A-1 Handgun

Part 108 061D

NORDSON CORPORATION • AMHERST, OHIO • USA

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TABLE OF CONTENTS

SECTION **PAGE**

SECTION 1
SAFETY SUMMARY

INTRODUCTION

The following paragraphs provide safety guidelines for working safely with Nordson® adhesive and sealant application equipment. Some of these guidelines are repeated throughout the manual, along with specific warnings and cautions not included here. These safety guidelines cover:

- Safety During Installation,
- Safety During Operation,
- Safety During Servicing,
- Safety When Using Hot Melt Adhesives/Sealants, Solvents and Reactive Materials,
- What to do if Molten Material Comes in Contact with the Skin.

Failure to follow these recommendations may result in personal injury from burns or electrocution and/or equipment and property damage.

EXPLANATION OF TERMS AND SYMBOLS

The following safety symbols and signal words are used throughout this publication to alert the reader to personal safety hazards, or to identify conditions that may result in equipment or property damage.

WARNING: This is a general warning. Failure to observe this warning may result in personal injury or death.

WARNING: This means risk of electrical shock. Failure to observe this warning may result in personal injury or death.

CAUTION: This is a general caution. Failure to observe this caution may result in minor personal injury or damage to property.

NOTE: This indicates important information. Failure to observe this note may result in equipment damage.

SAFETY DURING INSTALLATION

Electrical

- A protective electrical ground connection to a reliable earth ground is essential for safe operation. Without one, all accessible conductive components (including knobs and controls that appear insulated) can render an electric shock.
- A disconnect switch with lockout capability must be provided between the power source and the equipment.
- The power supply wire gauge and insulation must be sufficient to meet the temperature and power requirements.
- Only fuses of the correct type voltage rating and current rating should be used. Refer to the equipment parts list for fuse recommendations. Using incorrect or non-recommended fuses can present a fire hazard.

Pneumatic

Install a lockout, three-way, manual valve in the air supply line to the filter/regulator. This valve makes it possible to relieve air pressure and lock out the pneumatic system before undertaking maintenance or repairs.

Gas System Installation (FoamMelt® applicators and nitrogen blanket kits only)

Cylinders of compressed gas are under high pressure and can present significant safety hazards if handled improperly. Refer to OSHA General Industry Standards, paragraphs 1910.101, 1910.166 and 1910.167 for safety precautions that apply to the use, handling, and storage of compressed air.

SAFETY DURING OPERATION

DO NOT operate Nordson equipment under the following conditions:

- At a pressure higher than the rated maximum working pressure of any component in the system.
- Near volatile or otherwise explosive gases or materials.
- Without the covers, panel and safety guards properly installed.

- At atmospheric temperatures below 20°F (-6°C) or above 120°F (50°C).
- With hoses enclosed in any material that interferes with heat dissipation. This includes electrical conduit, insulation of any type, or tight metal covers.
- With large areas of hose in contact with a cold floor, cold supports or other such surfaces. Cold points along the hose restrict the flow of adhesive inside the hose and can create potential problems during operations.
- In drafty areas with the applicator guns unshielded from the draft. Rapid heat dissipation due to air movement across the guns may cause operational problems.
- (If a handgun is used) with the handgun trigger left unlocked while the gun is unattended.

In addition:

- Use only the metal base when attempting to lift or move an applicator. **DO NOT** use equipment covers, doors, panels or hose connectors as braces or grips.
- **NEVER** use Nordson equipment as a ladder or stepping stool.
- Route all hoses to prevent damage from kinking, abrasion and other physical damage. **DO NOT** allow a hose to be installed with a bend radius of less than 6 inches (15.1 cm).
- **NEVER** point an applicator handgun at yourself or anyone else.

SAFETY DURING SERVICING

- **DO NOT** perform internal service or adjustment on any equipment unless another person capable of rendering first aid and resuscitation is present.
- Only qualified personnel should service Nordson equipment.
- To avoid personal injury, never touch exposed connections and components while power is ON. Dangerous voltages exist at several points in the equipment.

SAFETY DURING SERVICING *(continued)*

- Disconnect, lock out and tag external electrical power before removing protective panels or replacing electrical components.
- Remove all jewelry (rings, watches, etc.) before servicing equipment.
- If possible, stand on a rubber mat when servicing Nordson equipment. **DO NOT** work on equipment if standing water is present. Avoid working in a high-humidity atmosphere. Cover exposed terminals and work areas with rubber sheeting to avoid accidental contact while the power is ON.
- Always wear safety glasses, protective gloves and long-sleeved protective clothing to prevent injury from hot applicator parts, splashed hot melt adhesive and hot gun surfaces.
- To prevent serious injury from molten adhesive under pressure, always relieve system hydraulic pressure (by triggering the gun, for example) before opening any hydraulic fitting or connection.
- **NEVER** use an open torch or drill to clean a nozzle.
- **NEVER** operate equipment with a known leak in the system.

SAFETY WHEN USING HOT MELT ADHESIVES/SEALANTS, SOLVENTS AND REACTIVE MATERIALS

- Use extreme care when working with molten materials. They solidify rapidly at high temperatures and present a hazard. Severe burns can occur if the molten materials come in contact with the skin. Even when first solidified, they are still hot.
- Always wear protective clothing and eye protection when handling molten material or working near equipment containing hot melt adhesives under pressure.
- **DO NOT** use an open flame or uncontrolled heating device to heat solvents (for example, a small pan on an unregulated hot plate).
- Avoid a fire hazard by using a controlled heating device to heat solvents (for example, a small deep fat fryer or thermostatically controlled hot plate).

SAFETY WHEN USING HOT MELT ADHESIVES/SEALANTS, SOLVENTS AND REACTIVE MATERIALS *(continued)*

- DO NOT USE PAINT-TYPE SOLVENTS UNDER ANY CIRCUMSTANCES! These solvents are volatile and may be a fire and/or toxic-vapor hazard even at room temperature.
- Always be sure the work area is adequately ventilated. Avoid prolonged or repeated breathing of solvent vapors.

Halogenated Solvents

Halogenated Hydrocarbon Solvents are dangerous when used in a pressurized fluid system that contains aluminum components. No available stabilizers will prevent halogenated hydrocarbon solvents from reacting with aluminum components.

- **NEVER** clean any aluminum component or flush any system using halogenated hydrocarbon solvents. Use Type R solvent (P/N 270755) or contact your solvent or hot melt supplier for a non-halogenated hydrocarbon solvent for cleaning and flushing. Halogenated fluids include the following solvents:

Fluorinated Solvents:

Dichlorofluoromethane
Trichlorofluoromethane

Chlorinated Solvents:

Carbon Tetrachloride
Dichloromethane
Methylene Chloride
Monochlorotoluene
Perchloroethylene
1-1-1 Trichloroethane
Chloroform
Ethylene Dichloride
Monochlorobenzene
Orthodichlorobenzene
Trichloroethylene

Reactive Materials

Reactive materials may produce fumes when heated. When using reactive materials in this system, do not set the operating temperatures or over temperature limits without first consulting the adhesive manufacturer and the **Material Safety Data Sheet** (MSDS) concerning the use of these materials.

IF MOLTEN MATERIAL COMES IN CONTACT WITH THE SKIN

- Do NOT try to remove the molten material from the skin.
- Immediately immerse the affected area in cold, clean water. Keep the affected immersed until the material has cooled.
- Do NOT try to remove the cooled material from the skin.
- Cover the area with a clean, wet compress.
- In cases of severe burns, look for signs of shock. If shock is suspected, have the patient lie down, use blankets to preserve body heat and elevate the feet several inches.
- Call a physician immediately.

SECTION 2
EQUIPMENT FAMILIARIZATION

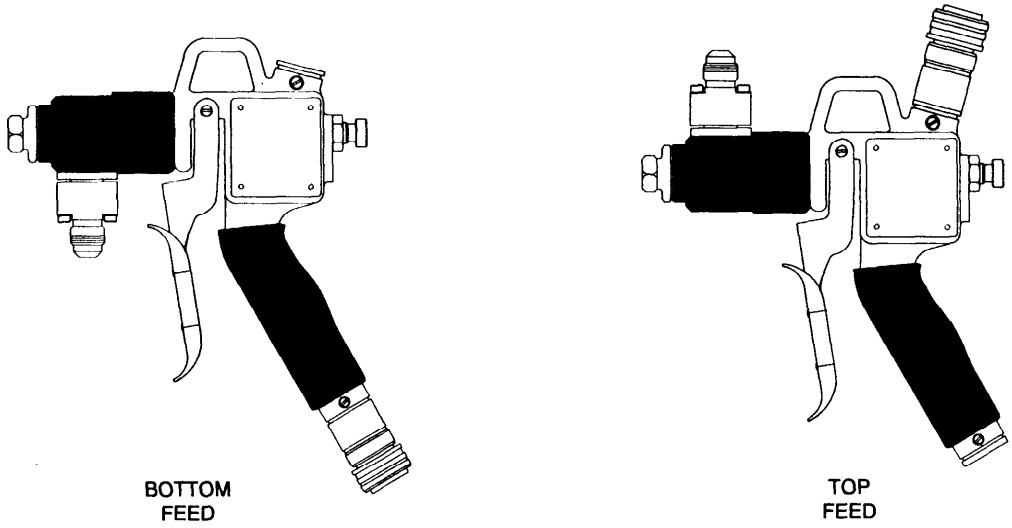

Figure 2-1 — A-1 Handguns

DESCRIPTION

Refer to Figure 2-1. The Nordson A-1 Handgun is a dispensing gun for manual application of high-viscosity material, or materials at high flow rates, onto a substrate.

This manual covers sixteen different versions of the gun:

Heated Guns:

- 120VAC, Switched, Top, Bottom, Left and Right Side Feed, with Swivels
- 240 VAC, Switched, Top, Bottom, Left and Right Side Feed, with Swivels
- 120VAC, Switched, Top and Bottom Feed, without Swivels
- 240 VAC, Switched, Top and Bottom Feed, without Swivels

Unheated Guns:

- Unheated, Top and Bottom Feed, w/Swivels
- Unheated, Switched, Top and Bottom Feed, w/Swivels

DESCRIPTION *(continued)*

The gun features a "cool handle" design with no heated parts in the handgrip/trigger section.

The swivels allow the gun to be rotated 340 degrees at the hose connection without twisting or damage to the hose.

The thumb screw in the back of the gun handle is used to adjust trigger travel, for consistent bead size with every application. When the thumb screw is rotated fully clockwise, it locks the gun to prevent inadvertent triggering when not in use.

Switched versions incorporate a microswitch, used to control operation of the material supply pump, on the trigger mechanism.

Heated versions of the gun have two heater cartridges in the hydraulic body. Gun temperature is sensed and controlled by a resistance temperature detector (RTD), also located in the body.

Optional Nozzles and Hoses

A wide variety of different nozzles, each allowing for precise control of material deposition, are available for the gun. Section 8 of this manual includes lists of available nozzles and heated hoses, as well as replacement parts for the gun.

THEORY OF OPERATION

Material is delivered under hydraulic pressure from the bulkmelter or unloader through a hose to the gun. Heated hoses are used with bulkmelters to keep the material at the proper application temperature. Hose and gun temperature is controlled by either the bulkmelter or a System Sentry® Control Console.

The trigger is connected to a ball and seat valve in the hydraulic body. Squeezing the gun trigger pulls the ball away from the seat, allowing the pressurized material to be forced through the opening in the seat and out through the nozzle.

A microswitch attached to the trigger mechanism closes and actuates a solenoid (on piston pump units), starting the pump.

THEORY OF OPERATION *(continued)*

When the gun trigger is released, a spring forces the ball back against the seat to positively stop material flow. The microswitch opens, stopping the pump.

The gun should be hung by the loop provided in the top of the gun handle when not in use.

SPECIFICATIONS

Dimensions

Length: 10.5 in. (26.7 cm)
Depth: 9.2 in. (23.4 cm)
Width: 2.4 in. (6.1 cm)

Weight

3.5 pounds (1.58 kg)

Electrical Requirements

120 VAC, 50/60 Hz, 60 watts
220/240 VAC, 50/60 Hz, 60 watts

Maximum Working Pressure

3000 psi (210 bar)

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SECTION 3
INSTALLATION

UNPACKING

No special unpacking instructions are necessary. Use normal care to prevent damage to the handgun when unpacking.

INSPECTION

After unpacking, inspect:

a. The gun surfaces for evidence of shipping damage.

b. For loose electrical connections.

c. All fasteners for tightness.

d. If damaged, contact your Nordson representative.

SAFETY PRECAUTIONS

WARNING: This equipment contains energized electrical components with potentials that could be fatal. Disconnect and lock out input electrical power before installing or servicing this equipment.

WARNING: To prevent electrical shock, always complete the hose-to-gun hydraulic and electrical connections before connecting the hose to the bulk melter.

CIRCUIT BREAKER RETROFIT KITS

WARNING: Failure to change the circuit breakers in the gun channels of the System Sentry® Control Console and Bulkmelter Series 5000 Units could result in damage to the guns and/or injury to the operator.

Before using the A-1 Handgun with a System Sentry Control Console or a Bulkmelter, the gun circuit breakers in these units must be changed. Heated 120VAC guns are shipped with System Sentry Control Console kits, 240VAC guns with Bulkmelter kits. The kits include installation instructions.

INSTALLATION

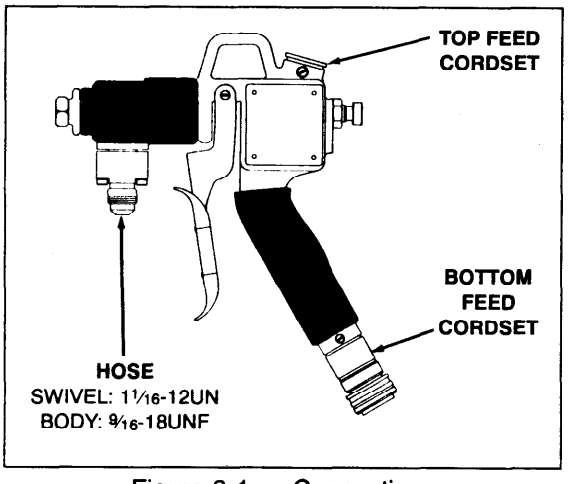

Figure 3-1 — Connections
(Bottom Feed Version Shown)

1. Connect a material supply hose to the swivel or hydraulic body. Tighten firmly.

   a. Top and Bottom Feed, w/Swivel: Connect hose to swivel connector. Connection is male, 1 1/16-12 UN.

   b. Right and Left Side Feed: Install 90° elbow shipped with gun onto swivel connector, then connect hose. Connection is male, 1 1/16-12 UN.

   c. Guns without swivels: Connect hose to hydraulic body. Connection is female, 9/16-18 UNF.

NOTE: To ensure a tight hose-to-gun hydraulic connection, hold the swivel joint in place with a wrench across the swivel flat while using another wrench to tighten the hose fitting.

NOTE: DO NOT use extra fittings or nipples to connect this gun to a heated hose. A cold connection may result, adversely affecting material flow and deposition.

2. Connect the hose electrical plug into the socket at the end of the A-1 cordset connector. Refer to Section 8 for cordset pinouts.

NOTE: Orient the gun-to-hose cable connector pins correctly before completing the connection or damage to the equipment could result.

SECTION 4
OPERATION

SETUP AND INITIAL OPERATION

WARNING: Failure to change the circuit breakers in the gun channels of the System Sentry® Control Console and Bulk Melter Series 5000 Units could result in damage to the guns and/or injury to the operator.

Before using the A-1 Handgun with a System Sentry Control Console or a Bulkmelter, make sure the gun circuit breakers in these units have been changed. Refer to Section 8 in this manual for the circuit breaker retrofit part numbers.

Heated guns receive input power from the bulkmelter. The gun will not extrude material until the entire system reaches application temperature. Use the following procedure to start up the system:

WARNING: Wear safety glasses, safety gloves and protective clothing to prevent injury from hot bulk melter parts, splashed hot adhesives/sealants and hot gun surfaces.

WARNING: This equipment contains energized electrical components with potentials that could be fatal. Only qualified personnel should operate and service this equipment.

1. Start up the bulkmelter system in accordance with the bulkmelter service manual.

NOTE: The following factors can affect the material output rate from the handgun nozzle:

- A change in hydraulic pressure
- A change in application temperature
- A change to a lower or higher viscosity material
- A change in nozzle orifice size
- A change in hose length
- A change in the trigger-adjust thumb screw

2. Check the settings and factors which influence the discharge force of material through the handgun nozzle.

3. Trigger the gun to purge air from the hose and gun.

The system is now ready for operation.

ADJUSTMENT

Increase Deposition

To increase the amount of material being deposited on the substrate, make one or more of the following changes:

a. Increase hydraulic pressure.

b. Install nozzle with larger orifice.

c. Rotate trigger-adjust thumb screw counter-clockwise and lock with jam nut.

Decrease Deposition

To decrease the amount of material being deposited on the substrate, make one or more of the following changes:

a. Decrease hydraulic pressure.

b. Install nozzle with smaller orifice.

c. Rotate trigger-adjust thumb screw clockwise and lock with jam nut.

SYSTEM SHUTDOWN

1. Shut down the bulkmelter system as described in the bulkmelter service manual.

2. Rotate trigger-adjust thumb screw clockwise to a full stop.

CAUTION: Never hang the A-1 handgun by the trigger. Hanging the gun by its trigger may cause an accidental discharge of hot adhesive/sealant, resulting in burns.

3. Hang the A-1 handgun by the loop on the top of the handle.

SECTION 5
PREVENTIVE MAINTENANCE

GUN CLEANING

Daily

Clean all exterior gun and nozzle surfaces. Material accumulating on the nozzle can cause erratic operation. Do not clean the gun exterior with anything stronger than mineral spirits.

Weekly

Clean the nozzle bore. Refer to "Nozzle Cleaning" later in this section. More or less frequent cleaning may be required depending on the application and materials used.

GUN INSPECTION

Semiannually

WARNING: This equipment contains energized electrical components with potentials that could be fatal. Disconnect and lock out input electrical power before installing or servicing this equipment.

WARNING: To prevent burns from splashed hot material, relieve system pressure before opening any hydraulic connection.

1. Relieve system pressure by turning the bulkmelter pump selector switch to the OFF position. Trigger the gun to relieve any trapped residual pressure.

2. Disconnect the hose electrical plug from the A-1 cordset connector.

3. Remove the screws and lockwashers securing the data plate to the handle.

4. Inspect wiring insulation for signs of wear or other damage. Check all electrical connections for tightness.

WARNING: Vibration and heating/cooling cycles may loosen connections, resulting in possible electric shock or equipment damage.

GUN INSPECTION *(continued)*

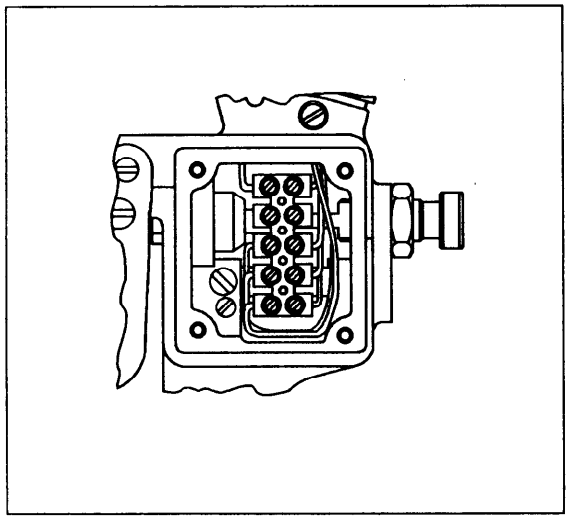

Figure 5-1 — Electrical Connections

5. Inspect the sub-miniature switch on the trigger mechanism for loose, damaged, or worn parts. Replace if malfunctioning or damaged.

6. Re-install the data plate on the handle.

7. Connect the hose to the gun.

8. Connect the hose electrical plug to the cordset connector.

NOTE: Orient the gun-to-hose connector pins correctly before completing the connection or equipment damage could result.

9. Restore the system to normal operation as described in the bulkmelter service manual.

SWIVEL CONNECTOR THRUST BEARING LUBRICATION

Semiannually

WARNING: This equipment contains energized electrical components with potentials that could be fatal. Disconnect and lock out input electrical power before installing or servicing this equipment.

WARNING: To prevent burns from splashed hot material, relieve system pressure before opening any hydraulic connection.

1. Relieve system pressure by turning the bulkmelter pump selector switch to the OFF position. Trigger the gun to relieve any trapped residual pressure.

2. Disconnect the hose electrical plug from the A-1 cordset connector.

NOTE: It may be necessary to heat the swivel connector and hose fitting before Step 3 can be completed.

SWIVEL CONNECTOR THRUST BEARING LUBRICATION *(continued)*

CAUTION: Never use a torch or other open flame to heat gun parts. Use an electric heat gun instead. Wear safety gloves to prevent burns.

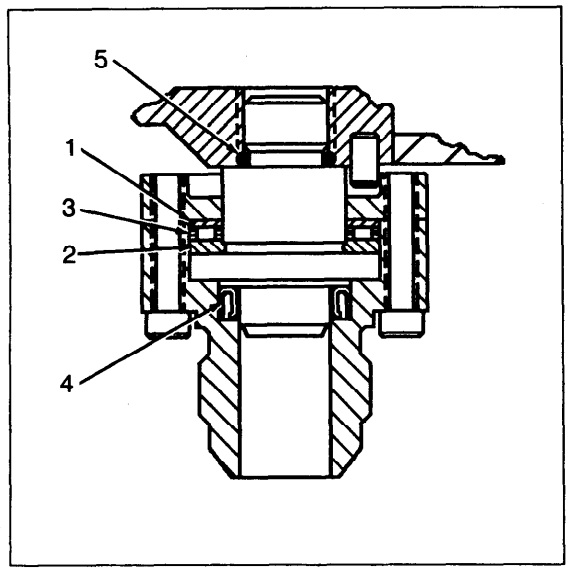

Figure 5-2 — Swivel Cutaway
(Shown Installed)

3. Disconnect the hose from the gun at the gun swivel connector.

4. Remove the swivel assembly. Refer to Section 7, Swivel removal procedures.

5. Disassemble the swivel and clean the thrust washers (1, 2) and thrust bearing (3) thoroughly in Nordson Type R solvent. Repack the thrust bearing with high-temperature silicone lubricating grease.

NOTE: Use only high-temperature grease on the swivel thrust bearing (Nordson P/N 900301). Do not use standard grease to lubricate this bearing. High temperatures will carbonize standard grease and cause the bearing to bind and possibly damage the swivel.

6. Inspect the swivel connector shaft seal (4) and O-ring (5) for evidence of hardening, cracking or other damage. Replace these components if damage is found.

7. Apply Parker O-Lube, or equivalent lubricant, to the O-ring, and PTFE grease to the shaft seal. If the seal was removed, re-install it with the open side of the seal pointed away from the thrust bearing, as shown in Figure 5-2.

8. Finish re-assembling the swivel and install it on the gun. Refer to Section 7, Swivel Installation procedures.

9. Reconnect the hose and hose electrical plug.

NOTE: Orient the gun-to-hose connector pins correctly before completing this connection or equipment damage could result.

10. Restore the bulkmelter system to normal operation as described in the bulkmelter service manual.

NOZZLE CLEANING

Nozzle clogging occurs when there is reacted or charred material in the hose or gun that works its way into the nozzle orifice. Reacted or charred material may form if the material is heated above the application temperature recommended by the manufacturer, or if the material remains at an elevated temperature for an extended period of time. If this does occur, it may even be necessary to replace the hose and/or gun.

WARNING: Wear safety glasses, safety gloves, and protective clothing to prevent injury from hot bulkmelter parts, material and gun surfaces.

1. Bring the gun to application temperature as described in the bulkmelter service manual.

WARNING: To prevent burns from splashed hot material, relieve system pressure before opening any hydraulic connection.

2. Relieve system pressure by turning the bulkmelter pump selector switch to the OFF position. Trigger the gun to relieve any trapped residual pressure.

3. Unscrew the nozzle retaining nut from the seat and remove the nozzle.

4. Clean out the nozzle bore by inserting a pin-type probe through the nozzle in the same direction as material flow.

5. Re-attach the nozzle to the seat with the nozzle retaining nut.

6. Restore the system to normal operation as described in the bulkmelter service manual.

7. Trigger the gun to make sure material flows properly.

SECTION 6
TROUBLESHOOTING

INTRODUCTION

This section provides troubleshooting procedures for the following:

- Material does not flow when gun is triggered (gun heats)
- Material leaks from nozzle
- Material leaks from swivel connector
- Material leaks from seat or insulator block
- Hose or gun fails to heat
- Gun overheats

The A-1 handgun wiring diagram is located at the end of this section.

Note that any fault may have a number of reasons for occurring. Check all possible causes for any given fault. Obvious causes of malfunction such as broken wires, missing fasteners, etc., should be noted during visual inspection and corrected immediately.

These tests are to be performed by qualified personnel observing standard safety practices

WARNING: Review Section 1, Safety Summary, before attempting to troubleshoot or repair this equipment.

WARNING: This equipment contains energized electrical components with potentials that could be fatal. Disconnect and lock out input power to the system before removing any panels or performing troubleshooting procedures.

WARNING: DO NOT attempt to loosen any part of the manifold, hoses, or guns until the bulkmelter has been turned off and pressure in the system has been relieved. Failure to relieve system pressure could result in serious burns.

WARNING: Wear safety glasses, safety gloves, and protective clothing to prevent injury from hot parts, material and gun surfaces.

PROBLEM:	Probable Cause:	Suggested Correction:
Material does not flow when gun is triggered (gun heats).	1. Bulkmelter failed to heat.	1. Troubleshoot bulkmelter. Refer to bulkmelter service manual.
	2. Hose failed to heat.	2. Refer to Hose Fails To Heat in this section.
	3. Dirty nozzle or ball and seat.	3. Clean nozzle and/or ball and seat.
	4. Trigger-adjust thumb screw is at full stop position.	4. Rotate trigger-adjust thumb screw counterclockwise to obtain desired material flow.
	5. Hose clogged.	5. Replace hose.
PROBLEM:	**Probable cause:**	**Suggested Correction:**
Material leaks from nozzle.	1. Foreign material in ball and seat area.	1. Clean ball and seat.
	2. Faulty microswitch.	2. Adjust microswitch as described in Section 7. If problem still exists, replace microswitch.
	3. Worn ball tip.	3. Replace ball tip and shaft.
PROBLEM:	**Probable Cause:**	**Suggested Correction:**
Material leaks from swivel connector.	1. Loose socket head screws.	1. Tighten socket head screws.
	2. Worn swivel connector O-ring or seal.	2. Replace worn O-ring or seal.

PROBLEM:	Probable Cause:	Suggested Correction:
Material leaks around seat or insulator block.	1. Worn O-ring between body and seat.	1. Replace O-ring.
	2. Worn packing cartridge seal.	2. Replace seal.

PROBLEM:	Probable Cause:	Suggested Correction:
Hose or gun fails to heat.	1. Bulkmelter circuitry fault.	1. Refer to Troubleshooting in Bulkmelter Manual.
	2. Hose faulty.	2. Replace hose.
	3. Faulty gun heater cartridges.	3. Disconnect MS connector from gun. Using a multimeter set for ohms, check resistance across cordset pins A and B: 120 VAC handgun: 81-94 ohms 240 VAC handgun: 325-376 ohms Replace heater(s) if resistance check fails.
	4. Open or short in cordset wiring.	4. Check for cordset wiring for continuity (closed circuit) between connector pins and terminal strip. If an open or short circuit exists, replace cordset.

PROBLEM:	Probable Cause:	Suggested Correction:
Gun overheats.	1. RTD failed.	1. Disconnect MS connector from gun. Using multimeter set for ohms, check for resistance across cordset pins C and D. Check should be done in ambient conditions (75°F/24°C). The resistance value should be 133-138 ohms. If resistance check fails, replace RTD.
	2. Open or short in cordset wiring.	2. Check cordset wiring for continuity between connector pins and terminal strip. If an open or short circuit exists, replace cordset. See Figure 6-1.

Electrical Tests:

Cordset Pins or Gun Parts	Resistance or Continuity
A and B	240VAC — 324.9 to 376.2 Ω @ 50 to 100° F 120VAC — 81.2 to 94 Ω @ 50 to 100° F
C and D	133 to 137.5 Ω @ 65 to 75° F
Swivel Connector and Cordset Connector	Less than .015 Ω
A and/or B and H, hyd. body, handle, or trigger	No continuity
C and/or D or E, and H, hyd. body, handle, or trigger	No continuity
H and hyd. body, handle, or trigger	Continuity
F and G	Trigger Depressed - Continuity Trigger released - No continuity

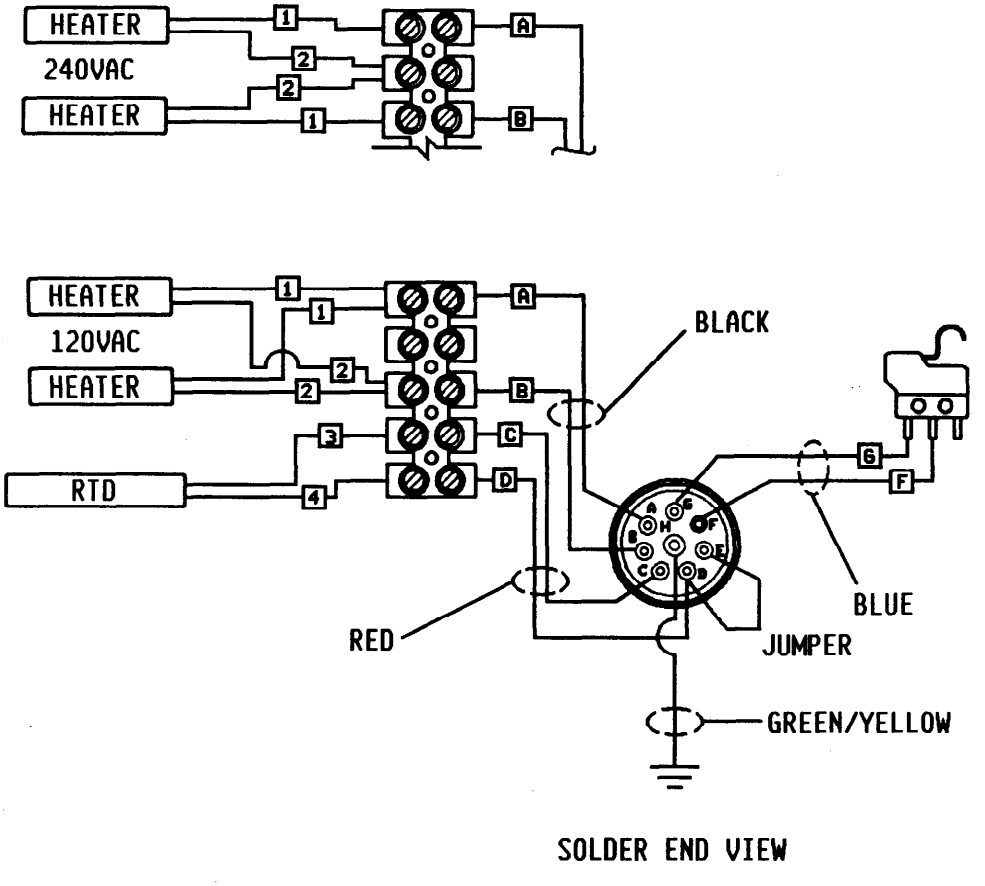

Figure 6-1 — Wiring Diagram

SECTION 7
DISASSEMBLY AND REPAIR

SAFETY PRECAUTIONS

WARNING: This equipment contains energized electrical components with potentials that could be fatal. Disconnect and lock out input electrical power to the gun before performing service procedures. Only qualified personnel should operate and service this equipment.

WARNING: Wear safety glasses, safety gloves and protective clothing to prevent injury from hot bulk melter parts, splashed hot adhesive/sealant and hot gun surfaces.

WARNING: To prevent burns from splashed hot material, relieve system pressure before opening any hydraulic connection.

To relieve system pressure:

Turn the bulkmelter pump selector switch to the OFF position. Trigger the gun to relieve any trapped residual pressure.

HEATER CARTRIDGE AND RTD REPLACEMENT

Refer to Figure 7-1.

1. Remove screws and lockwashers (1) securing warning plate (2) to handle and disconnect heater and RTD leads from terminal strip (3).

2. Remove screw (4) securing trigger (5) to handle (6) and remove trigger.

3. Remove screws and lockwashers (7) securing hydraulic body (8) and insulation block (9) to handle.

4. Pull hydraulic body, insulation block, and puller (10) away from handle. Pull heater cartridge and RTD leads through handle and insulation block.

5. Pull heater cartridges and RTD (11) from hydraulic body, noting locations of each.

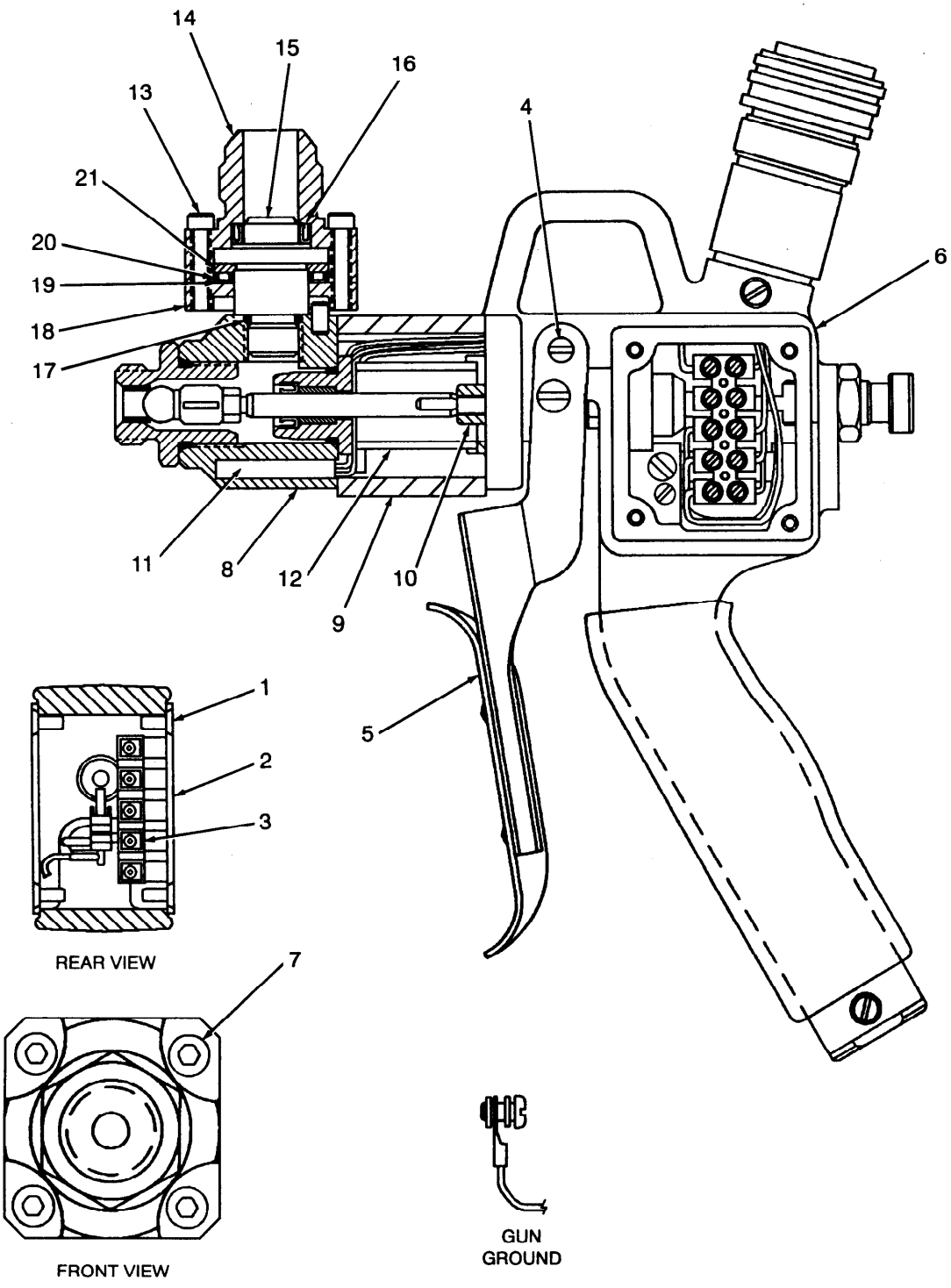

Figure 7-1 — Heated, Switched,Top Feed Gun Cutaway

HEATER CARTRIDGE OR RTD REPLACEMENT *(continued)*

6. Coat heater cartridges and RTD with heat sink compound (Nordson P/N 900298) and install in proper locations in hydraulic body (8).

7. Feed leads of new heater cartridges and RTD around insulation sleeve (12), through insulation block (9) and handle (6). Connect leads to terminal strip as shown in Figure 6-1.

8. Install warning plate (2) on handle using lockwashers and screws (1). Tighten screws securely.

CAUTION: To prevent damage to the heater and RTD cartridges, ensure wire leads do not get kinked when installing hydraulic body and insulation block to gun.

9. Guide puller (10) through handle (6), and install insulation block (9) and body (8) on handle using lockwashers and screws (7). Torque screws to 78 in. lbs. (8.8 N•m).

10. Install trigger (5) on handle with screw (4).

SWIVEL REBUILD

Refer to Figures 7-1 and 7-2.

1. Remove screws and lockwashers (13) from swivel connector (14). Remove swivel connector from swivel body joint (15). Remove seal (16) from swivel connector.

2. Using a 5/16" allen key, remove swivel body joint from hydraulic body.

3. Remove O-ring (17), swivel support plate (18), thrust washers (19 & 21), and thrust bearing (20) from swivel body joint.

4. Apply a thin coat of high-temperature silicone grease to thrust bearing (20).

5. Install thrust washer (21), thrust bearing (20), thrust washer (19), and swivel support plate (18) on swivel body joint (15).

6. Apply a thin coat of Parker O-lube or equivalent to O-ring (17).

7. Install O-ring (17) onto swivel body joint (15).

SWIVEL REBUILD *(continued)*

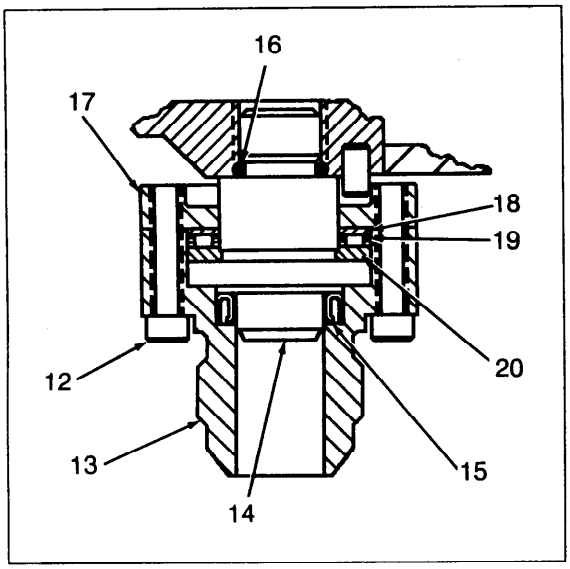

Figure 7-2 — Swivel Cutaway

NOTE: Make sure hydraulic body roll pin fits into groove in support plate before tightening swivel body joint.

5. Apply a thread sealant such as Loctite® High Temp SS567 (or equivalent) to swivel body joint threads. Using a 5/16" allen key, install swivel body joint into hydraulic body.

6. Apply a thin coat of PTFE grease to swivel seal (16) and install in swivel connector (14). Make sure seal is correctly oriented.

7. Install swivel connector over body joint and secure to support plate using lockwashers and screws (13). Torque screws to 39 in.lbs. (4.4 N•m).

MICROSWITCH REPLACEMENT

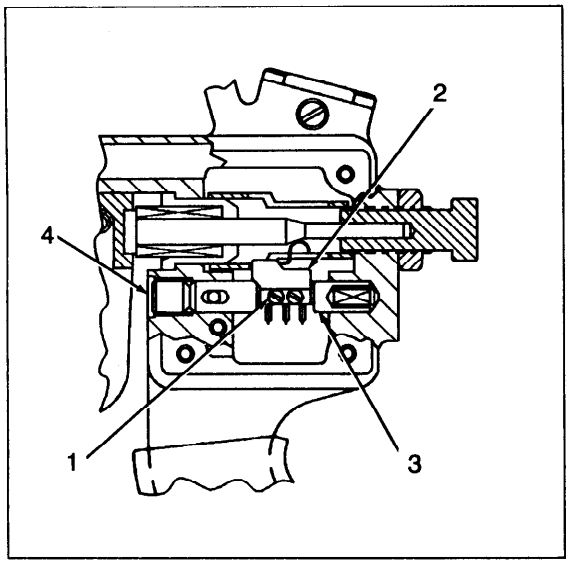

Figure 7-3 — Microswitch Replacement and Adjustment

Refer to Figure 7-3, except where noted.

1. Remove screws and lockwashers (1, Fig. 7-1) securing warning plate (2, Fig. 7-1) to handle.

2. Remove screws (1) securing switch (2) to switch shaft (3).

2. Disconnect leads from old switch and connect to new switch posts.

3. Install new switch on switch shaft with screws. Tighten screws securely.

4. Install warning plate on handle with lockwashers and screws. Tighten screws securely.

5. Perform microswitch adjustment procedure.

MICROSWITCH ADJUSTMENT

Numbers in parenthesis refer to Figure 7-3.

1. Disconnect MS connector from gun cordset.

Note: The setscrew must be adjusted to achieve an open circuit (trigger disengaged) and a closed circuit (trigger engaged). Some trial and error is required to achieve both conditions.

2. Use a multimeter to check for an open circuit across cordset connector pins F and G (see Figure 6-1) with trigger disengaged. If an open circuit does not exist:

   a. Insert allen wrench (supplied with gun) into setscrew (4).

   b. Rotate the setscrew clockwise until an open circuit is obtained.

3. Use a multimeter to check for an closed circuit across cordset connector pins F and G with trigger engaged. If a closed circuit does not exist:

   a. Insert allen wrench into setscrew (4).

   b. Rotate setscrew counterclockwise until a closed circuit is obtained.

4. Recheck for open and closed circuits, repeat procedure if necessary, until properly adjusted.

CORDSET REPLACEMENT

1. Remove screws and lockwashers securing warning plate to handle and disconnect wires from terminal strip, ground, and switch.

2. Remove screw securing cordset to handle and remove cordset. If gun is bottom feed version, tie a line around cordset wires before pulling through handle. Line through handle will aid in pulling new cordset wires through handle.

3. Feed cordset wires through top or bottom of handle and connect according to wiring diagram (Figure 6-1) to terminal block, gun ground, and switch.

4. Secure cordset to handle with screw removed in Step 2. Install warning plate on handle with screws and lockwashers.

BALL AND SEAT REPLACEMENT

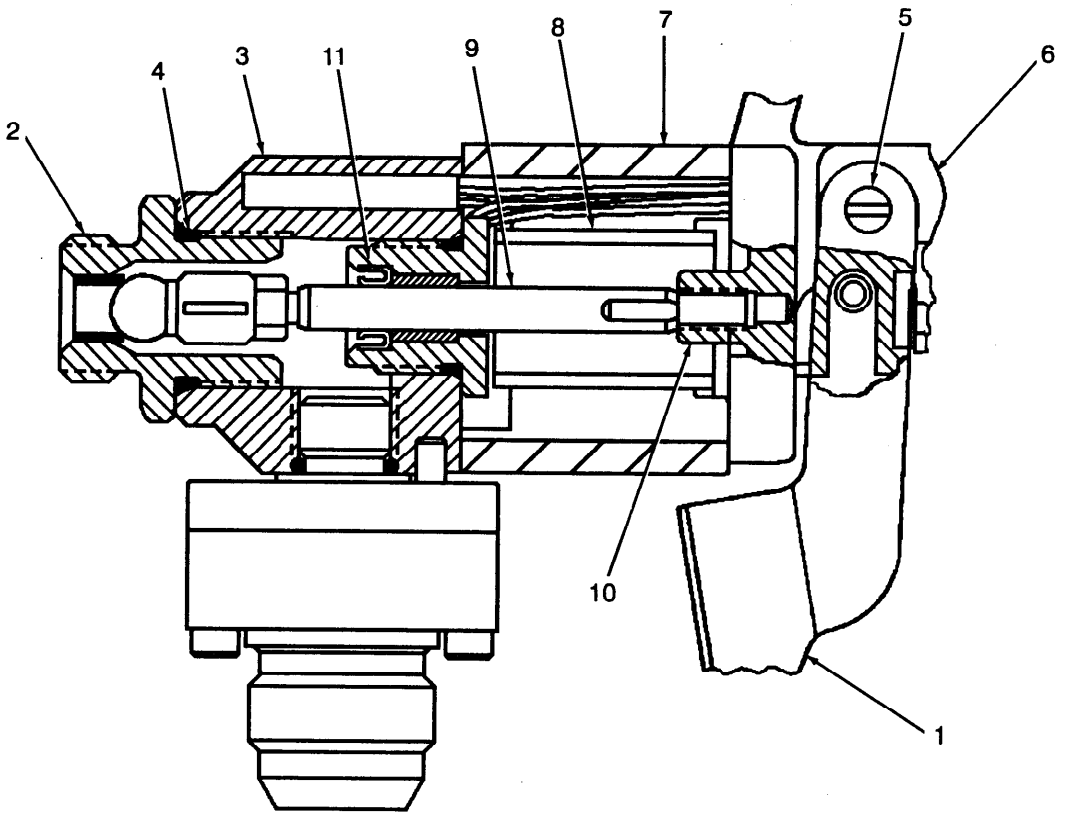

Figure 7-4 — Ball and Seat Replacement

Numbers in parenthesis refer to Figure 7-4, except where noted.

NOTE: Ball and seat are only available as a matched set. Refer to Section 8 of this manual for ball and seat kit part number.

1. Refer to "Heater Cartridge and RTD Replacement" in this section. Remove warning plate and disconnect heater cartridge and RTD leads from terminal block.

2. While pulling back on trigger (1), unscrew and remove seat (2) from hydraulic body (3). Inspect O-ring (4) and replace if damaged.

3. Remove screw (5) securing trigger to handle (6). Remove trigger from gun.

4. Remove screws and lockwashers (7, Fig. 7-1) securing hydraulic body and insulation block (7) to handle.

5. Remove body, insulation block, sleeve (8), and ball shaft (9) from handle, pulling heater cartridge and RTD leads through handle carefully.

6. Place puller (10) in a soft-jawed vise. Place a wrench on the ball shaft flats and unscrew it from the puller.

7. Push ball shaft through packing cartridge. Inspect packing cartridge seal (11) and replace if damaged. Refer to Section 8 for part numbers.

8. Lubricate packing cartridge seal with PTFE grease. Install new ball shaft through packing cartridge.

9. Apply threadlock adhesive (Loctite® High Temp. SS 567 or equivalent) to shaft threads and install puller on shaft end. Tighten puller securely.

10. Re-assemble sleeve (8), insulation block (7), and hydraulic body (3) to handle. Make sure heater cartridges and RTD are in place in hydraulic body, and leads are routed properly. Feed leads and puller through handle.

11. Install screws and lockwashers (7, Fig. 7-1) through hydraulic body and insulation block, thread screws into handle and tighten securely.

12. Connect heater cartridge and RTD leads to terminal block (see wiring diagram, Figure 6-1).

13. Re-install trigger on handle with pivot in slot in puller. Secure trigger with screw (5).

14. Lubricate new seat O-ring (4) with Parker O-Lube or equivalent. Pull back on trigger to retract ball, thread new seat (1) into hydraulic body and tighten securely.

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SECTION 8
PARTS LISTS

Using The Parts Lists

Reference Numbers — The number in the REF. column indicates the number assigned to the part in the illustration preceding the list. The code NS means the part is Not Shown in the illustration.

Notes — A letter in the NOTE column refers to a note below the parts list. *Special attention should be given to noted parts.*

Part Numbers — Part numbers are given only for saleable parts or kits. Parts that are not sold separately are sometimes shown for clarity.

Descriptions — Descriptions are indented to show the relationship between parts for ordering purposes. A part indented once is a component of the top level assembly, a part indented twice is a component of both the first one level indented item above it and the top level assembly. For example:

Ref.	Note	Part No.	Description	Qty.
-		000 000	Top Level Assembly	1
1	A	000 000	• Assembly or Part	2
2		000 000	•• Subassembly or Part	1

If you order item 1, items 2 & 3 will be included.
If you order item 2, item 3 will be included.
If you order item 3, you will receive item 3 only.

Part descriptions indented to kit descriptions are included in the kits, and in the top level assembly.

Quantities — Quantities given in all parts lists except recommended spares lists are the quantities needed to assemble the next level assembly. The code "ASR" (As Required) is used for bulk items such as tubing, which is ordered in increments of one foot.

A-1 HANDGUN VERSIONS

The following chart lists the top level gun number, the service kit included with the gun for use with Nordson Bulkmelters or System Sentry® Controllers, and cordsets or cordset service kits. All other differences between the various versions are noted in the main parts list.

Heated Guns with Swivels

Part No.	Description	Service Kit	Cordset Kit
125 520	120VAC, Bottom Feed	126 573	129 638
125 521	240VAC, Bottom Feed	130 806	129 639
126 681	120VAC, Top Feed	126 573	129 636
126 682	240VAC, Top Feed	130 806	129 637
133 688	120VAC, Right Side Feed	126 573	129 636
133 689	240 VAC, Right Side Feed	130 806	129 637
133 690	120VAC, Left Side Feed	126 573	129 636
133 691	240VAC, Left Side Feed	130 806	129 637

Heated Guns without Swivels

Part No.	Description	Service Kit	Cordset Kit
146 314	120VAC, Bottom Feed	126 573	129 638
146 315	240VAC, Bottom Feed	130 806	129 639
146 316	120VAC, Top Feed	126 573	129 636
146 317	240VAC, Top Feed	130 806	129 637

Unheated Guns, with Cordset and Trigger Switch

Part No.	Description	Cordset
138 622	Bottom Feed	138 844
138 623	Top Feed	138 845

Unheated Guns, without Cordset and Trigger Switch

Part No.	Description
138 624	Bottom Feed
138 621	Top Feed

A-1 HANDGUN SERVICE PARTS AND KITS

Heater and RTD Cartridges

Part No.	Description
938 090	Heater, 120V, 80W
939 739	Sensor, Temp. RTD

Gun Service Kit List

Refer to Gun Parts List for items included in each kit.

Part No.	Description
129 628	Service Kit, A-1 Hydraulic Body
129 630	Service Kit, A-1 Trigger
129 631	Service Kit, .375 Ball/Seat
129 632	Service Kit, Packing Cartridge
129 633	Service Kit, Seals, A-1
129 635	Service Kit, A-1, 1.06-12 Swivel

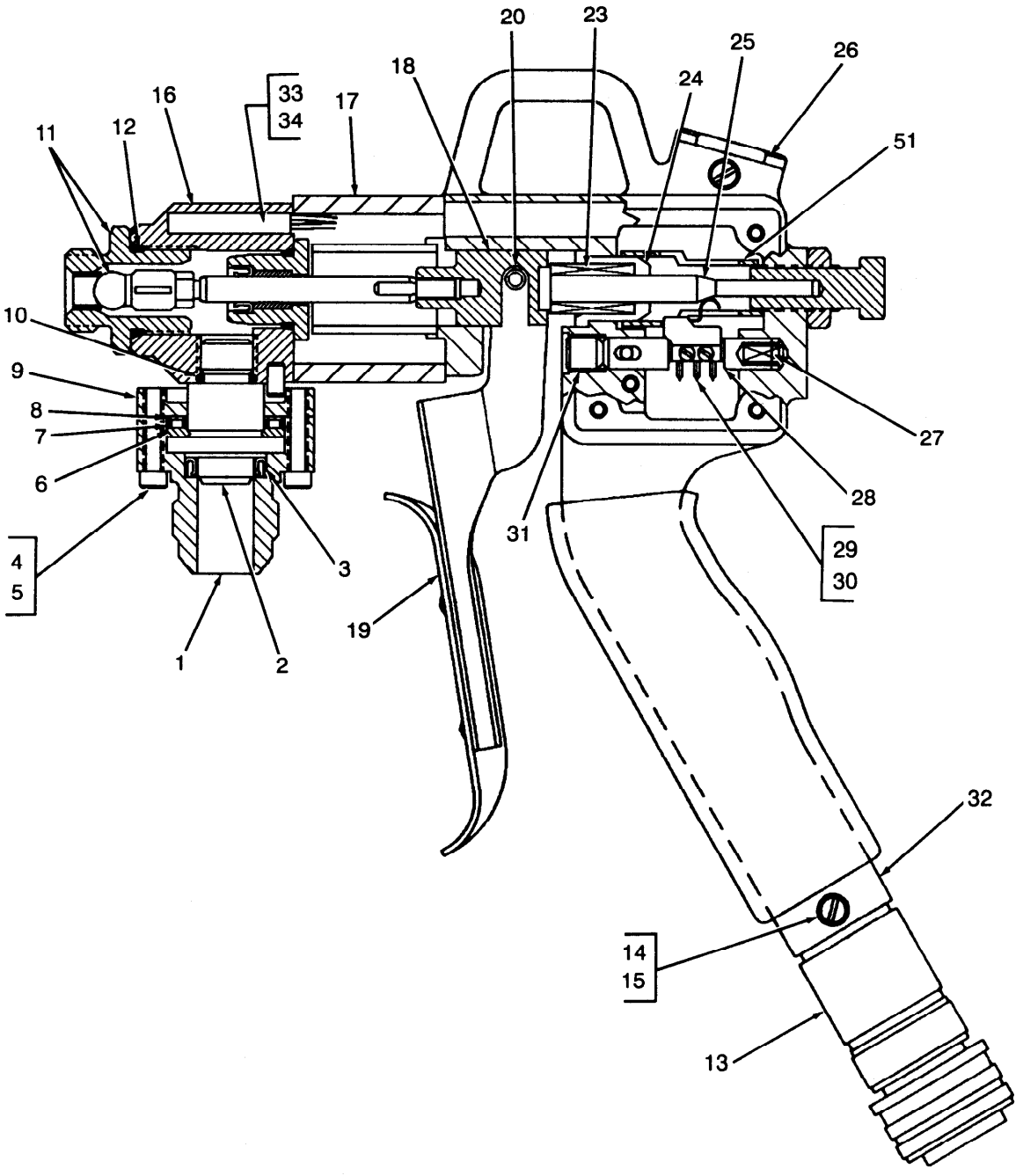

Figure 8-1 — Bottom Feed Version Cutaway View

GUN PARTS LIST

Parts list continued on following pages. Reference numbers refer to Figures 8-1 and 8-2.

Refer to version charts on page 8-2 for Bulkmelter and System Sentry kits and cordset part numbers.

Ref.	Note	Kit P/N	Part No.	Description	Qty.
-		129 635	←	Service Kit, A-1, 1.06-12 Swivel	1
1	A		127 361	• Connector, Swivel, 1.06-12	1
2	A		127 359	• Body, Joint, Swivel	1
3	AB		324 759	• Seal, Shaft	1
4	A		982 271	• Screw, Socket Hd, M4 x 20	4
5	A		983 011	• Washer, Lock	4
6	A		324 761	• Washer, Thrust, .750 x 1.25 x .093"	1
7	A		324 762	• Bearing, Thrust, .750 x 1.25 x .078"	1
8	A		324 763	• Washer, Thrust, .750 x 1.25 x .031"	1
9	A		127 367	• Plate, Support, Swivel	1
10	AB		945 082	• O-ring, Viton®, Black, .375" Tube	1
11		129 361	←	Service Kit, .375 Ball/Seat	1
12	B		945 084	• O-ring, Viton, Black, .625" Tube	1
13	C	—	—	Cordset or Cordset Service Kit	1
14			982 265	• Screw, Flat Hd, M3.5 x 8	2
15			983 412	• Washer, Lock, Ext, M3.5	2
16		129 628	←	Service Kit, A-1 Hydraulic Body	1
17			127 358	Block, Insulator, Handgun	1
18			127 374	Puller, Needle	1
19		129 630	←	Service Kit, A-1 Trigger	1
20			127 382	• Pivot, Trigger	1
21			982 000	• Screw, Pan Hd, M5 x 10	2
22			127 383	Screw, Pivot, Trigger	2
23			987 039	Spring, Compression, 1.25 x .480 OD x .052"	1
24			127 372	Retainer, Stop, Spring	1
25			127 373	Stem, Spring	1
26			127 371	Closure, Handle	1
27	D		987 059	Spring, Compression, .560 x .180 OD x .032"	1
28	D		127 364	Shaft, Switch	1
29	D		937 240	Switch, Subminiature, w/Lever	1
30	D		982 242	Screw, Fillet Hd, M2 x 12	2
31	D		981 453	Screw, Socket Hd, 3/8-24 x .375", Cup	1
32			127 355	Handle, Gun	1
33	E		938 090	Heater, 120V, 80W, .25 x 1.00"	2
34	E		939 739	Sensor, Temp. RTD, w/48" Leads	1

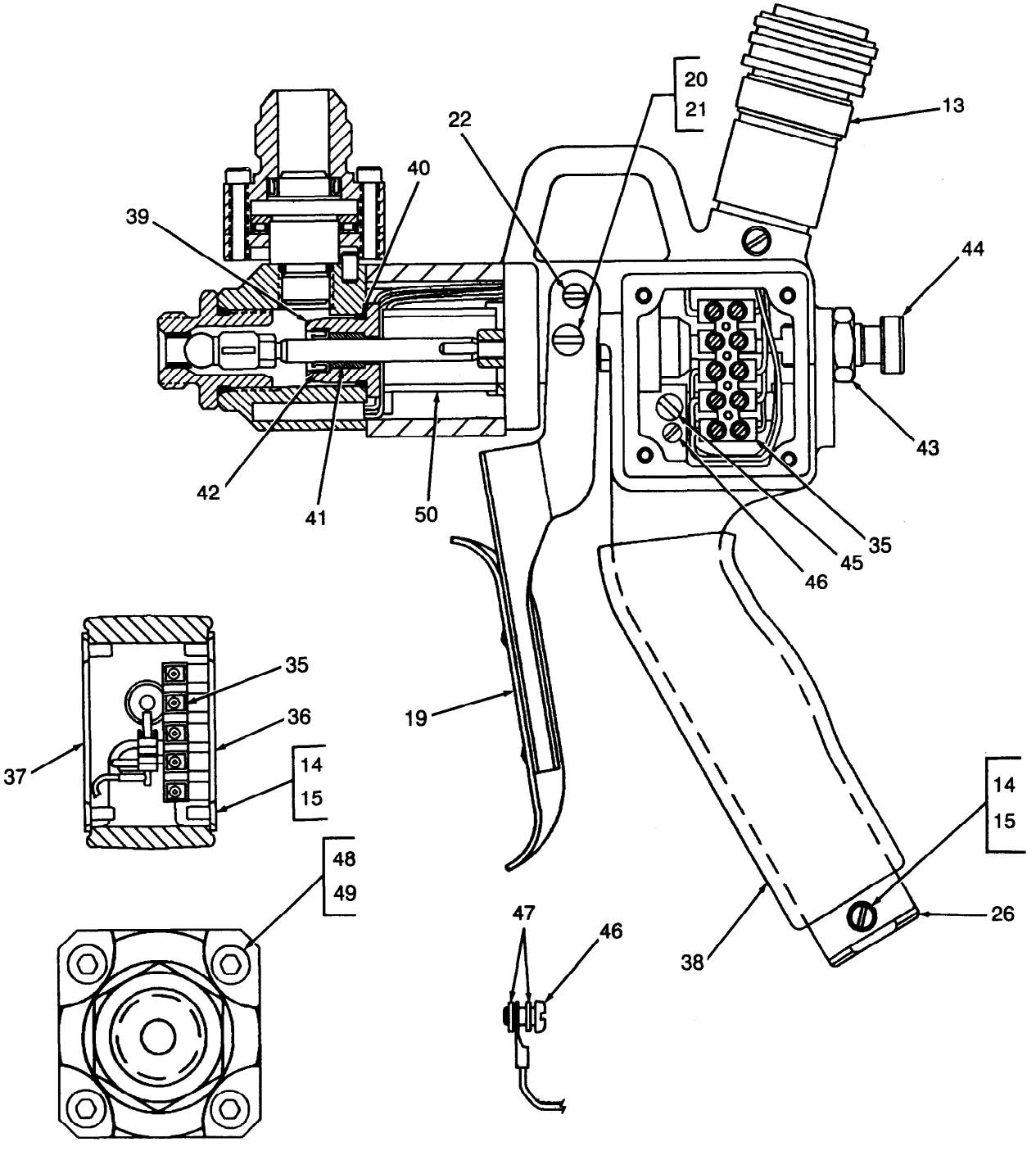

Figure 8-2 — Top Feed Version Cutaway View

Ref.	Note	Kit P/N	Part No.	Description	Qty.
35	E		933 149	Strip, Terminal, 5 Station	1
36			127 365	Plate, Warning	1
37			—	Plate, Data	1
38			901 941	Grip, Handle	1
39		129 632	←	Service Kit, Packing Cartridge	1
40			945 083	• O-ring, Viton®, Black, .500 Tube	1
41			324 767	• Bearing, Shaft, .251 ID x .380 OD x .375"	1
42			324 776	• Seal, Shaft, .251 ID x .430 OD x .093"	1
43			984 710	Nut, Hex, Jam, M12	1
44			127 375	Screw, Stop	1
45	D		127 381	Screw, Anti-Rotation, M4	1
46	D		982 099	Screw, Pan Hd, M3.5 x 6	1
47	D		983 524	Washer, Lock, Ext, #6	2
48			982 168	Screw, Socket Hd, M5 x 55	4
49			983 124	Washer, Lock, Int, #10	4
50			133 814	Sleeve, Insulator, Handgun	1
51			133 767	Sleeve, Handle Leads	1
NS			325 104	Nut, Nozzle, 1/2" NPSM	1
NS			901 942	Key, Hex, .187", Special	1
NS	F		972 783	Swivel, Joint, Elbow, 1.06-12	1

Note (A) - Not used with guns without swivels.

Note (B) - Included in 129633 Service Kit, Seal.

Note (C) - Part numbers given under "A-1 Handgun Versions".

Note (D) - Not used with unheated guns without cordsets.

Note (E) - Not used with unheated guns.

Note (F) - Used only with left and right side feed guns.

NOZZLES

A-1 Handgun Nozzles				
Orifice Diameter	**Part No.**	**Length**	**Material**	**Comments**
.023*	803 632	.825"	Brass	Straight
.025*	270 593	2.50"	Copper W/Steel Insert	Straight
.032*	809 186	.825"	Brass	Straight
.032*	270 594	2.50"	Copper W/Steel Insert	Straight
.040*	103 817	1.50"	Steel	Straight
.040*	324 493	2.50"	Copper W/Steel Insert	Straight
.040*	103 838	2.50"	Steel	Straight
.042*	270 595	2.50"	Copper W/Steel Insert	Straight
.050*	324 494	2.50"	Copper	Straight
.052*	804 585	2.50"	Copper W/Steel Insert	Straight
.053*	103 839	2.50"	Steel	Straight
.060*	103 818	1.50"	Steel	Straight
.060*	324 495	2.50"	Copper	Straight
.060*	103 840	2.50"	Steel	Straight
.061*	804 578	2.50"	Copper W/Steel Insert	Straight
.080*	324 496	2.50"	Copper	Straight
.082	103 819	1.50"	Steel	Straight
.082	103 853	2.50"	Steel	Straight
.093**	271 683	2.53"	Copper	Straight
.100	103 820	1.50"	Steel	Straight
.100	324 497	2.50"	Copper	Straight
.100	103 841	2.50"	Copper W/Steel Insert	Straight
.122	103 821	1.50"	Steel	Straight
.122	324 498	2.50"	Copper	Straight
.122	103 842	2.50"	Steel	Straight
.125	804 489	1.00"	Stainless Steel	Straight
.125**	271 684	2.53"	Copper	Straight
.130	805 395	2.50"	Copper	Straight
.148	103 843	2.50"	Steel	Straight
.150	324 499	2.50"	Copper	Straight
.156**	271 685	2.53"	Copper	Straight
.160	103 822	1.50"	Steel	Straight
.180	103 823	1.50"	Steel	Straight
.187	703 223	2.125"	Copper	Straight
.275	106 006	2.00"	Brass	Straight
.275	106 007	2.00"	Brass	Straight
.275	106 016	5.00"	Brass	Straight

Continued on following page.

NOZZLES *(continued)*

A-1 Handgun Nozzles				
Orifice Diameter	**Part No.**	**Length**	**Material**	**Comments**
.275	106 017	2.00"	Brass	30° Angle
.275	106 018	3.00"	Brass	30° Angle
.275	106 019	5.00"	Brass	30° Angle
.312	126 982	2.00"	Copper	Straight
.312	126 981	3.00"	Copper	Straight
.312	126 980	4.00"	Copper	Straight
.312	126 979	3.00"	Copper	30° Angle
.312	126 978	4.00"	Copper	30° Angle
.312	126 977	5.00"	Copper	30° Angle
* These nozzles may not achieve full shut off when used with materials having a viscosity greater than 1,000,000 centipoise. ** These nozzles require the use of nozzle adapter (P/N 111 987).				

HOSES

A-1 Handgun Hoses Standard Pressure Series 120 VAC For System Sentry Control Console			
Part Number	**Description**	**Connector End/Pin Outs For A-1 Handgun**	**Connector End/Pin Outs For System Sentry**
126 718	5/8" x 10 Ft.	8 Pin, Keyed "W" (See Note A)	17 Pin, Straight Plug (See Note B)
126 719	5/8" x 16 Ft.		
126 720	5/8" x 24 Ft.		
126 314	5/8" x 30 Ft.		
Note (A) - Connector P/ N 939872. Note (B) - Consists of: Connector, P/N 807839 Cable Clamp, P/N 80784		**Pin Outs:** A - Heater B - Heater C - RTD D - RTD F - Trigger G - Trigger H- Ground	**Pin Outs:** A - Hose Heater B - Hose Heater D - Hose Sensor C - Hose Sensor D - Hose Sensor E - Hose Sensor F - Ground J - Gun Sensor K - Gun Sensor M - Gun Heater N - Gun Heater P - Gun Trigger R - Gun Trigger S - Jumper To D T - Jumper To Pin K

HOSES *(continued)*

A-1 Handgun Hoses
Standard Pressure Series 240 VAC
For Bulkmelters

Part Number	Description	Connector End/Pin Outs For A-1 Handgun	Connector End/Pin Outs For Bulkmelter
127 317	5/8" x 10 Ft.	8 Pin MS, Keyed "Z" (See Note A)	15 Pin, Angled (See Note B)
127 318	5/8" x 16 Ft.		
127 319	5/8" x 24 Ft.	Pin Outs:	Pin Outs:
Note (A)- Connector, P/N 324364 Note (B)- Consists of: Connector, P/N 933393 Plug, P/N 933394 Contact pins, P/N 939521 Cordset Strain Relief, P/N 939699		A - Heater B - Heater C - RTD D - RTD F - Trigger G - Trigger H - Ground	Ground 1A - Jumper to Pin 2A 1B - Gun Sensor 1C - Hose Sensor 2A - Hose Sensor 2B - Gun Trigger 2C - Gun Trigger 3A - Gun Sensor 3B - Gun Sensor 3C -Gun Heater 4A - Hose Heater 4B - Gun Heater 4C - Hose Heater 5B & 5C - Not Used

A-1 Handgun Hoses
High Pressure Series 240 VAC
For Bulkmelters

Part Number	Description	Connector End/Pin Outs For A-1 Handgun	Connector End/Pin Outs For Bulkmelter
105 988	3/8" x 10 Ft.	8 Pin MS, Keyed "Z" (See Note A)	15 Pin (See Note B)
106 039	3/8" x 24 Ft.		
324 745	3/4" x 10 Ft.	Pin Outs:	Pin Outs:
324 746	3/4" x 16 Ft.	A - Heater	Ground
324 747	3/4" x 24 Ft.	B - Heater	1A - Jumper to Pin 2A
Note (A) - Connector, P/N 324364 Note (B) - Consists of: Connector, P/N 933393 Plug, P/N 933394 Contact pins, P/N 939521 Cordset Strain Relief, P/N 939699		C - RTD D - RTD F - Trigger G - Trigger H - Ground	1B - Gun Sensor 1C - Hose Sensor 2A - Hose Sensor 2B - Gun Trigger 2C - Gun Trigger 3A - Gun Sensor 3B - Gun Sensor 3C -Gun Heater 4A - Hose Heater 4B - Gun Heater 4C - Hose Heater 5B - High Pressure Jumper 5C - High Pressure Jumper

A-1 Handgun Hoses High Pressure Series 120 VAC For System Sentry Control Console			
Part Number	**Description**	**Connector End/Pin Outs For A-1 Handgun**	**Connector End/Pin Outs For System Sentry**
105 796	3/4" x 10 Ft.	8 Pin, MS, Keyed "W"(See Note A) Pin Outs: A - Gun Heater B - Gun Heater C - RTD D - RTD F - Manual Gun Trigger G - Manual Gun Trigger H - Ground	17 Pin, MS (See Note B) Pin Outs: A - Hose Heater B - Hose Heater C - Hose TTD D - Hose TTD E - Hose TTD F - Ground G - Gun Heater H - Gun Heater J - Gun RTD K - Gun RTD P - Manual Gun Trigger R - Manual Gun Trigger S - High Pressure Jumper T - High Pressure Jumper
105 797	3/4" x 16 Ft.		
105 794	3/4" x 24 Ft.		
105 791	1" x 10 Ft.		
105 792	1" x 16 Ft.		
105 793	1" x 24 Ft.		
Note (A) - Connector, P/N 939872 Note (B) - Connector, P/N 807839			