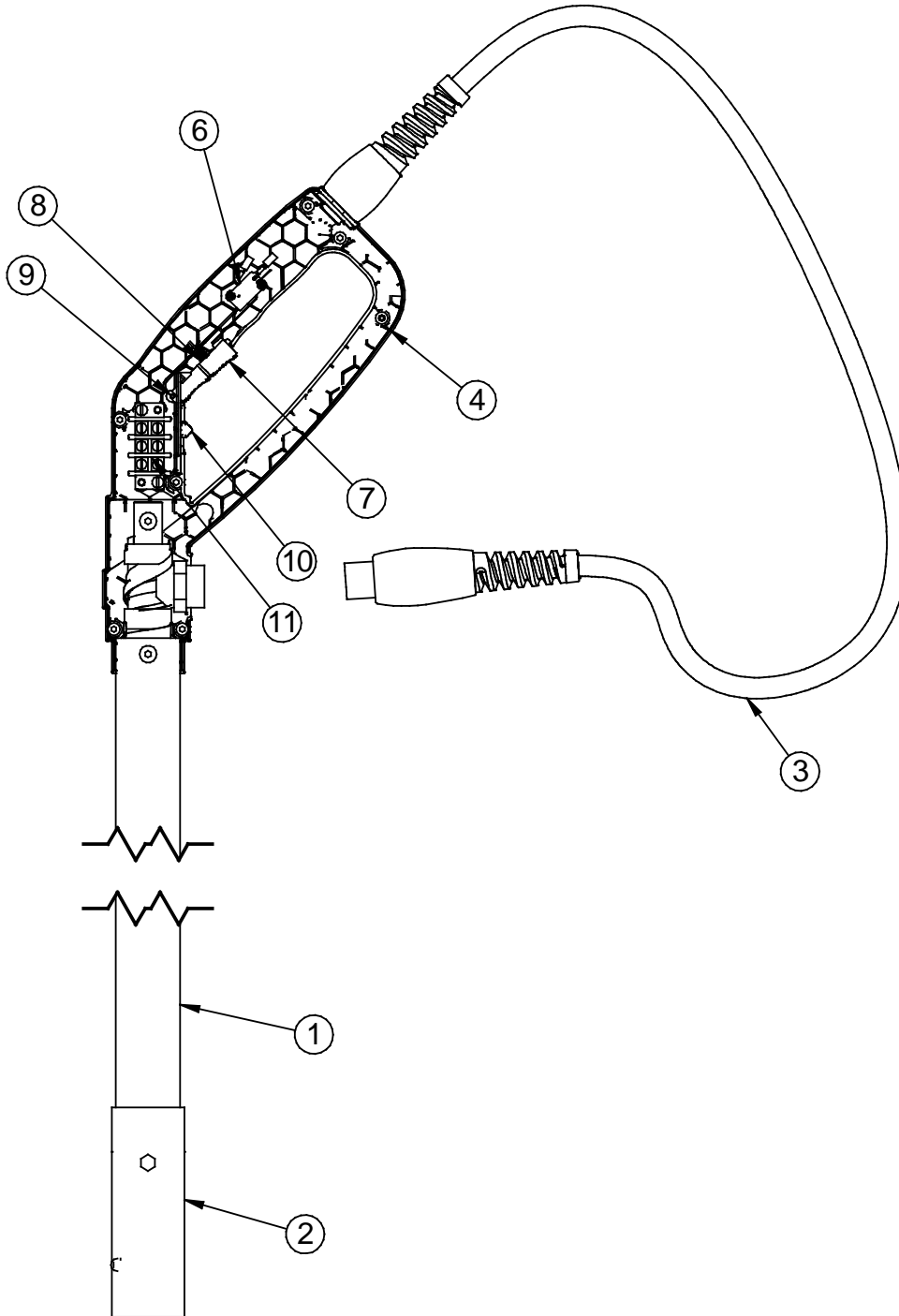


Fig. 10-31 Wand Assembly PN 52200

Chapter 10 Illustrated Parts List

Table 10-31 Wand Assembly PN 52200

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-31	1	52204	COVER, WAND	1
	2	50278	TIP GUARD, LONG CLAMP ON	1
	3	52206	CORD ASSEMBLY	1
	4	52201RN	HANDLE, WAND – RIGHT (W/INSERTS)	1
	5	52201LN	HANDLE, WAND – LEFT (NOT SHOWN)	1
	6	52208	SWITCH, WAND	1
	7	52202N	ACTUATOR	1
	8	52207	SPRING, ACTUATOR	1
	9	52209	PIN, ACTUATOR	1
	10	52203N	LOCK, TRIGGER	1
	11	51656	TERMINAL STRIP	1

Chapter 10 Illustrated Parts List

10.24 Optional Engine Cover for 44100

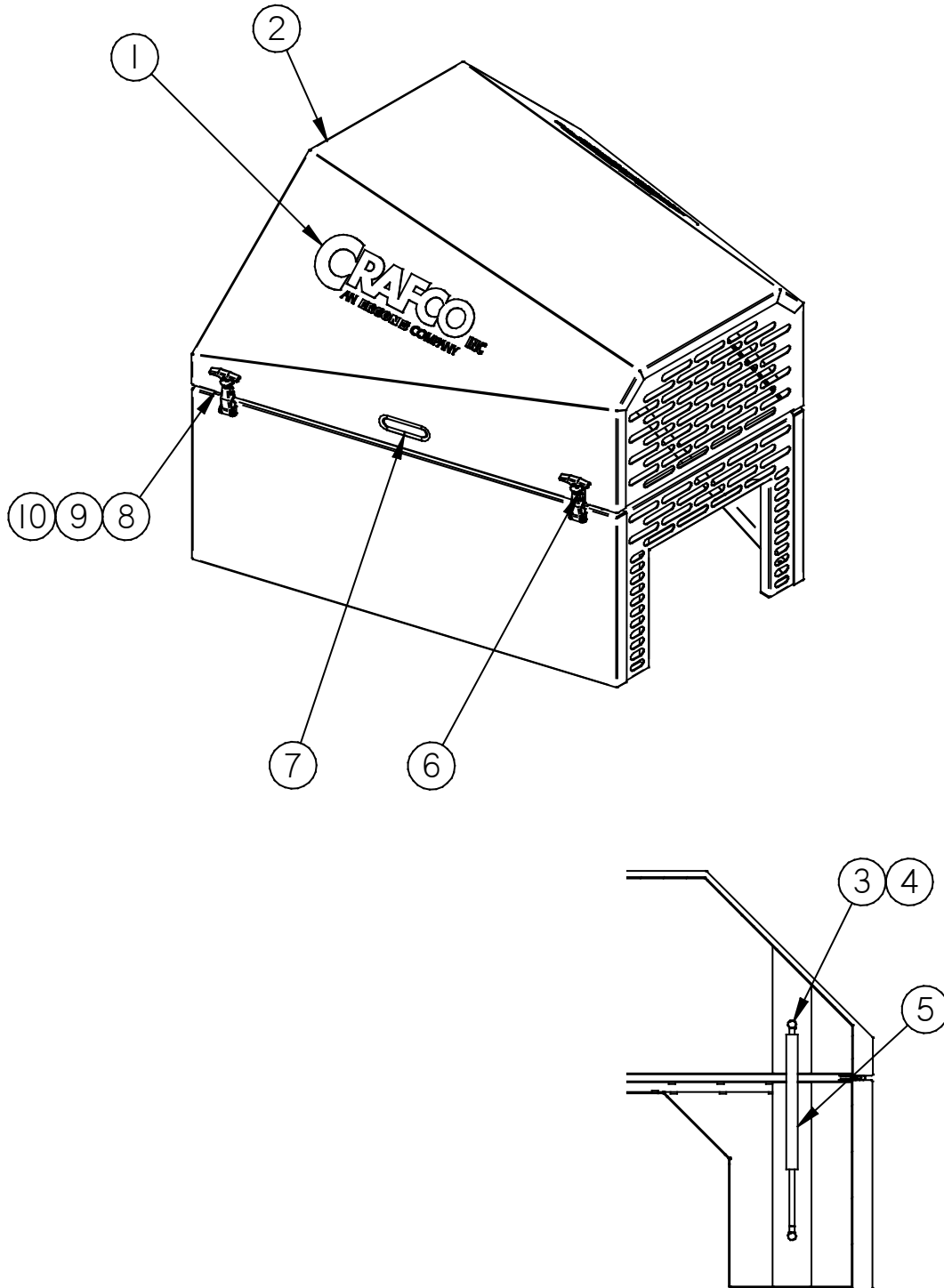


Fig. 10-32 Optional Engine Cover for 44100

Chapter 10 Illustrated Parts List

Table 10-32 Optional Engine Cover for 44100

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-32	1	26443	DECAL ENGINE COVER CRAFCO	2
	2	45535	ENGINE COVER ASSEMBLY	1
	3	45537	BALL STUD	2
	4	46749	SOCKET, GAS SPRING	2
	5	46748	GAS SPRING	1
	6	45597	RUBBER T-HANDLE DRAW LATCH	2
	7	43746	NEOPRENE-HANDLE ENG CVR ONLY	1
	8	45496N	BOLT ON BUMPER, ENGINE COVER	2
	9	28535	#4-40 NYLON INSERT HEX LOCKNUT	2
	10	29001	4-40 X 1/2" PAN HEAD SCREW	2

Chapter 10 Illustrated Parts List

10.25 Optional Engine Cover for 47900N

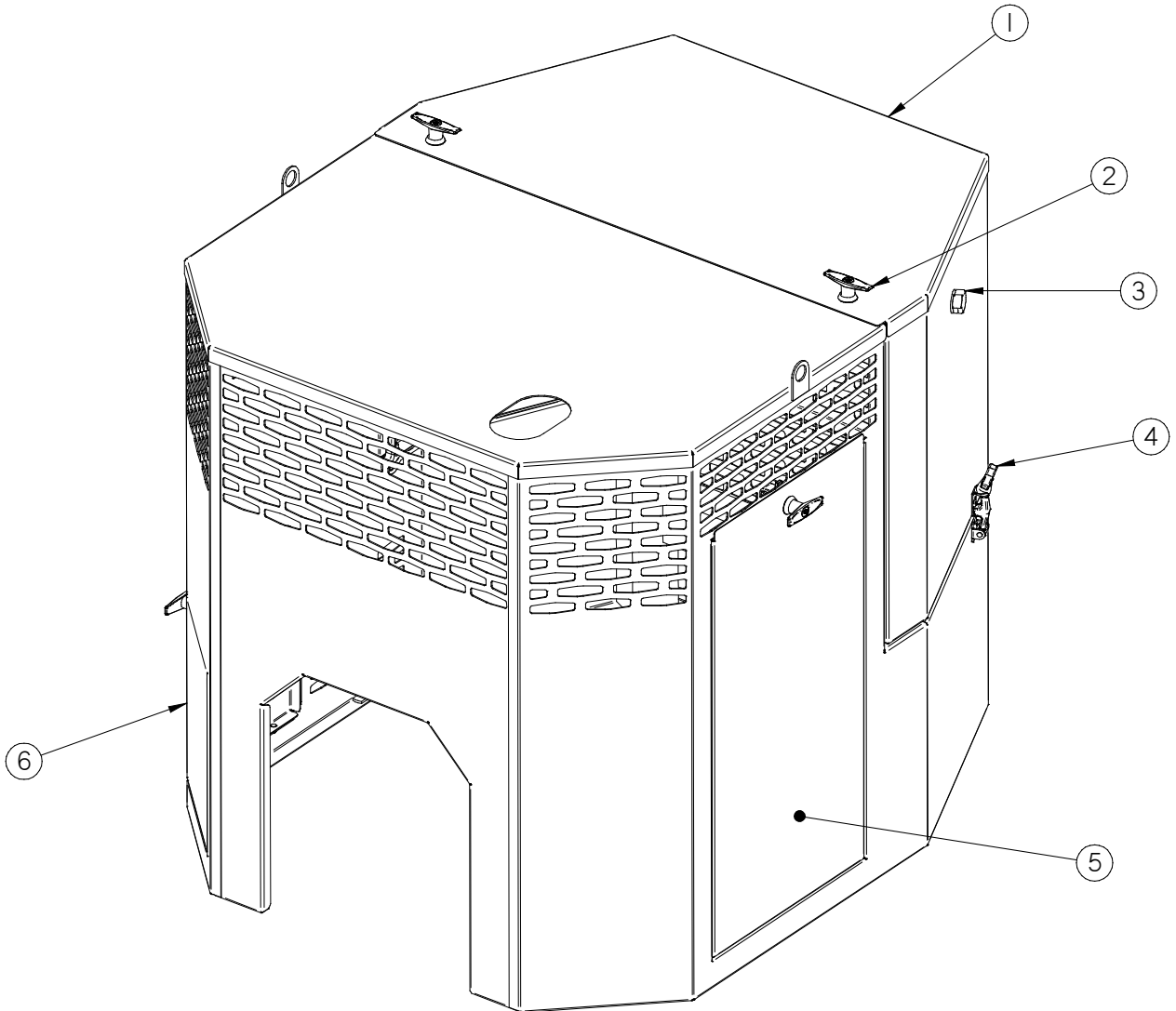


Fig. 10-33 Optional Engine Cover for 47900N

Chapter 10 Illustrated Parts List

Table 10-33 Optional Engine Cover for 47900N

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-33	1	47500N	OPTIONAL ENGINE COVER, 4LE2 ENGINE	1
	2	47510N	LATCH, COMPRESSION, W/ KEY	4
	3	43746	NEOPRENE HANDLE TRIM	2
	4	45600	RUBBER REPLACEMENT LATCH	2
	5	47506N	PASS SIDE DOOR	1
	6	47507N	AIR CLEANER DOOR	1
	N/A	47509N	RADIATOR SEAL KIT	1
	N/A	47519N	WEATHERSTRIP, BULB STYLE (FOR HOOD)	9 FT
	N/A	47511N	WEATHERSTRIP, FLAT (FOR DOORS)	6 FT
	N/A	47525N	OPTIONAL ENGINE COVER INSULATION KIT	1

Chapter 10 Illustrated Parts List

10.26 Hot Air Lance (Option)

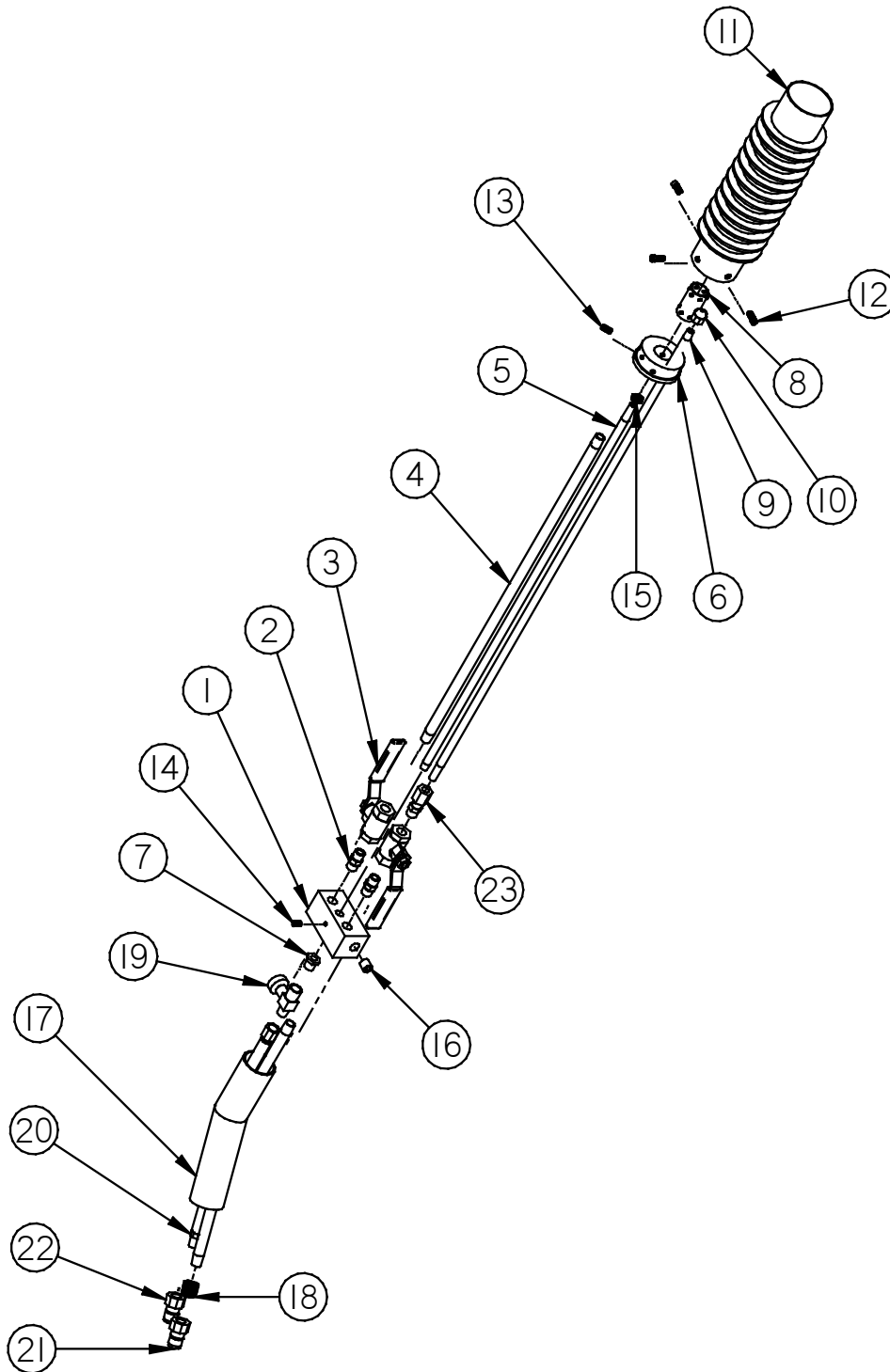


Fig. 10-34 Hot Air Lance (Option)

Chapter 10 Illustrated Parts List

Table 10-34 Hot Air Lance (Option)

FIG.	ITEM	PART NO.	DESCRIPTION	QTY.
Fig. 10-34	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/ ORIFICE	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 ORIFICE "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 11 Tools and Accessories

11.0 Tools and Accessories



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



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



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



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



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



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



Crafcoco Cold Air Lance - 42648

Chapter 11 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 High Velocity Heat Lance - 45650

Chapter 11 Tools and Accessories



**Crafcro Love Velocity Heat
Lance - 32259**



**Crafcro Hand Torch
W/ 20ft. Hose – 25012
W/ 12ft. Hose – 25016
W/ 50ft. Hose – 25021**



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