Series 2300 Applicator

Part 104 445D

NORDSON CORPORATION • AMHERST, OHIO • USA

Nordson Corporation welcomes requests for information, comments and inquiries about its products.

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Notice

Trademarks

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HOW TO USE THIS MANUAL

The Page Numbering System

The page number is composed of two parts: the section number followed by the section page. Page 5-3, for example, is the third page in Section 5.

Finding Information Quickly

Before trying to find information in this manual, become familiar with its organization and contents.

Afterwards:

1. Use the Brief Summary of Manual Contents (below) to determine which section contains the information you are seeking.

2. Use the tabs to find the section that contains the desired information. On the first page of each section is a Table of Contents for that section. It gives the starting page number of all the material in the section.

Brief Summary of Manual Contents

The following summary lists the most important information in each section and provides a general idea of where to look for material not included in the summary.

Section 1: Safety Summary

- Explanation of safety symbols
- Safety during installation, operation and servicing
- Safety in handling solvents
- Safety in handling thermoplastic hot melt material and in handling PUR hot melt material

Section 2: Equipment Familiarization

- General description
- Description of equipment and features
- Operation
- Glossary of terms

Section 3: Installation

- Unpacking and inspection
- Installing the unit, hoses and guns
- Electrical installation

Brief Summary of Manual Contents

(continued)

Section 4: Operating Instructions

- Loading adhesive, including flushing the system
- Daily operating procedures

Section 5: Preventive Maintenance

- General maintenance and filter flushing procedures

Section 6: Troubleshooting

- Troubleshooting functional problems
- Troubleshooting adhesive and adhesive-application problems
- Wiring diagrams and schematics

Section 7: Disassembly and Repair

- Mechanical repairs
- Electrical repairs
- Gun heater and RTD replacement

Section 8: Illustrated Parts Lists

- Illustrations of the unit and its subassemblies
- Matching parts lists
- Listings of recommended spare parts and service items/kits

Section 9: Technical Data

- Mechanical specifications
- Electrical specifications
- Material safety data information about Nordson Type R solvent

Section 10: Optional Parts and Equuipment

- Listings of various field-installed options, guns, hoses, filters etc.

NOTE: If at any time you are unable to find needed information in this manual, contact your local Nordson representative or your regional sales office.

SERVICES PROVIDED TO NORDSON CUSTOMERS

Customer Support Before And After The Sale

For more than 35 years Nordson has offered unparalleled service to its customers before, during and after the sale. Nordson representatives will work with you to choose the best system for your application. We'll assist you during start-up and help train your employees to maintain and operate the equipment. Plus, parts and service are only a phone call away from one of our strategically located sales and service centers.

System Engineering

Custom designs and modification of standard equipment are available to meet your particular needs. From a complete new system for automotive assembly to a special nozzle used in the production of diapers, Nordson has the expertise to integrate adhesive and sealant equipment with your manufacturing operation.

Parts And Accessories

In addition to standard replacement parts, many accessories are available to help improve productivity and reduce downtime. For example, heated and non-heated in-line filters reduce stoppages from clogged nozzles, and nozzles in multi-orifice, offset, right-angle and other designs are available for special needs. Also, gloves, solvent, spare parts kits and other components are in stock for immediate delivery. Conversion kits for tapers, labelers and box-forming equipment are also available.

To help you eliminate downtime and costly inplant repairs, Nordson has developed a Rebuilt Exchange (RBX℠) Program* which can save you up to 50 percent of the cost of new equipment. You may trade in your old worn units, hoses and guns for rebuilt Nordson equipment which has the same warranty as new equipment.

The Nordson Package of Values™

From specifications assistance to post-installation troubleshooting, the Nordson Package of Values is designed to keep our customers productive and profitable by providing:

- Carefully engineered, durable products
- Strong service support
- The back-up of a well-established international company with financial and technical strength
- A corporate commitment to deliver what was specified

* This service not available in all countries.

How To Order Nordson Parts

Replacement parts may be ordered through your local Nordson representative or by contacting our Customer Service Centers. When ordering parts, please use the description shown in the parts list, the part or service kit number (when listed) and the quantity desired.

Country	Telephone	Facsimile
Argentina	54-1-921-3058	54-1-924-3206
Australia	61-2-838-7144	61-2-838-7394
Austria	43-222-707-5521	43-222-707-5517
Belgium	32-2-720-9973	32-2-720-7371
Brazil	55-11-274-6011	55-11-632300
Canada	416-475-6730	416-475-8821
Chile	56-2-555-7190	56-2-551-7549
Colombia	57-4-266-6965	57-4-266-5716
Denmark	45-42-648-500	45-42-641-101
France	33-1-64-12-14-00	33-1-64-12-14-01
Germany	49-211-2002-0	49-211-254658
Greece	30-1-941-9058	30-1-942-7623
Hong Kong	852-4287228	852-4804685
India	91-22-6442852	91-22-6427520
Italy	39-2-9078-23-40	39-2-9078-24-85
Japan	81-3-3450-8818	81-3-3472-3301
Korea	82-2-428-1931	82-2-427-9387
Malaysia	60-3-703-7248	60-3-791-5152
Mexico	216-988-9411/4315	216-985-3710
Netherlands	31-3403-77812	31-3403-74189
New Zealand	64-9-634-0179	64-9-579-7797
Norway	47-2-656100	47-2-658858
Pakistan	92-21-568-8609/3869	92-21-568-4585
Philippines	63-2-721-1421	63-2-721-3927
Portugal	351-2-941-3874	351-2-941-3867
Puerto Rico	809-787-2474	809-780-6063
Singapore	65-459-9533	65-459-9514
Spain	34-6-3705013	34-6-3705004
Sweden	46-40-291-585	46-40-932-882
Switzerland	41-61-463-838	41-61-463-818
Taiwan	886-2-581-3172	886-2-581-3074
Thailand	66-2-5141159	66-2-2531571
Turkey	90-1-384-4085	90-1-372-1528
United Kingdom	44-84421-3171	44-84421-5358
USA: Continental	770-497-3400	770-497-3500
Alaska & Hawaii	770-497-3400	770-497-3500
Venezuela	58-2-939-111	58-2-938097

Eastern Europe, Africa & Middle East, contact:
Nordson European Division
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Distributor & Export Department 49-211-2002-0 49-211-254652

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SECTION 1

SECTION 1

Safety Instructions

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Section 1
Safety Instructions

1. Operate safely!

Safety recommendations contained in this section and throughout the manual apply to tasks that may be performed on or with the unit or with materials used with the unit. **IT IS VERY IMPORTANT THAT THESE SAFETY RECOMMENDATIONS ARE ALWAYS FOLLOWED. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE UNIT OR OTHER EQUIPMENT.**

With this in mind, here are some basic safety recommendations:

- Read and become familiar with this Safety Instructions Section prior to installing, operating, maintaining or repairing the unit.
- Store this manual within easy reach of personnel operating or maintaining the unit.
- Be familiar with and always observe safety symbols.
- Wear adequate personal protective equipment and clothing such as safety goggles and gloves.
- Familiarize yourself with and follow all safety instructions prescribed by your company, general accident prevention regulations and government safety regulations.

2. Safety symbols

The following symbols are used throughout the manual to warn against dangers or possible sources of danger. Become familiar with them! Failure to heed a warning symbol could lead to personal injury and/or damage to the unit or other equipment.

WARNING: Failure to observe may result in personal injury, death or equipment damage.

WARNING: Risk of electrical shock. Failure to observe may result in personal injury or death.

WARNING: Disconnect equipment from line voltage. Failure to observe may result in equipment damage, personal injury or death.

WARNING: Hot. Risk of burns. Wear protective clothing/safety goggles (ANSI Z87.1-1989 or equal)/protective gloves (P/N 902 514) depending on the symbol shown.

2. Safety symbols
(continued)

WARNING: Risk of explosion or fire. Fire, open lights and smoking prohibited. Failure to observe may result in personal injury or death.

WARNING: System or material pressurized. Release pressure. Interrupt compressed air, set motor switch to "0" and release hot melt material pressure by actuating the extrusion guns. Failure to observe may result in serious burns.

3. Intended use

The unit is designed and intended to be used only for the purpose described in Section 2 "Equipment Familiarization". Uses not in accordance with the Section are considered unintended uses and not in accordance with governing regulations.

The following actions of the owner or operator of the unit are some but not all examples of unintended use which would permit Nordson to claim it is not responsible for personal injury or property damage arising from such unintended use:

- unapproved modifications or changes to the unit
- failure to comply with the Safety Instructions
- failure to comply with instructions concerning installation, use, operation, maintenance, or repair, or when these tasks are carried out by unqualified personnel
- use of inappropriate or incompatible foreign materials or auxiliary equipment
- failure to observe workplace safety rules or regulations issued by government authorities or safety councils

NOTE: Operators or maintenance workers are regarded as being "qualified personnel" when they have gained, through training and experience, an understanding of the manner in which the unit is to be operated, serviced and repaired, and based on safe workplace practices are familiar with relevant regulations.

4. Installation and electrical connections

- All electrical, pneumatic, gas, and hydraulic connections and installations of heated hoses and hot melt applicators may only be carried out by qualified personnel. Be sure to observe installation instructions for components and accessories.
- Equipment must be properly grounded and fused according to its rated current consumption (see ID plate).
- Cables which run outside the unit must regularly be checked for wear and tear or damage.
- The conductors of cables connecting the unit to the main electrical supply must have adequate diameters according to the rated current consumption.

4. Installation and electrical connections

(continued)

- Cables must never be squeezed or pinched. They should be located or positioned to eliminate the opportunity for an operator to stumble or trip.
- A disconnect switch with lockout capability must be provided between the power source and the equipment.

WARNING: If the installation is not carried out according to instructions, especially in case of electrical connections, this will result in imminent danger of serious personal injury including death.

5. Operation

The unit should be operated according to relevant instructions and by qualified personnel.

- **NEVER** have the unit operated by personnel under the influence of substances reducing their reaction times, or who are not able to operate the equipment for physical reasons.
- At regular intervals, check protective and warning devices to determine that they are in a functioning condition. **DO NOT OPERATE THE UNIT IF THESE DEVICES ARE NOT FUNCTIONING PROPERLY**.
- When the removal of safety equipment is required for installation, maintenance, or repair of the unit, it must be reconnected immediately upon completion of the work and prior to unit start-up.
- In a humid environment, only equipment featuring a corresponding class of protection may be operated.
- Do not operate the unit in an explosive environment.
- Keep endangered parts of the body or clothing away from rotating parts. Take off wrist watches, rings, necklaces, or similar pieces of jewelry and pin up or cover long hair before performing any work on or with the unit.
- To carry out measurements on work pieces, switch off the unit and wait until it comes to a standstill.
- Never point hand guns or applicator nozzles at yourself or other persons.

Action in the even of unit malfunction

In the event the unit experiences a malfunction, switch off the unit immediately.

- Switch off the main switch or, if available, the emergency turnoff switch or use other safety equipment to stop the unit.
- After turning the unit off and prior to switching it on again, the malfunction has to be eliminated by qualified personnel.

Danger of burns

Contact with hot areas of the hot melt applicator as well as to the hot melt material may produce a severe skin burn.

- Take utmost care when using hot melt material. Even solidified material may still be very hot.

Danger of burns
(continued)

- Always wear protective clothing which safely covers all endangered body parts.

In case of burns:

- Immediately cool affected skin areas using cold, clean water.
- Do not forcefully remove hot melt material from the skin.
- Immediately seek medical attention.

6. Maintenance/Repair

Allow only qualified personnel to perform maintenance, repair and troubleshooting. All activities should only be carried out wearing personal protective clothing and equipment and when the equipment is switched off and unpressurized.

WARNING: Even when the main switch is set to OFF there remains residual voltage inside the switchboard. So, on principle, carry out the following work prior to maintenance and repair:

- Disconnect, lock out and tag external power supply.
- To ensure the external power supply is disconnected, attempt to operate the unit. If the unit does not energize, proceed with maintenance or repair work.
- If the unit energizes, repeat the disconnect, lock out and tag procedure. Retest the unit.
- Manually actuate the applicators/hand guns to release the system pressure in the entire unit.
- Secure pneumatically or hydraulically operated equipment against uncontrolled movement.
- Only use spare parts which do not compromise the safety of the unit. A list of Nordson spare parts is provided in Section 8 of this manual.
- **ALWAYS** use a rubber handle screwdriver when removing or installing components.

7. Cleaning

NOTE: Always refer to the Material Safety Data Sheet or material information sheet before working with the material.

WARNING: Never clean any aluminum part or flush any system using halogenated hydrocarbon solvents. Examples of common halogenated hydrocarbons are dichloromethyline, 1,1,1-trichloroethylene, perchloroethyline. Halogenated hydrocarbons may react violently with aluminum parts.

- **NEVER** use an open flame to clean the unit or components of the unit.
- Use only cleaning solvents designed or intended to be used with the hot melt material being used in the unit. **NEVER USE PAINT SOLVENTS UNDER ANY CIRCUMSTANCES**.

7. Cleaning
(continued)

- Note the flash point of the cleaning solvent used. Only use a controlled heating method to heat solvents.
- Ensure sufficient room ventilation to draw off generated vapors. Avoid prolonged breathing of vapors.

WARNING: Fire, open lights and smoking are prohibited when cleaning solvents are used. Risk of explosion or fire. Failure to observe may result in personal injury or death.

8. Thermoplastic hot melt material

NOTE: Always refer to the Material Safety Data Sheet or material information sheet before working with the material.

- Ensure the work area is adequately ventilated.
- Do not exceed recommended processing temperatures. Doing so creates a danger to personnel due to decomposition of the material.

9. Polyurethane Reactive ("PUR") hot melt material

NOTE: Always refer to the Material Safety Data Sheet or material information sheet before working with the material.

WARNING: Exercise extreme caution and always provide adequate ventilation when using reactive materials. Failure to observe may result in personal injury or death.

WARNING: Only use PUR material in units that are designed to process such material. Using PUR material in units that cannot process them can cause damage to the unit and premature reaction of the hot melt material.

WARNING: PUR material contains isocyanate ingredients which will irritate skin, mucous membranes of eyes and respiratory passages.

Because isocyanate ingredients are found in various concentrations in reactive materials produced by different manufacturers, it is imperative that the manufacturer's or supplier's Material Safety Data Sheet or material information sheet be consulted BEFORE using reactive material. Pay particular attention to the discussion of material toxicity, health effects and reactivity conditions.

There are certain universal safety guidelines that should be followed when using any reactive material:

- Recommended processing temperatures must not be exceeded.
- When handling and using reactive material, always wear protective clothing and use personal protective equipment such as safety goggles and gloves.

9. Polyurethane Reactive ("PUR") hot melt material

(continued)

- The regular use of barrier creme for hands and face is recommended as preventive skin protection.
- Do not eat, drink, smoke or store food in working areas where PUR material is being processed.
- Wash hands thoroughly after working with reactive material.
- Remove hot melt material vapors using suitable extraction equipment. This also holds true for the vapors released by fresh hot melt material applications.
- Use appropriate respiratory equipment where there is the danger of inhaling isocyanate vapors or of other ingredients used in the production of PUR material in concentrations exceeding permissible limit values.
- In case of very high concentrations of harmful substances or if environment conditions are not clear, respiratory protective equipment operating independent of the open air must be used.
- In order to determine concentrations of harmful substances samples of the air should be taken and evaluated.

SECTION 2

SECTION 2

Equipment Familiarization

List of Illustrations

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Section 2
Equipment Familiarization

1. Introduction

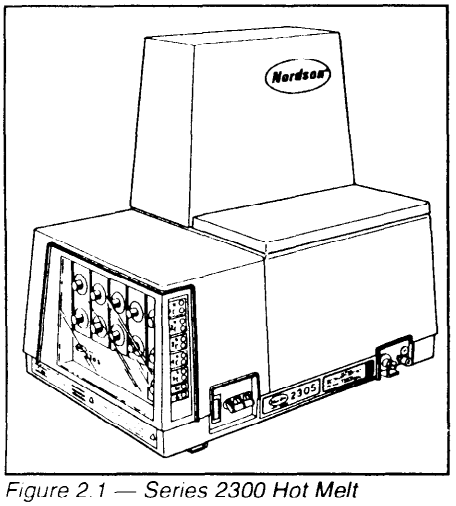

Figure 2.1 — Series 2300 Hot Melt Applicator (Model 2305 Shown)

The Nordson® Series 2300 Hot Melt Applicators are designed to melt adhesives and other thermoplastic materials with viscosities ranging from 1,000 to 30,000 centipoise and deliver them through hoses and extrusion guns to a substrate. The hot melt material is melted in a PTFE-coated aluminum tank and transferred by an air-driven, dual-acting piston pump into a distribution manifold and through a filter, heated hoses, and heated extrusion guns.

The tank, hoses, and guns are all electrically heated: the tank by a cast-in resistive heater in its aluminum wall, the hoses by a spirally wound heating element, and the guns by a cartridge heater. The heating control system utilizes solid-state electronics throughout, with proportional control for the tank, each hose, and each gun. Resistance temperature detectors (RTD's) are used to sense the temperature in the tank, hoses, and guns. An automatic, sequential start-up routine ensures that the entire system powers up in the optimum manner.

Some of the standard features of the Series 2300 applicators include a fiberglass reinforced plastic enclosure for cooler surface temperatures, a large filter for less frequent cleaning, a special wear-resistant valve shifter for extended pump life, and recessed external parts for increased safety. A recessed circuit breaker prevents accidentally turning the unit on during servicing and a recessed filter bung and drain valve prevent accidental burns during operation.

The Series 2300 applicators come in four standard configurations:

- Two-hose unit (the 2302)
- Four-hose unit (the 2304)
- Five-hose unit (the 2305, shown in Figure 2.1)
- Six-hose unit (the 2306)

In addition, there are four major optional features:

- System-ready indicator for parent machine interlock
- Digital readout of temperature on all channels
- Temperature setback switch for production interruptions
- Low-level indicator

The parent machine interlock and the low level indicator can be easily added to the applicator at any time, but the digital readout and the temperature setback options cannot be added after purchase of the applicator without ordering a new circuit board.

1. Introduction
(continued)

Three types of extrusion guns can be used with the Model 2300:

- H20 automatic gun (available with or without a micro-adjuster),
- H200 automatic gun (available in 1, 2, 4, and 8 module units and in close, extended, and low-profile configurations)
- AD-31 handgun.

Hoses for the automatic guns are available in lengths of 2, 4, 6, 8, 10, 12, and 16 feet. All of the automatic hoses are provided with quick-disconnect electrical connections on both ends of the hose. Hoses for the AD-31 handgun are available in lengths of 8 and 16 feet and come with a quick-disconnect on the applicator end of the hose.

Refer to Section 9 of this manual for Series 2300 applicator dimensions.

2. Functional description of standard features

The following paragraphs divide the Series 2300 applicators into their various standard components and describe the operation of each component. Optional features are discussed later in Section 2.

Hot melt tank

The applicator melts adhesive or other thermoplastic materials in a cast aluminum tank with a cast-in resistive heating element. Temperature control is accomplished by means of a resistance temperature detector (RTD) mounted in the tank wall and solid-state circuitry located in the electrical enclosure. The temperature control range is from 220°F to 400°F (105°C to 205°C).

Either granular, ribbon, or chunk forms of adhesive may be used in the tank, which is **PTFE** -coated to prevent char buildup and secured with a loading lid to prevent contamination of the adhesive. The loading lid is composed of two pieces, a hinged cover which is made of fiberglass reinforced plastic (FRP) and an inner detachable condensate tray of aluminum. The condensate tray is designed to prevent hot adhesive from spilling onto the exterior of the applicator when the loading lid is opened and to prevent breakage of the plastic lid when the unit cools down. When the unit is cool, the metal condensate tray adheres to the top surface of the tank pan and cannot be opened, but the hinged plastic lid, which is connected to the condensate tray by a ball-and-stud mechanism, separates from the tray and swings open. This design prevents the lid from being damaged if someone tries to open it when the unit is cold.

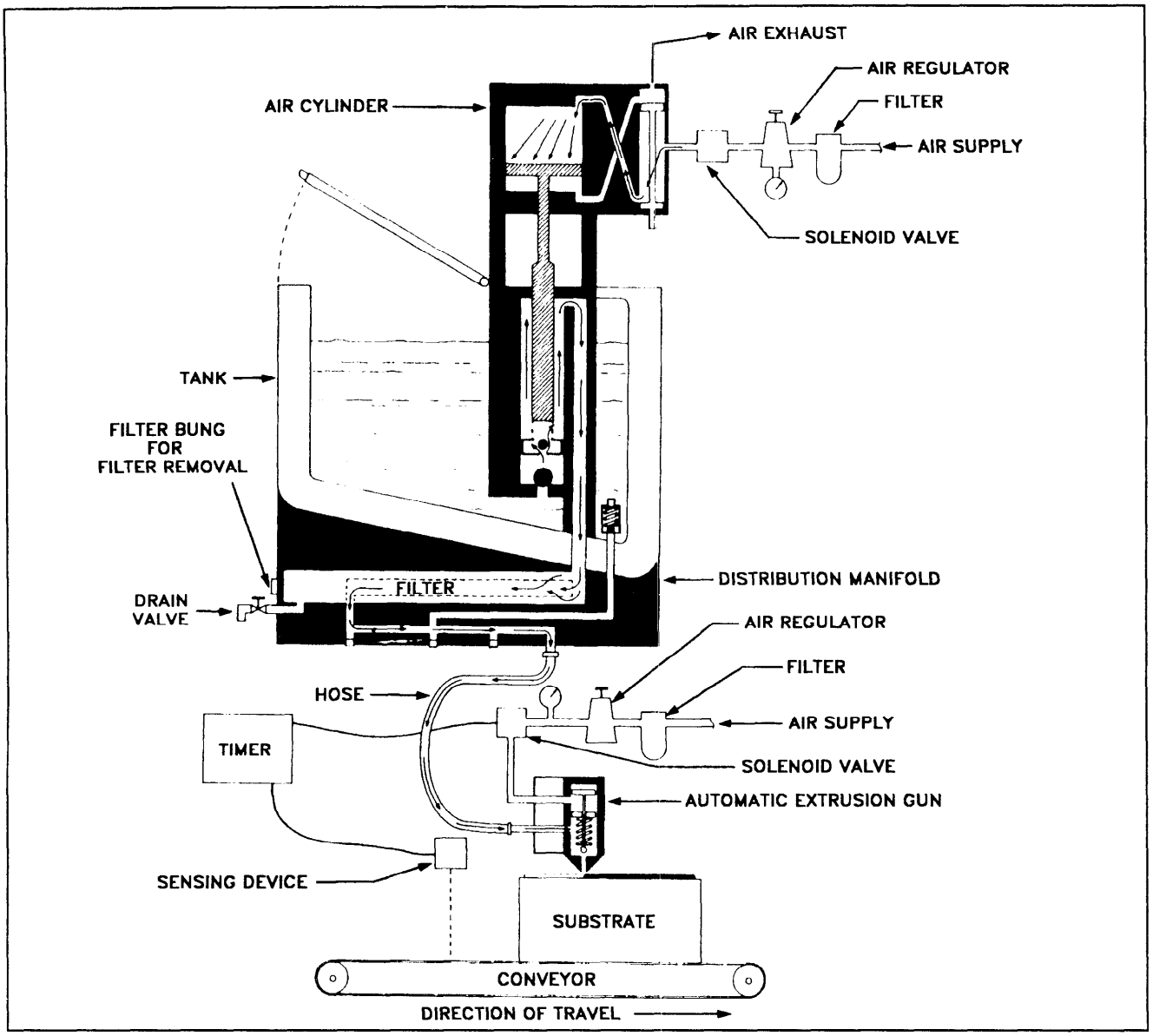

Figure 2.2 — Air-Driven, Dual-Acting Piston Pump on Downstroke

Hot melt adhesive pump

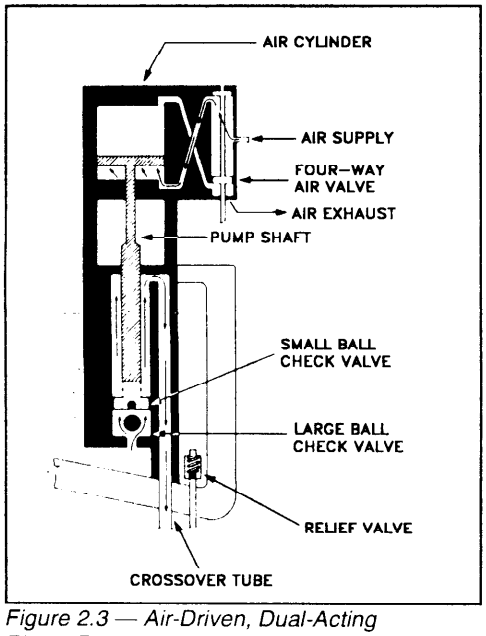

Figure 2.3 — Air-Driven, Dual-Acting Piston Pump During Upstroke

Series 2300 applicators use an air-driven, dual-acting piston pump to transfer the adhesive from the tank to the substrate. The pump assembly consists of a regulator, a solenoid valve, an air piston with a four-way control valve, a valve shifter, and a dual-acting hydraulic pump. The air cylinder and hydraulic pump are tied together through a common shaft. A crossover tube connects the output of the hydraulic pump to the distribution manifold.

The pump delivers adhesive to the distribution manifold on both the upstroke and the downstroke of the piston. On the upstroke (see Figure 2.2) compressed air enters the air cylinder below the air piston, forcing it upward. As the attached pump shaft moves up, the large ball check valve is lifted off its seat, sucking adhesive into the chamber from the applicator tank. The small ball check valve remains on its seat during this time because the pump shaft is moving up. The upward movement of the plunger at the lower end of the pump shaft also pushes the adhesive above it into the crossover tube and from there into the distribution manifold.

In the downstroke of the pump (see Figure 2.3) compressed air enters the air cylinder above the air piston, forcing it down. As the attached pump shaft moves down, the adhesive pressure forces the large ball check valve against its seat and the small ball check valve off its seat, allowing the adhesive to move up the pump cylinder and into the crossover tube. It then passes through a filter in the distribution manifold and from there to the hose(s) and gun(s).

Overpressure protection is provided by a relief valve in the distribution manifold. It opens at 1,500 psi (10.3 MPa) to relieve system pressure back to the adhesive tank.

Distribution manifold

An aluminum manifold assembly mounted on the bottom of the hot melt tank receives hot adhesive from the air-driven pump, filters it, and distributes it to the heated hoses and extrusion guns. Because the distribution manifold is mounted to the tank, it is indirectly heated by the tank heaters.

The filter consists of a core and fine mesh screen to filter out contaminants and char. The filter is threaded into a sleeve to prevent overtorquing and allow easy removal for inspection and cleaning.

A drain valve in the manifold allows material to be pumped through the filter assembly without the use of the hoses and extrusion guns. The valve also provides a convenient method to relieve pressure in the system during maintenance operations.

The manifold contains six ports for connecting hot melt hoses: four in the side of the manifold and two in the bottom.

Tank, hose, and gun temperature controls

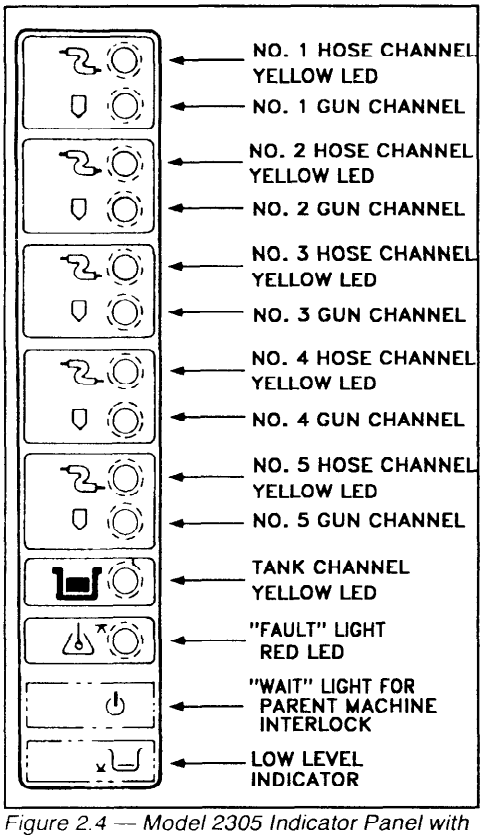

Figure 2.4 — Model 2305 Indicator Panel with Parent Machine Interlock (PMI) and Low Level Indicator options.

The temperature controller in Series 2300 applicators is a solid-state device that monitors and controls the temperatures within the hot melt tank and heated hoses and guns. Temperature is sensed in the tank and in each of the hoses and guns by a resistance temperature detector (RTD) in each component. Each of these heating zones or channels has an operating range of 220°F to 400°F (105°C to 205°C).

- The six-hose, Model 2306 applicator has thirteen individual channels for heating: one for the tank, six for the hoses, and six for the guns.
- The five-hose, Model 2305 applicator has eleven individual channels for heating: one for the tank, five for the hoses, and five for the guns.
- The Model 2304 has nine separate temperature controls: one for the tank, four for the hoses, and four for the guns.
- The Model 2302 has five individual channels for heating: one for the tank, two for the hoses, and two for the guns..

Each channel has a separate dial potentiometer on the control panel and a yellow light emitting diode (LED) on the indicator panel (see Figure 2.4). The yellow LED acts as a load light: it glows continuously when the temperature is below the control sensor temperature, flashes when the controller is maintaining the sensor temperature within 2.7°F (1.5°C), and remains off when the temperature exceeds the sensor temperature by approximately 2.7°F (1.5°C). Actual tank, hose, and gun temperatures can be determined within 10°F (6°C) at any time by rotating the temperature control knob until the yellow LED begins to flash. The dial reading at this point corresponds to the temperature in the wall of the tank, hose, or gun.

An important safety feature of the temperature control system is overtemperature protection. A red LED on the indicator panel comes on when either of two fault conditions arise: when an open or short circuit occurs in any of the RTD's (failure of the RTD) or when the temperature of any channel reaches 425°F (220°C), indicating a failure of some other component in the hot melt system. In either case, a solid-state time delay is activated. The time delay gives an operator approximately 1 minute for troubleshooting the overheating or RTD problem before it trips the circuit breaker, shutting off power to the applicator. The circuit breaker may be reset immediately to allow an additional 1 minute interval for troubleshooting. It may be reset indefinitely in this way until the fault condition is corrected or until the tank sensor temperature reaches 500°F (260°C).

When temperature rises above 500°F (260°C) on the surface of the tank, a close-on-rise thermostat causes the circuit breaker to trip. It cannot be reset until the tank sensor temperature falls below 500°F (260°C).

Automatic gun hoses

The automatic gun hoses for Series 2300 applicators come in lengths of 2, 4, 6, 8, 10, 12, and 16 feet, and all have quick-disconnect electrical connectors at both the applicator end and the gun end of the hose. Constructed of aircraft-type hydraulic hose with a **PTFE** liner reinforced by stainless steel braid, the hoses are both durable and flexible. Heat is generated in the hose by a resistive-type heating wire wrapped spirally around the steel braid. Insulation is provided by wrapped layers of polyester felt, vinyl tape, and a special high-temperature insulating felt.

An electrical cordset runs the length of the hose to provide power to the gun and connect the RTD's to the circuit board. Electrical power to the hose and gun is 230 VAC from the hot melt applicator electrical system. Temperature in the hose is monitored and controlled by an RTD in the hose wall and solid-state circuitry in the hot melt applicator.

Handgun hoses

The handgun hoses for Series 2300 applicators come in lengths of 8 and 16 feet. They are equipped with a quick-disconnect plug on the applicator end of the hose and with a five-wire cordset on the gun end of the hose. In all other respects, they are identical to the automatic gun hoses.

Automatic extrusion guns (H20 and H200)

Two of Nordson's automatic guns, the H20, and the H200, have been equipped with RTD's for use with Series 2300 applicators. The H20 gun is available as a single module gun, either with or without a micro-adjuster. The H200 gun is available in 1, 2, 4, and 8 module units and in three configurations: one with close center-to-center distances (close), one with wider center-to-center distances (expanded), and one designed for use on case sealers with short compression sections (low profile). All of the automatic guns are equipped with a quick-disconnect electrical plug, and all may be mounted either vertically or horizontally.

The automatic guns consist of two major parts: a service block and a firing mechanism, both made of aluminum. The firing mechanism for the H20 and H200 guns is a rectangular-shaped "module" which bolts onto the face of the service block. It consists of an air cylinder, an air piston with a needle and ball attached, a seat, and a nozzle. It can be repaired in the field. Standard, multiple-orifice, and right-angle nozzles can be used with all of the automatic guns.

The service block contains one or two cartridge heaters, an RTD, and the inlet connections for air and hot melt material.

During operation, hot melt material is supplied to the automatic gun(s) by the pump in the applicator (see Figure 2.3). It enters the inlet port of the service block and is directed through drilled passages in the block to the extrusion module(s). When the gun solenoid valve is energized by a signal from a sensing device (such as a microswitch or a photosensor), compressed air enters the module by way of the service block and forces the air piston upward, lifting the attached ball off its seat. The pressurized hot melt fluid is extruded from the nozzle while the ball is held off its seat by air pressure.

Automatic extrusion guns (H20 and H200)
(continued)

When the sensing device or timer deenergizes the solenoid valve, the air under the air piston and in the service block vents to the atmosphere and the piston-return spring forces the ball against its seat, stopping the flow of hot melt material.

Each of the automatic guns offers certain advantages. The H200 gun has an adjustment screw which enables the firing of one module to be synchronized with another. The H20 may be ordered with a micro-adjuster which enables bead thickness to be changed without changing the hydraulic pressure of the system.

All of the automatic guns, with the exception of the H20 gun with the microadjuster, are available in a 200 VAC version as well as in the standard 230 VAC version.

Manual extrusion gun

The AD-31 handgun, designed for applications requiring manual placement of adhesive bead deposits, has been equipped with an RTD for use with Series 2300 applicators. Like all Nordson handguns, the AD-31 is operated by a manual trigger which is isolated from the gun to keep it cool. The trigger is connected by a linkage to a packing cartridge in the gun body. At the end of the packing cartridge is a carbide ball tip that seals against a matching seat. Heat is supplied by a cartridge heater, which is controlled by the RTD.

When the trigger is squeezed, the carbide ball is lifted from its seat by the linkage mechanism, forcing the pressurized hot melt material through the opening in the seat and out the nozzle. When the trigger is released, a spring forces the ball back against its seat, stopping material flow.

The AD-31 handgun is available in 200 VAC and 230 VAC versions.

3. Functional description of optional features

Four optional features may be purchased with Series 2300 applicators: parent machine interlock, digital readout, low temperature setback, and low level indication. Each of these four is described in the following paragraphs.

Parent machine interlock (PMI)

A Parent Machine Interlock performs two basic functions: it provides a way for an operator to tell when the adhesive in the tank has reached application temperature (an indicator light turns off) and, once this temperature is reached, it energizes a contact which may be used to operate a normally open or a normally closed switch on a parent machine. If, for example, a system user wants to ensure that a packaging line does not run unless the adhesive is fully melted, a PMI can be used to achieve this purpose.

Although an operator can easily tell when the tank walls have reached application temperature—the yellow LED of the tank circuit begins to flash—it typically takes 15-20 minutes longer, depending upon the adhesive used, for all of the adhesive to reach the same temperature. The PMI is essentially a time delay which takes this difference into account. It begins timing when the tank control channel reaches the set, or application, temperature, that is, when it begins proportioning and the tank's yellow LED is flashing. It completes its time-delay cycle when the number of minutes for which it is set (determined from past experience with the adhesive used) have passed. The delay cycle is adjustable between 12 and 22 minutes. Once the set time period has elapsed, the PMI "wait" light on the indicator panel (see Figure 2.4) turns off and an output relay is actuated, allowing interface with either normally closed or normally open contacts.

After the initial start-up sequence, the PMI operates somewhat differently. During normal operations the adhesive may occasionally drop below the application temperature for several reasons, the most common one being the refilling of the tank with fresh adhesive. If enough cold adhesive is added that the temperature of the tank wall drops more than about 3°F (1.5°C) below application temperature (also called the setpoint temperature), the tank heating circuit will stop proportioning and will apply heat steadily until the set temperature is reached again. In this situation the PMI may be set by a switch on the interlock board to do one of two things: either to ignore the drop of the tank below application temperature or to activate the "wait" light and deenergize the output relay. In the first situation the applicator will operate as it would without a PMI. In the second situation the PMI will perform as follows. If the tank temperature falls below the application temperature for only a short period of time (less than about six minutes), the output relay will be deenergized only until the tank heating circuit begins to proportion again. But if the tank is out of the proportioning range for longer than six minutes, the time delay will be activated and the wait period will include the time delay, allowing the adhesive in the tank to reach the application temperature again.

Parent machine interlock (PMI)
(continued)

During a power failure or a temporary shut down of the applicator, the parent machine interlock will operate in the same way, no matter how the switch on the interlock board is set. If, after power is restored, it takes less than 6 minutes for the tank temperature control circuit to begin proportioning (and its yellow LED to begin flashing), the output relay will be deenergized only until the set temperature is reached again. But if it takes longer than 6 minutes for the set temperature to be reached, the output relay will be deenergized until the time delay has elapsed.

Parent Machine Interlock is an optional feature which may be either purchased with the applicator or added at a later date.

See Section 3, Installation, for instructions on installing and setting up Parent Machine Interlock.

Digital readout

Digital Readout provides a numerical LED display of the temperature reading on any channel, or heating zone. A three-digit temperature display window and a channel selector switch are located on the control panel of applicator (see Figure 2.5). The selector switch determines which channel"the tank channel or any of the gun or hose channels"will be displayed. Because the temperature is displayed instantaneously, the temperature on all channels can be quickly monitored by turning the selector switch from channel to channel. Or a single channel can be monitored continuously by leaving the selector switch in one position.

A small red switch along the lower edge of the circuit board allows the customer to select whether the temperature will display in F or C. Pushing the right half of the switch in (with a pencil or some other pointed object) selects the F readout; pushing the left half of the switch in selects the C readout.

NOTE: If the selector switch is turned to an unused channel, a number between 725 and 735 if F readout is selected (or between 950 and 960 if C readout is selected) will appear in the temperature display window. This number has no significance and does not mean that any channel is overheating.

Digital Readout is available only on the Model 2302 (two-hose), the Model 2304 (four-hose) and the Model 2305 (five-hose) units. It must be ordered at same time the unit is purchased; it cannot be added later without ordering a new circuit board.

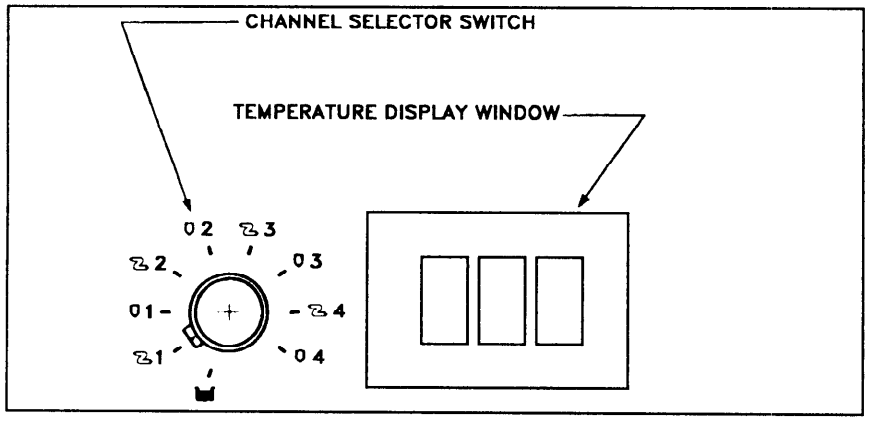

Figure 2.5 — Controls and Indicators on Units with Digital Readout.

Low temperature setback

Low Temperature Setback provides a means to reduce the temperature of the heating channels without changing all of their setpoints or without shutting the unit down. It is especially useful when normal operations must be interrupted for a while. The adhesive in the system can be kept hot during such periods but at a lower temperature, thus reducing the amount of char that will form when the system is idle and reducing energy consumption as well.

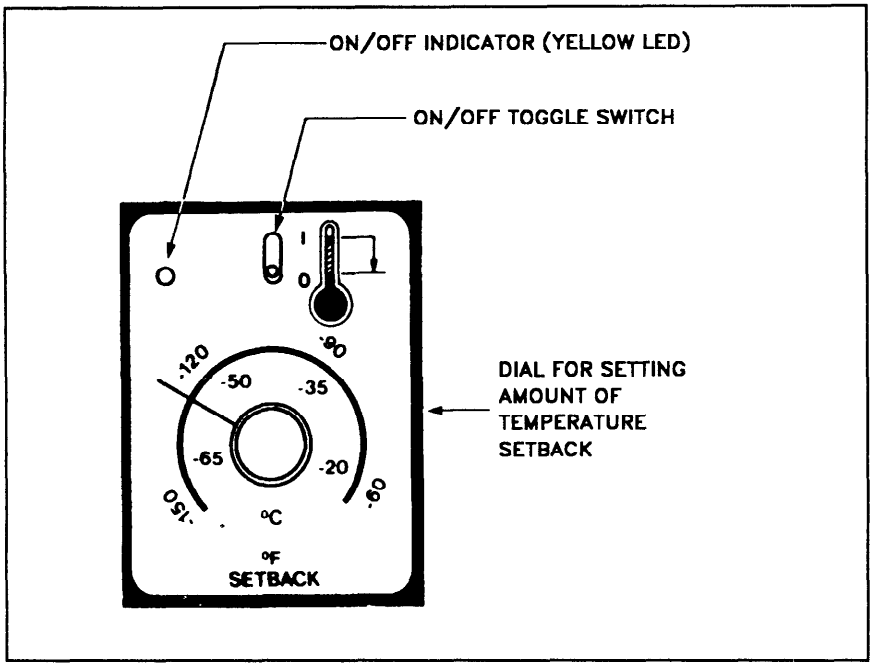

Figure 2.6 — Controls and Indicators on Units with Low Temperature Setback.

The Low Temperature Setback feature is activated by a toggle switch on the control panel of the applicator (see Figure 2.6). Once the switch is turned on, a yellow LED on the control panel and the lower half of the power indicator lamp on the front of the unit will begin to flash. They will continue to flash as long as the applicator is in the setback mode of operation. The amount by which the temperature is to be set back is determined by turning a dial potentiometer, which is located on the control panel. The setback range is adjustable from 60°F (16°C) to 150°F (66°C). If, for example, the temperature is set back by 70°F (21°C), the temperature on all channels will be reduced by this amount.

As soon as the temperature setback feature is turned on, the yellow LED's for the tank, hoses,and guns will go off because the unit is cooling down, but when the setback temperature is reached, the yellow LED's will begin flashing, just as they do at the normal operating setpoints. The pump, however, will not operate when the applicator is in the setback mode because the pump solenoid valve is disabled.

A special feature can be obtained with Digital Readout: a plug on the circuit board for activating the temperature setback mode of operation remotely and automatically instead of manually by a switch on the control panel.

Low Temperature Setback must be ordered at same time the unit is purchased; it cannot be added later without ordering a new circuit board.

Low level indicator

A Series 2300 applicator equipped with a Low Level Indicator will display a warning whenever the level of adhesive in the tank falls to the point that the unit should be refilled. The low-level light (see Figure 2.4) will come on and stay on until the tank is refilled.

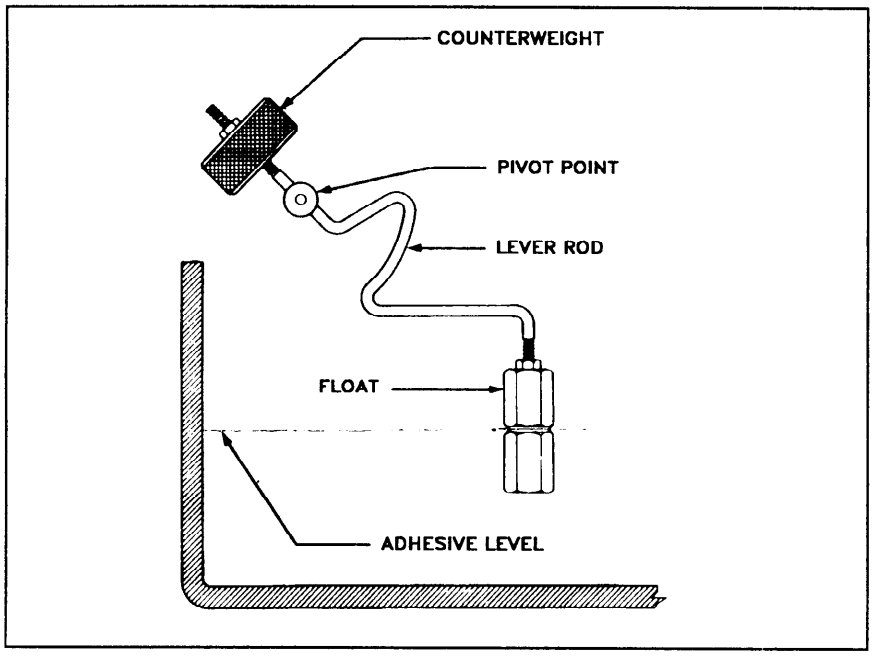

Figure 2.7 — Basic Low-Level Indicator Components (mercury switch and lamp not shown).

The Low Level Indicator consists of a float, a counterweight, a lever rod, a mercury switch, and a light (see Figure 2.7 for basic components). The float is balanced by the counterweight such that it rides half in the adhesive, half out. As the adhesive level drops, the lever rod to which the float is attached drops down and the mercury switch, which is attached to the pivot point on the lever rod, tilts forward. This action causes the mercury switch to close and turn on the light on the indicator panel.

The Low Level Indicator is an optional feature which may be either purchased with the applicator or added at a later date. It may be obtained with a kit which will permit the warning to be displayed (or sounded) remotely.

See Section 10, Optional Parts and Equipment, for instructions on installing and setting up the Low Level Indicator.

4. Glossary

Applicator. That part of the hot melt system which is used to heat adhesive to its required application temperature and pump it to the hoses and guns. It consists of a tank, a pump, a filter, a distribution manifold, and a temperature controlled heating system.

Bead Thickness. The width of an adhesive bead which has been deposited on a substrate. The measurement is of course taken before the bead has been flattened by adhering it to another surface. The thickness may be adjusted in three ways: by adjusting the hydraulic pressure of the system (increasing the pressure produces thicker beads), by varying the speed of application, or by using a gun with a microadjuster, like the H20 (see Section 4, Operating Instructions).

Extrusion Gun. A spring-loaded triggering device for dispensing or depositing adhesive. There are two basic types of gun, the manual gun, in which the spring is actuated by a hand trigger, and the automatic, in which the spring is actuated pneumatically. For a more detailed description of the operation of extrusion guns, see Section 2, Equipment Familiarization.

Hot Melt System. The applicator, the hose(s), and the gun(s).

LED (Light Emitting Diode). A device that converts applied voltage to light. LED's are used to display operating conditions on the indicator panel of the Model 2300 Applicator.

Maximum Instantaneous Pumping Rate. The adhesive delivery measured at the manifold outlet, with the conditions that produce maximum flow without exceeding any operating parameter limits. The rate in the specifications is based on an adhesive with a viscosity of 32,000 centipoise.

Service Block. One of the two main parts of a Nordson automatic extrusion gun, the other being either a module or a cartridge, depending upon the design of the gun. The automatic guns are constructed so that the module or cartridge contains the spring-loaded firing mechanism of the gun and the service block supplies the needed air, adhesive, and heat to make the gun operate. It consists of an aluminum block drilled with air and adhesive passages and with a cavity for a cylindrical heater, which is referred to as a cartridge heater. Illustration of various service blocks may be found in the parts lists for automatic guns, Section 8.

Substrate. The material or surface upon which the adhesive is applied. System Melt Rate. The amount of adhesive, measured in pounds per hour, that an applicator (including hoses and guns) can melt and pump continuously within 10°F (5.6°C) of the set application temperature. The measurement is based upon an adhesive with a specific heat of 0.77 BTU/lb°F (cal/g°C) at 247°F (199°C) and upon a system consisting of a Model 2302 Applicator, two hoses (6 ft. and 8 ft.), and two H20T (RTD temperature sensor) automatic guns.

4. Glossary
(continued)

Tank Capacity. The weight of adhesive that a tank can hold when it is filled to the top flange. The measurement is based upon an adhesive with a specific gravity of 1.0. See definition of Tank Volume.

Tank Volume. The volume that the tank can hold when it is filled to the top flange. The displacement of the pump is taken into account in this measurement. The usable volume will be somewhat less since Nordson recommends that the tank be filled no more than one inch from the top.

Thermoplastic Material. A material which is solid at room temperature, becomes soft when heated, and returns to solid form upon cooling.

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SECTION 3

SECTION 3

Installation

List of Illustrations

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Section 3
Installation

1. Introduction

Section 3 contains information necessary for the proper installation of the applicator, hoses and guns. Instructions for preparing the Series 2300 Applicator for operation, loading and changing adhesive and daily operation are included in this section.

2. Unpacking

NOTE: Do not attempt to lift the applicator by any of the fiberglass panels or hose connectors. Lift the unit from the hand grips in the metal base (see Figure 3.1).

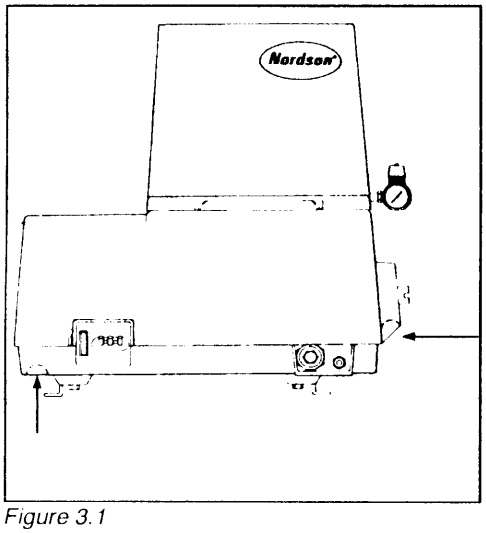

Figure 3.1

No special instructions are necessary to unpack the applicator, hoses or guns. The applicator is shipped preassembled. Hoses and guns are shipped separately, also preassembled. Normal care should be exercised not to damage the equipment during unpacking.

3. Inspection

After unpacking is completed, the following inspection should be performed:

1. Inspect the fiberglass cover for evidence of cracks and the other surfaces for scratches, corrosion, or other damage.
2. Remove the electrical enclosure and inspect for loose electrical connections.
3. Inspect hose for broken connectors, rips in the outer cover, and evidence of kinks or other damage.
4. Inspect guns for loose mechanical and electrical connections and for evidence of dents, scratches, and corrosion.
5. Inspect all fasteners and mechanical connections for tightness.

4. Installation

General requirements

- Install the applicator so panels can be removed and the unit is otherwise accessible for operation. See Figure 3.2 for required clearances.

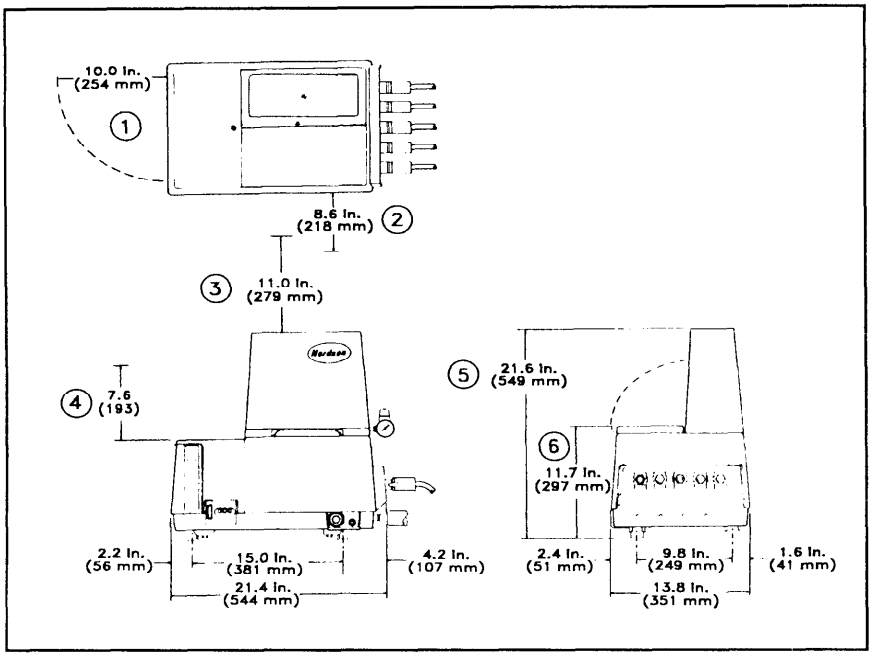

Figure 3.2:
1 Clearance for opening door panel
2 Clearance for filter removal
3 Clearance for pump enclosure removal
4 Clearance for electrical enclosure removal
5 Top of applicator motor cover to bottom of foot pad spacing
6 Top of tank cover to botomof foot pad spacing

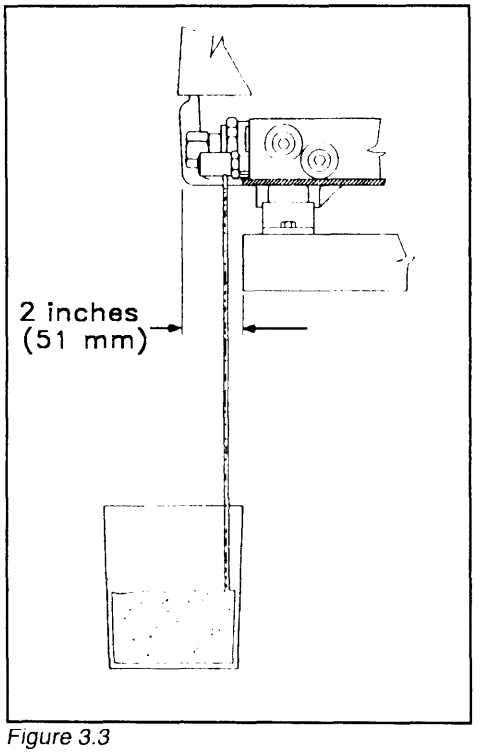

Figure 3.3

- Make sure that the applicator overhangs its support platform by about 2 inches (5 cm.) so that the unit will not drain onto the platform (see Figure 3.3).
- Avoid unusual ambient temperature conditions, such as below 32°F (0°C) or above 120°F (50°C).
- Protect the applicator from unusual dust conditions and severe vibration.
- If the applicator is installed in a drafty area, shield the guns from the draft. Rapid heat dissipation due to air movement across the guns can prevent the guns from operating properly.
- The applicator is not designed for water-washdown environments.

WARNING: Risk of electrical shock. Spraying water on the Series 2300 Applicator may cause water to enter the unit, resulting in an electrical shock hazard.

- Ensure that the applicator is level to prevent the tank from overflowing.

Automatic gun installation

WARNING: Allow only qualified personnel to perform the installation. Observe the information provided in Section 1 - Safety Instructions.

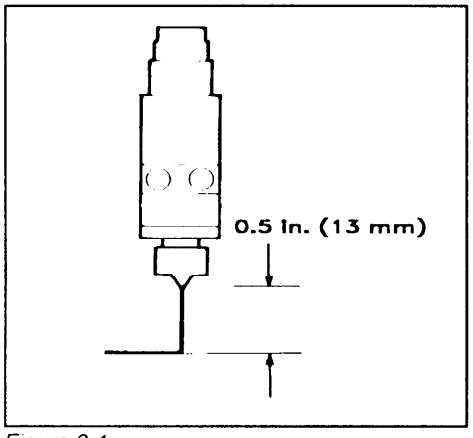

Figure 3.4

1. Install the gun on the parent machine in proper alignment with the substrate. If the mounting retainer is used for this purpose, use a 0.5 inch (13 mm) diameter bar. Guns may be installed either vertically or horizontally.

NOTE: For optimum control of bead position, optimum response time, and minimum heat loss, Nordson recommends that, wherever possible, nozzles should be positioned about 0.5 inch (13 mm) from the substrate (see Figure 3.4).

NOTE: The gun mount should be protected from vibration and secured so that the gun will not change position during application.

NOTE: Nordson recommends the installation of a heated or a nonheated inline filter between the gun and hose and the installation of insulation on the fittings that connect the hose to the gun.

NOTE: Refer to the installation instructions provided with the hose before performing any installation of hoses.

2. Mechanically connect the hose to the gun (see Figure 3.5).

3. Electrically connect the hose to the gun by connecting the plug on the gun to the receptacle on the hose (see Figure 3.5).

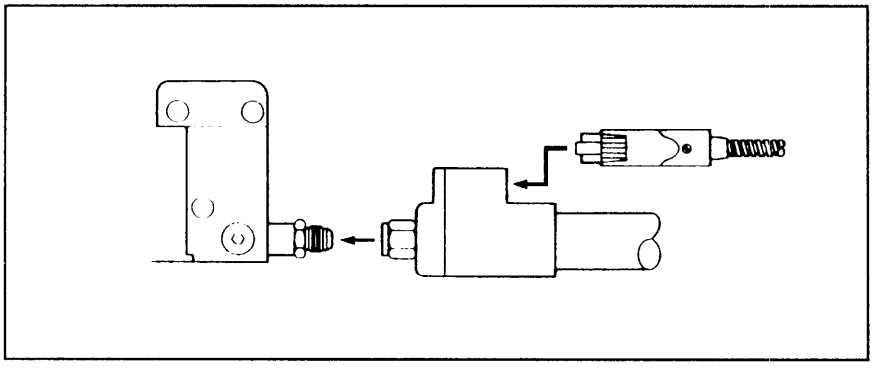

Figure 3.5

NOTE: Save the dust cap. It is needed to perform some of the electrical troubleshooting procedures described in Section 6 or to operate the unit with a gun removed. Without either a gun plug or the dust cap connected to the hose receptacle, the unit will sense an open circuit in the gun channel and shut down automatically.

4. Connect a filter/regulator and solenoid valve (both supplied by the customer) to the gun.

NOTE: The solenoid valve should be placed as close as practical to the gun to prevent introduction of lag time between solenoid valve actuation and gun operation.

Automatic gun installation (continued)

5. Set the regulator to zero pressure (fully counterclockwise) and connect the air supply line to it.

NOTE: The air supply should deliver a minimum of 30 psi (205 bar) of unlubricated air to the filter/regulator to ensure proper gun operation. The recommended air pressure supply is 70-100 psi (485-690 bar).

6. Connect the solenoid leads to the appropriate timing device. The solenoid valve voltage must correspond to the input voltage from the triggering device.

Manual gun installation

WARNING: Allow only qualified personnel to perform the installation. Refer to the information provided in Section 1 - Safety Instructions.

1. Remove the pivot sleeve shells by removing the four screws that hold them together (see Figure 3.6).
2. Remove the wire retaining clip from the pivot sleeve.
3. Remove the caplug on the swivel connector.
4. Attach the hose fitting to the gun swivel connector and tighten firmly.

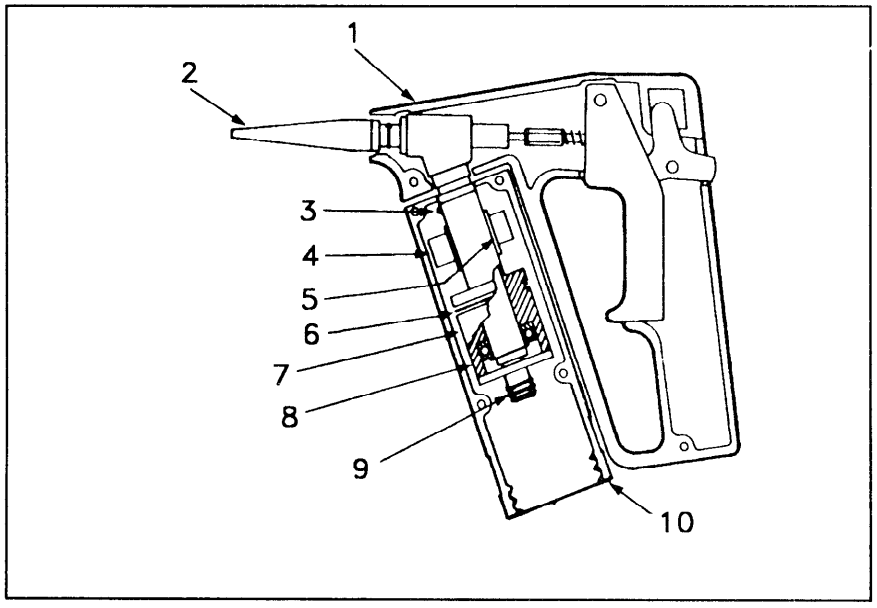

Figure 3.6:
1 Gun Body
2 Nozzle
3 Ground connection screw
4 RTD terminal block
5 Heater terminal block
6 Wire retaining clip
7 Pivot sleeve
8 Thrust bearing
9 Swivel connector
10 Pivot sleeve shells

WARNING: Always connect the handgun to the hose hydraulically and electrically before connecting the hose to the applicator to prevent electrical shock.

NOTE: To ensure a tight connection between the hose and gun, hold the swivel connector with an open-ended wrench across the flat portion. Tighten the hose fitting with another open-ended wrench.

5. Connect the ground wire (green/yellow in color) from the hose to the ground screw located on the pivot sleeve.

Manual gun installation

(continued)

6. Connect wires 3 and 5 (the smaller diameter wires) extending from the end of the hose to the ceramic terminal block on the same side of the pivot sleeve as the ground connection. (The RTD is connected to this terminal block.)
7. Connect wires 1 and 2 (the larger diameter wires) extending from the end of the hose to the ceramic terminal block on the opposite side of the pivot sleeve from the ground connection. (The heater cartridge, which is larger than the RTD, is connected to this terminal block.)

NOTE: Be sure that these connections are made correctly. Connecting the wires incorrectly may cause an electrical short and damage the equipment.

8. Route the ground wire and wires 3 and 5 down the recessed slot which is nearest the ground connection in the pivot sleeve.
9. Route wires 1 and 2 down the recessed slot on the opposite side of the pivot sleeve.
10. Replace the wire retaining clip.

NOTE: Make certain that all wires lie flat and side by side, not crossing each other within the slot.

11. Replace the pivot sleeve shells, making sure to clamp them around at least three corrugations of the protective covering on the hose (see Figure 3.7).
12. Secure the shells with four screws.
13. Install the handgun hose support bracket on the underside of the applicator base before the applicator is bolted down. (This bracket is shipped with the hose. Instructions for installing it come with it.)

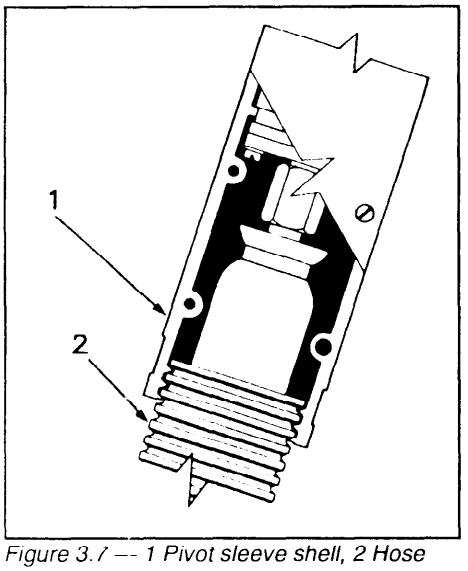

Figure 3.7 — 1 Pivot sleeve shell, 2 Hose covering

NOTE: Do not permit the hose to drag on the floor. Nordson offers a Handgun Hose Hanger Kit (P/N 271 486) to prevent this from happening. Note that there must be a place where the hanger can be suspended.

Applicator installation

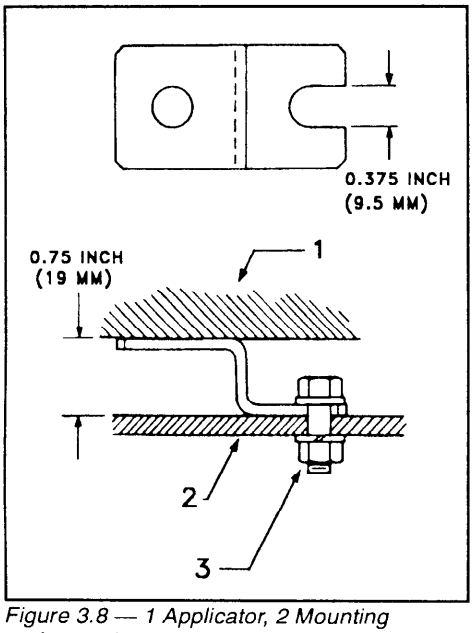

Figure 3.8 — 1 Applicator, 2 Mounting surface, 3 Mounting bolt

WARNING: Allow only qualified personnel to perform the installation. Observe the information provided in Section 1 - Safety Instructions.

1. Mount the hot melt applicator securely to the parent machine or in some other location so that the controls and panels are accessible and required clearances (see Figure 3.2) are provided. Four mounting feet with bolt holes are provided in the base of the applicator for mounting (see Figure 3.8 for closeup of one of the mounting feet). Nordson recommends the use of 5/16 inch (7.9 mm) mounting bolts.

NOTE: Hoses must be routed to prevent damage from kinking, abrasion and other physical damage. Do not install the hose with a bend radius less than 8 inches (20.3 cm).

2. Route the hoses from the guns to applicator.

NOTE: Failure to connect a hose to one of the rear-most ports in the manifold (either the one in the side of the manifold or the one in the bottom) will create a dead end in the manifold where char can build up.

3. Using the fittings provided with the hoses and **PTFE** paste (P/N 900 236) on the threads, connect the first hose to one of the two-hose ports shown in Figure 3.9.

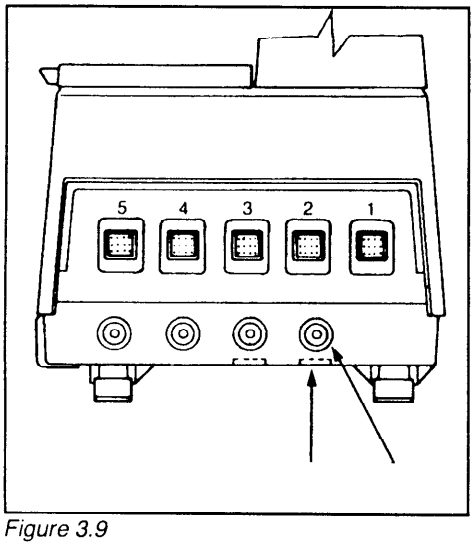

Figure 3.9
Arrows point to hose ports.

NOTE: The position of the other hoses, if more than one is used, is not important, but perhaps the most logical arrangement is to connect the second hose next to the first one, working in the same direction that the electrical receptacles are numbered (that is, toward the front of the applicator). Four hoses may be connected in this way to the side of the manifold and a fifth hose, if one is needed, may be connected to either of two ports on the bottom of the manifold.

4. Set the air pressure regulator to the pump for zero pressure (fully counterclockwise).

5. Connect an air supply to the regulator, which has 1/4 inch NPT threads. Use Never-Seez on the threads before tightning.

NOTE: The air supply should be capable of supplying a range of 70-100 psi (4.83-6.89 bar) to the applicator. The supply to the pump should be filtered and unlubricated. Nordson offers an optional filter (P/N 901 515) to meet this requirement. Nordson also recommends that a shutoff valve be installed in the supply line to isolate the applicator supply air for maintenance. The valve must be furnished by the customer.

6. Connect the hoses to the applicator electrically by connecting the hose plugs to the receptacles on the applicator.

Electrical installation

WARNING: Allow only qualified personnel to perform the installation. Observe the information provided in Section 1 - Safety Instructions.

The Series 2300 Applicator is offered in two versions:

- Factory wired to accept either 200 VAC or 230 VAC three-phase service.
- Factory wired to accept 380-Y VAC three-phase, four-wire service (three-phase with a neutral).

200/230 units can be converted to single-phase service via a jumper from kit P/N 276 084; 380-Y units can be converted to 220 VAC single-phase service via a jumper from kit P/N 276 236. Refer to the following instructions for electrical installation.

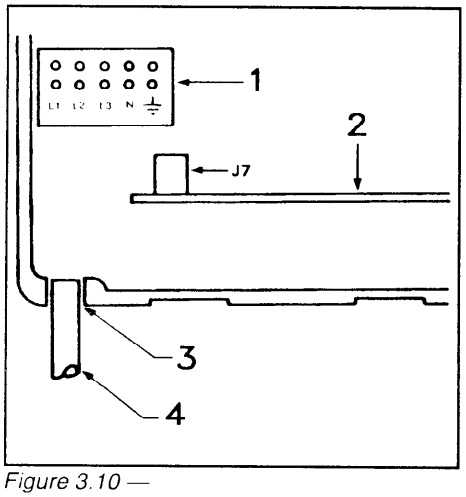

Figure 3.10 —
1 Terminal block (TB1)
2 Circuit board
3 Conduit opening
4 Conduit

WARNING: Disconnect and lock out external power to the applicator before opening the electrical enclosure. Failure to do so may result in personal injry or death.

WARNING: Do not touch the black heat sinks extending from the green circuit board when power to the unit is on. They are electrically energized and therefore present a shock hazard.

NOTE: Never connect three-phase power to a unit wired for single-phase operation, that is, to a unit with a jumper installed at J7 on the circuit board. Doing so will destroy the fusible link in the jumper.

1. Disconnect and lock out input electrical power.
2. Remove the electrical control cabinet enclosure by unscrewing the captive screw on top of the cabinet.
3. Route the service line through the cnduit located below and to the left of the control panel door. Secure it inside the cabinet with the two screws which are used to tighten the strain relief bracket (see Figure 3.10).

NOTE: Make sure that sufficient power is supplied to the applicator to operate both the applicator and the equipment connected to it (the guns, the hoses and any other power-drawing equipment, like a heated filter).

4. Make the appropriate connections at the five-station input terminal block (TB1) according to the instructions provided below (see Figure 3.10).

NOTE: The instructions for single-phase units are different from the instructions for three-phase units. Likewise, the instructions are different for European and non-European units.

Electrical installation
(continued)

All Units Except European Units:

a. 200 VAC or 230 VAC three-phase service: Connect the three input power leads to terminals L1, L2, and L3. Connect the ground wire to the terminal marked with the symbol for ground.

b. 200 VAC or 230 VAC single-phase service: Connect the two input power leads to terminals L1 and L2. Do not use L3. Connect the ground wire to the terminal marked with the symbol for ground. Find junction terminal J7, Figure 3.9, and install a jumper (supplied in the ship-with parts) between the two terminals labeled 1J.

European Units Only:

a. 380-Y VAC three-phase four wire service (three-phase with neutral): Connect the three input power leads to terminals L1, L2 and L3. Connect the neutral to terminal N. Connect the ground wire to the terminal marked with the symbol for ground.

b. 220 VAC single-phase service: Connect the two input power leads to terminals L1 and N. Connect the ground wire to the terminal marked with the symbol for ground. Find junction terminal J7, Figure 3.9, and install a jumper (supplied with the ship-with parts) between the two terminals labeled 1J.

5. Replace the electrical cabinet enclosure and secure it with the captive screw.

6. If the plant electrical system is not grounded, make sure that the ground wire attached to TB1 is secured to a reliable earth ground.

NOTE: Do not energize input electrical power at this time. Connect input power at the appropriate step in the Preparation of Equipment.

SECTION 4

SECTION 4

Operation

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Section 4
Operation

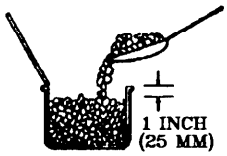
1. Introduction

Section 4 contains information necessary for preparing the Series 2300 Applicator for operation, loading it with adhesive, changing the adhesive used and operating the unit on a daily basis.

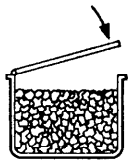
WARNING: Allow only qualified personnel to perform the preparation and operation of this applicator. Refer to the information provided in Section 1 - Safety Instructions.

2. Preparation of equipment

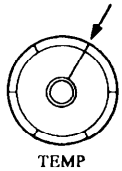
1. Verify that the air pressure to the pump reads zero (0) on the gauge.



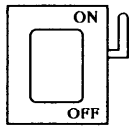
2. Use a metal or plastic scoop to fill the adhesive tank with clean material.



3. Close the applicator tank lid immediately to prevent the introduction of contaminants.



4. Set all temperature controls to the recommended temperature settings for the adhesive being applied.

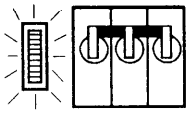


5. Turn the external power supply ON.

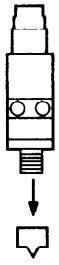
2. Preparation of equipment

(continued)

6.Turn the main electrical switch ON at the applicator.

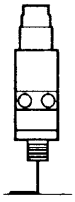


NOTE: The tank and hose(s) will begin to heat up first, as indicated by the lit yellow LED for each channel. As the tank and hose(s) reach setpoint temperatures, the gun(s) will begin to heat, as indicated by the lit yellow LED for each gun channel. As a channel reaches setpoint temperature, the yellow LED will begin to flash.



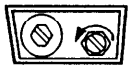
7. After the adhesive material in the tank becomes molten, remove the nozzles from the guns.

8. (Automatic guns only) Increase the air pressure to the guns to 35 psi (2.4 bar).



9. Keep the guns triggered so that no pressure will build up in the system. (Manual guns cannot be triggered without first releasing the trigger safety.)

WARNING: Burn hazard. Wear protective clothing/safety goggles/protective gloves (P/N 902 514).



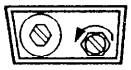
10. Place a pan or other suitable waste container under the manifold drain valve. Using a screwdriver, open the drain valve in the applicator manifold.

NOTE: Failure to use a screwdriver may turn the valve body resulting in equipment damage and possible discharge of molten material.

11. Gradually pressurize the pump and allow adhesive to flow in order to remove air trapped in filter.

2. Preparation of equipment

(continued)

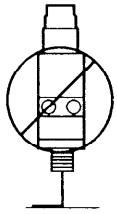


12. Using a screwdriver, close the drain valve after all air within the filter is removed.
13. Allow material to exit the gun(s) until all trapped air and impurities are flushed out of the system.

WARNING: Burn hazard. Trapped air may still be in the hose(s) and gun(s) causing the spitting of air and molten material.

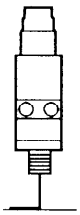
NOTE: It may be necessary to increase the pump air pressure to produce flow in the system.

NOTE: The pump will transfer adhesive material from the tank to the manifold, hose(s) and gun(s). The system is full when the pump stalls or slows noticeably.



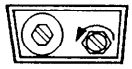
14. When material flows free of trapped air and contaminants, stop triggering the gun(s).

15. Reduce the pump air pressure to zero (0) at the regulator.



16. Trigger the gun(s) to relieve all system pressure.

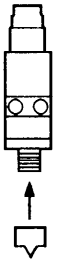
WARNING: System or material pressurized. Be sure that pump air pressure is at zero (0) and that no material flows from the gun(s) when triggered. Failure to observe these steps can result in serious burns in the following step.



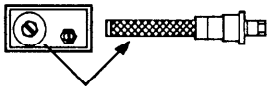
17. Using a screwdriver, open the manifold drain valve.

2. Preparation of equipment

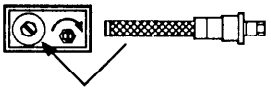
(continued)



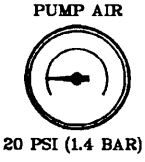
18. Attach the nozzles to the guns.



19. Remove and clean the adhesive filter in accordance with Filter Assembly Cleaning in Section 5 - Preventive Maintenance.

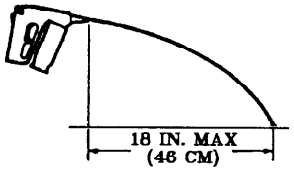


20. Replace the filter and close the manifold drain valve using a screwdriver.



21. Set the input air pressure to the pump to 20 psi (1.4 bar).

22. (Automatic guns only) Set the input air pressure to the gun solenoid valve(s) to 35 psi (2.4 bar). Further adjustment of gun air pressure may be necessary, depending on the viscosity of the material and gun response requirements.

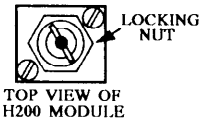


23. (Manual guns only) Adjust the discharge force of material from the nozzle by adjusting the input air pressure to the applicator pump.

24. Multiple Series H200 modules or guns maybe adjusted as follows:

a. Briefly trigger the guns at the desired line speed.

b. Note the position of each bead (see example at left).



c. To delay material flow (make the bead slightly shorter), loosen the locking nut and turn the loading screw clockwise (see illustration at left).

d. To advance material flow (make the bead slightly longer), loosen the locking nut and turn the loading screw counterclockwise (see illustration at left).

e. Repeat the procedure as necessary to coordinate the modules.

2. Preparation of equipment

(continued)

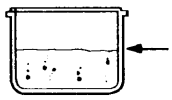
f. After adjusting a loading screw, tighten the locking nut.

NOTE: The adjustable loading screw is intended for minor adjustments in bead position. If bead positioning varies greatly from one gun to another, check to see that the time intervals on the timer are set to deposit the beads in the same position.

25. The system is ready for use.

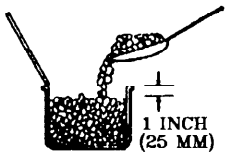
3. Adhesive loading

Daily Loading of Adhesive

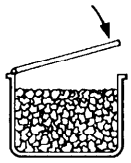


1. Be sure that the adhesive level in tank does not drop below half full.

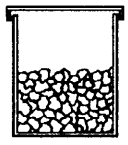
NOTE: Keeping the adhesive level in the tank above the half-full point eliminates the problem of "starving" the pump due to lack of material and also reduces the problems caused by charring of material.



2. Use a metal or plastic scoop to refill the tank with fresh, clean adhesive to a point 1 inch (25 mm) below the top of the tank.



3. Immediately close the tank lid to prevent contamination of the adhesive.



4. To prevent the adhesive supply from becoming contaminated, store the fresh adhesive in a closed container.

NOTE: Foreign material in the adhesive supply may damage the pump, clog the filter screen, or clog the tank strainer.

Flushing the system

WARNING: To avoid possible equipment damage and personal injury, refer to the information provided in Section 1 - Safety Instructions before proceeding.

Be sure to check product compatibility before changing adhesives. If they are compatible, an old adhesive may be purged out by the new one. It is advisable to have only a small quantity of the old material in the tank to avoid too much mixing between them. Remove the old material by draining the applicator or by operating the unit until empty.

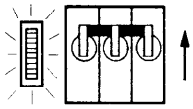
If the two different materials are not compatible, empty and flush the applicator using a flushing solvent matched to the material by following System Cleaning in Section 5 - Preventive Maintenance.

Properly dispose of flushed material and solvent by referring to the manufacturers' instructions and recommendations.

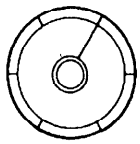
4. Daily operation

Daily startup procedure

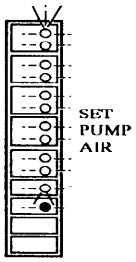
1. Turn the main electrical switch ON at the applicator.



2. Verify that tank, hose, and gun temperature controls are at the desired settings.



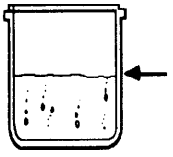
3. When all yellow LED indicators are flashing or off, adjust the pump input air pressure to the desired setting.



4. (Systems with automatic guns only) Adjust the gun input air pressure to the desired setting.

Daily startup procedure

(continued)



5. Check the level of material in the tank and, using a metal or plastic scoop, add material as necessary.

NOTE: In the space provided, record the temperature and pressure settings recommended by Nordson personnel or the adhesive representative.

Pump Air Pressure _____

Tank Temperature _____

Hose 1 Temperature _____

Gun 1 Temperature _____

Gun 1 Air Pressure _____

Hose 2 Temperature _____

Gun 2 Temperature _____

Gun 2 Air Pressure _____

Hose 3 Temperature _____

Gun 3 Temperature _____

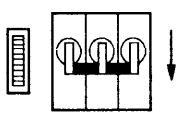
Gun 3 Air Pressure _____

Hose 4 Temperature _____

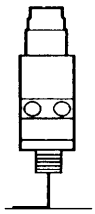
Gun 4 Temperature _____

Gun 4 Air Pressure _____

Daily shutdown procedure



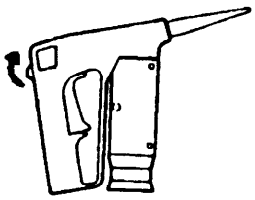
1. Turn the main electrical switch OFF at the applicator.



2. Trigger the gun(s) to relieve all system pressure.

3. Reduce pump air pressure to zero (0) at the regulator.

4. (Systems with automatic guns only) Reduce gun air pressure(s) to zero (0) at the regulator(s).



5. (Systems with manual guns only) Place the gun trigger safety in the locked position and hang the handgun by the hole in its handle.

SECTION 5

Preventive Maintenance

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Section 5
Preventive Maintenance

1. Introduction

Section 5 outlines the preventive maintenance procedures that are recommended for the Series 2300 Applicator. The procedures are organized according to the recommended frequency of performance: daily, weekly, semiannual and unscheduled. The last category, unscheduled, covers maintenance procedures that have no recommended frequency.

WARNING: Allow only qualified personnel to perform maintenance on this equipment. Refer to the information provided in Section 1 — Safety Instructions.

2. Daily maintenance

General maintenance

1. Keep the applicator clean at all times.
2. Keep the supply of hot melt material clean and free of contaminants. Foreign particles in the hot melt adhesive can block the filter or damage the pump. A plugged filter can shut down the system.
3. Clean all exterior gun surfaces. Accumulated hot melt material can char and cause erratic gun operation.

Filter flushing

Flush the adhesive filter once a day unless operating experience indicates that less frequent flushing is required.

WARNING: Risk of burns. Wear protective clothing/safety goggles/gloves (P/N 902 514) during the following procedure.

1. Heat the system to operating temperature.

NOTE: The applicator must be at operating temperature to prevent damage to the filter screen.

2. Reduce the pump air pressure to zero (0) at the regulator.
3. Trigger all gun(s) until the system has been relieved of pressurized molten material.

WARNING: Before performing the next step, be sure that all system pressure has been relieved to avoid spraying of moilten material.

4. Place a pan or other suitable waste container under the drain valve. Using a screwdriver, open the manifold drain valve.
5. Increase the pump air pressure until adhesive material flows steadily from the drain. Allow material to flow until it is clean and free from all contaminants.
6. Shut off the input air pressure to the pump at the regulator.
7. Close the manifold drain valve.

3. Weekly maintenance

Filter assembly cleaning

Clean the adhesive filter once a week, unless operating experience indicates that more or less frequent cleaning is required.

WARNING: Risk of burns. Wear protective clothing/safety goggles/gloves (P/N 902 514) during the following procedure.

1. Heat the system to operating temperature.

NOTE: The applicator must be at operating temperature before the filter is removed for cleaning.

2. Reduce the pump air pressure to zero (0) at the regulator.
3. Trigger the gun(s) until the system is relieved of all pressurized molten material.

WARNING: Before performing the next step, be sure that all system pressure has been relieved to avoid the spraying of molten material.

4. Place a pan or other suitable waste container under the drain valve. Open the manifold drain valve.
5. Increase the pump air pressure until adhesive material flows steadily from the drain. Allow material to flow until it is clean and free form all contaminants.
6. Shut off the input air pressure to the pump at the regulator.

WARNING: Risk of burns. The use of a straight wrench in the following step may result in the hand being under the filter when the connection is broken.

7. Use a ½ inch or 13 mm socket wrench to unscrew the filter assembly and remove it from the manifold.
8. Remove the screw from the filter bung and disassemble the filter.
9. There are several methods for cleaning the filter screen depending on the type of hot melt adhesive material used, as noted below.

WARNING: Risk of explosion or fire. Fire, open lights and smoking prohibited.

a. Place the filter components in a container of Nordson Type R solvent and heat it above the melting point of the melting temperature of the adhesive. Scrub the filter screen with a fine bristle brush.

Filter assembly cleaning
(continued)

NOTE: Do not use a metal brush to clean the filter screen. A metal brush may damage the screen.

b. Heat the filter screen with a flameless electric heat gun. Wipe it with a clean, dry cloth.

c. Use an ultrasonic cleaner filled with solvent to clean the filter screen.

10. Inspect the screen for damage. Replace the screen if there are any dents or breaks in the screen mesh.

NOTE: The applicator is shipped with a 0.006 inch (0.15 mm) mesh filter screen. The size of the screen mesh should always be smaller than the smallest gun nozzle.

11. Slide the screen over the core of the filter.
12. Insert the screw through the core into the filter bung and tighten the screw.
13. Replace the O-ring with P/N 941 172.
14. With the applicator at operating temperature, screw the filter assembly into the manifold and tighten.

4. Semiannual maintenance

Gun wiring inspection

WARNING: Disconnect input electrical power from the applicator. Failure to observe may result in personal injury or death.

1. Reduce the pump air pressure to zero (0) at the regulator.
2. Trigger all gun(s) until the system has been relieved of all pressurized molten material.
3. Wearing safety gloves, remove either the gun cover (automatic gun) or the pivot sleeve shells (handgun).
4. Inspect all wiring for signs of wear or damage to the insulation.
5. Check all electrical connections for tightness.

Thrust bearing lubrication (Handguns only)

WARNING: Disconnect input electrical power from the applicator. Failure to observe may result in personal injury or death.

1. Reduce the pump air pressure to zero (0) at the regulator.
2. Trigger all gun(s) until the system has been relieved of all pressurized molten material.
3. Wearing safety gloves, remove either the pivot sleeve shells by removing the six screws that secure them in place.

NOTE: Carefully handle the gun to prevent strain on the internal wiring and hose cordset.

4. With the swivel connector and hose fitting hot, remove the hose from the gun at the hose connector.
5. Remove the two screws and washers that secure the swivel connector to the pivot sleeve.
6. Remove the swivel connector and conical spring from the pivot sleeve.
7. Using snap-ring pliers, remove the retaining ring form the end of the gun body. Do not remove the pivot sleeve from the gun body.
8. Remove the thrust bearing.
9. Clean and repack thrust bearing with lubricant (P/N 900 301).

NOTE: Repack the thrust bearing only with Nordson high temperature grease (P/N 900 301). Do not use a standard grease to lubricate this bearing. The temperatures encountered in this area will carbonize standard greases, causing the bearing to bind.

10. Inspect the swivel connector seal and backup ring located inside the gun body. Replace these parts if they show evidence of hardening, cracking, or other damage.
11. Lubricate the swivel connector seal with bearing lubricant (P/N 900 301).
12. Reassemble the swivel connector seal and backup ring.

Thrust bearing lubrication (Handguns only)
(continued)

13. Reinstall the thrust bearing with the printed side of the bearing facing the gun body.
14. Using snap-ring pliers, reinstall the retaining ring into the retaining slot in the gun body.
15. Reinstall the conical spring (small end first) and the swivel connector into the gun body.
16. Install the two screws and washer to retain the swivel connector. Tighten them only finger tight.
17. Rotate the pivot sleeve to allow the swivel connector to self-center.
18. Tighten the screws and check for free rotation. If binding occurs, loosen the screws and rotate the pivot sleeve. Tighten the screws and check for free rotation. Repeat as necessary.
19. Connect the hose to the gun at the hose connector and tighten securely.
20. Replace the pivot sleeve shells, clamping them around at least three corrugations of the plastic hose covering.
21. Secure the shells with the six screws previously removed.

5. Unscheduled maintenance

General maintenance

1. Clean the filter (customer-supplied) to the air regulators for the pump and guns.
2. Carefully clean the inside of the electrical enclosure with pressurized dry air. Take care not to damage or dislodge any components inside the enclosure.
3. Ensure that all electrical connections and terminal blocks are secure.
4. Check for leakage around the hose connections to the service block and applicator manifold. If leakage is found, replace the O-ring in accordance with the instructions provided in Section 7, Disassembly and Repair.

System cleaning

The entire hot melt application system must be flushed periodically to remove excess dirt and charred material. The following procedure should also be used if the adhesive in the system is changed and the old and new adhesives are incompatible.

WARNING: Risk of burns. Wear protective clothing/safety goggles/gloves (P/N 902 514) during the following procedure.

1. Reduce the pump air pressure to zero (0) at the regulator.
2. Trigger the gun(s) until the system has been relieved of all pressurized molten material.

WARNING: Before performing the next step, be sure that all system pressure has been relieved to avoid the spraying of molten material.

3. Place a pan or other suitable waste container under the drain valve. with the system at operating temperature, open the manifold drain valve.
4. Reduce the gun air pressure to zero (0) at the regulator.
5. With the unit at operating temperature, increase pump air pressure and remove all adhesive from the system in one of the following ways:
   a. Remove a nozzle from its gun and pump the adhesive out through the gun.
   b. Or, open the manifold drain valve and pump the adhesive into a suitable waste container.
   c. Or, disconnect a hose hydraulically (but not electrically) from a gun and pump the adhesive into a suitable waste container.

WARNING: If the guns are removed from the hoses, the sockets on the hose quick disconnects are electrically energized with full voltage. Contact with these pins can cause equipment damage or severe electrical shock.

   d. Or, disconnect a hose from its gun hydraulically and electrically, making sure to replace the dust cover over the electrical receptacle on the hose. After the dust cover is on, pump the adhesive into a suitable waste container.

System cleaning (continued)

6. Reduce the pump air pressure to zero (0) at the regulator as draining is completed.

NOTE: Type R solvent may be used instead of adhesive material to flush the tank, pump and manifold. DO NOT PUMP TYPE R SOLVENT THROUGH THE HOSE(S).

7. Using a metal or plastic scoop, place several pounds of fresh, uncontaminated adhesive material normally used in production into the applicator tank.

NOTE: It is recommended that the hose(s) be positioned over the tank so that molten marterial can be circulated through the system.

8. Heat the material to application temperature, then pump the molten material through the system for 15 minutes.
9. After material has been pumped through the system, decrease the pump air pressure to zero (0).
10. Turn off the power to the unit.
11. Remove and clean the filter assembly according to the instructions under Filter Assembly Cleaning in this section.
12. If it is necessary to clean the inside of the tank, use a stiff bristle brush to scrub the inside of the tank. Do not use a metal brush or scraper. Using these items will remove the **PTFE** coating.
13. Reconnect the guns to the hoses (if step 5c or step 5d was followed).
14. Restore the system to operation.

Nozzle cleaning

WARNING: Risk of burns. Wear protective clothing/safety goggles/gloves (P/N 902 514) during the following procedure.

1. Heat the system to operating temperature.
2. Reduce the pump air pressure to zero (0) at the regulator.
3. Trigger all guns until the system has been relieved of all pressurized molten material.

WARNING: Before performing the next step, be sure that all system rpessure has been relieved to avoid the spraying of molten material.

4. Using a screwdriver, open the manifold drain valve over an open waste container.
5. (Automatic guns only) Reduce the gun air pressure to zero at the reguiator.
6. Remove the nozzle(s).

WARNING: Risk of explosion or fire. Fire, open lights and smoking prohibited.

7. Place the nozzle(s) in a container of Nordson Type R solvent and heat the solvent to the melting temperature of the adhesive material being used.

Nozzle cleaning
(continued)

NOTE: See Section 10 — Optional Equipment for nozzle cleaning kits. Do not use an open torch, drill, or broach to clean a nozzle. Damage may result.

8. Clean the nozzle bore with a pin-type probe inserted into the nozzle in a direction opposite to the flow of adhesive.

NOTE: Alternative methods of nozzle heating and cleaning include:

   a. Heat the nozzle with a flameless electric heat gun, then wipe nozzle with a clean cloth.

   b. Or, submerge the nozzle in an ultrasonic cleaner.

9. After cleaning, reassemble the nozzle(s) onto the gun(s).

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SECTION 6

SECTION 6

Troubleshooting

List of Illustrations

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Section 6
Troubleshooting

1. Introduction

The following troubleshooting tables help the expert but cannot compensate for specific troubleshooting using a circuit diagram as well as required measuring devices.

In the following tables, the column labeled Refer to directs you to specific parts, sections and other pages of this manual which contain further information on corrective actions.

⚠ **WARNING:** Allow only qualified personnel to perform troubleshooting. Observe and follow all safety instructions.

Pump Not Stroking

Problem	Possible Reason	Corrective Action	Refer to
1. Adhesive not melted	Tank temp setting incorrect	Check tank temp setting and correct if necessary	Section 4
	Tank temp channel not functioning properly	Go to *Tank/Hose/Gun Fails to Heat or Underheats*	Later in this section
2. No or inadequate air pressure to pump	Incorrect setting at filter/regulator	Set pump air supply to 10 - 60 psi (0.7 - 4 bar)	Section 4
	Fault with shop air supply	Resolve problem with shop air supply	
	Faulty pump solenoid To test: (a) Shut pump air off (b) Disconnect air inlet line from solenoid valve (c) Remove solenoid from pump air control valve (d) Reconnect air inlet line to solenoid (e) Gradually increase air pressure at filter/regulator (f) Normal condition = air flows from the solenoid	Replace solenoid	
3. Problem in hydraulic system	Various (charred material from tank lodged in hydraulic system, blocked filter, clogged gun nozzle, etc.) To test: (a) Shut pump air off (b) Open drain valve slightly (c) Increase pump air pressure slowly (d) Note if pump begins to stroke	Go to step 4 if yes " problem is downstream of drain valve Go to step 8 if no " blockage is upstream of drain valve	
4. Clogged filter in manifold	Charred material from tank lodged in filter screen	Relieve system pressure, remove and clean filter	Section 5
5. Cold hose-to-applicator or hose-to-gun joints	Temperature at joint too low for adhesive to flow	Install insulation around joint Install heated inline filter at joint Go to *Tank/Hose/Gun Fails to Heat or Underheats*	Later in this section
6. (Auto guns) Input air pressure to gun incorrect	Setting incorrect	Set gun air supply to 35 - 80 psi (2.4 - 5.5 bar)	

Pump Not Stroking

(continued)

Problem	Possible Reason	Corrective Action	Refer to
7. Clogged gun nozzle	Charred material from tank or hose lodged in gun nozzle To check: (a) Relieve system pressure (pump air off, trigger all guns, open manifold drain) (b) Remove gun nozzles, close drain valve (c) Gradually increase pump air pressure while triggering gun (d) Note if adhesive flows from gun module	If yes, clean gun nozzle If no, go to *Automatic Gun Fails to Deposit When Triggered*	Section 5 Later in this section

Pump Not Stroking

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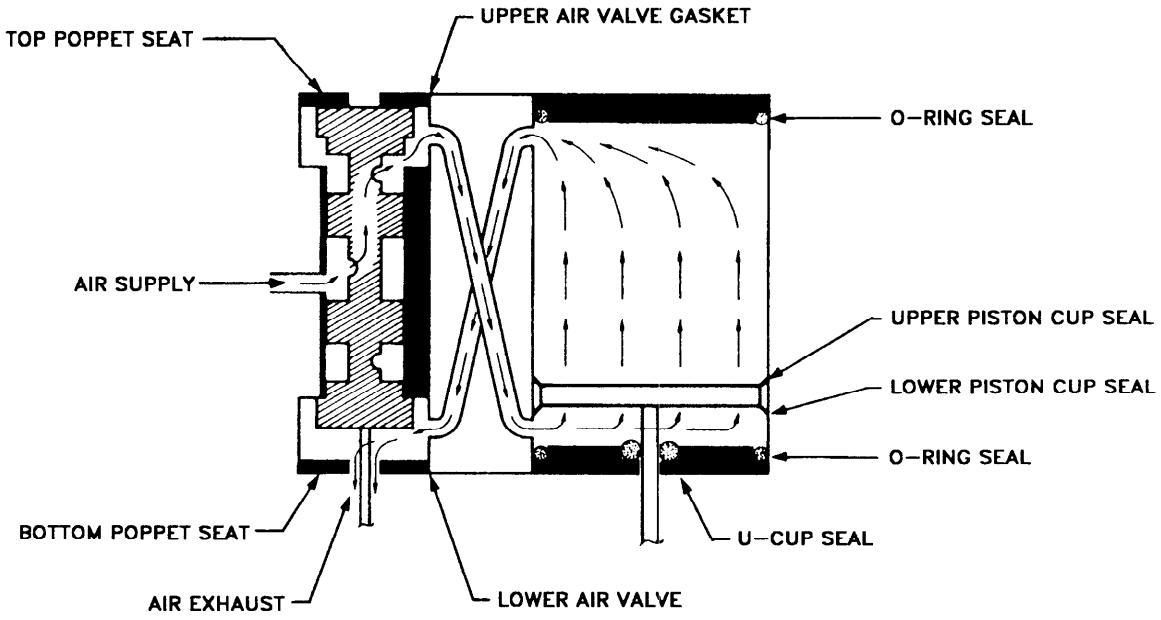

Figure 6.1

Problem	Possible Reason	Corrective Action	Refer to
8. With pump air on, pump stalls on upstroke (with shifter block above spring cams) and air control valve will not begin shifting even with spring cams manually pressed together	With pump air at 30 psi (2 bar), check for air leakage at following points (Figure 6.1 and Figure 8.8): (a) Where pump piston enters air cylinder beneath pump mount (Section 8, Figure 8, item 28) (b) Excessive leakage at air control valve bottom exhaust port (Section 8, Figure 8.8, item 7) (c) At air control valve top exhaust port (Section 8, Figure 8.8, item 7) (d) At bottom of air cylinder (Section 8, Figure 8.8, item 23) between cylinder and pump mount (Section 8, Figure 8.8, item 28) (e) Between air control valve and air cylinder If no leakage, go to step 10	Replace failed seal(s) (Figure 6.1 and Figure 8.8): (a) U-cup (Section 8, Figure 8.8, item 27) (b) Lower piston cup seal (Section 8, Figure 8.8, item 21) (c) Top poppet seat (Section 8, Figure 9, item 3) (d) Pump mount o-ring (Section 8, Figure 8.8, item 18) (e) Upper air valve gasket (Section 8, Figure 8.8, item 13) If one air cylinder seal requires replacement, replace all air cylinder seals	Section 8

Pump Not Stroking

(continued)

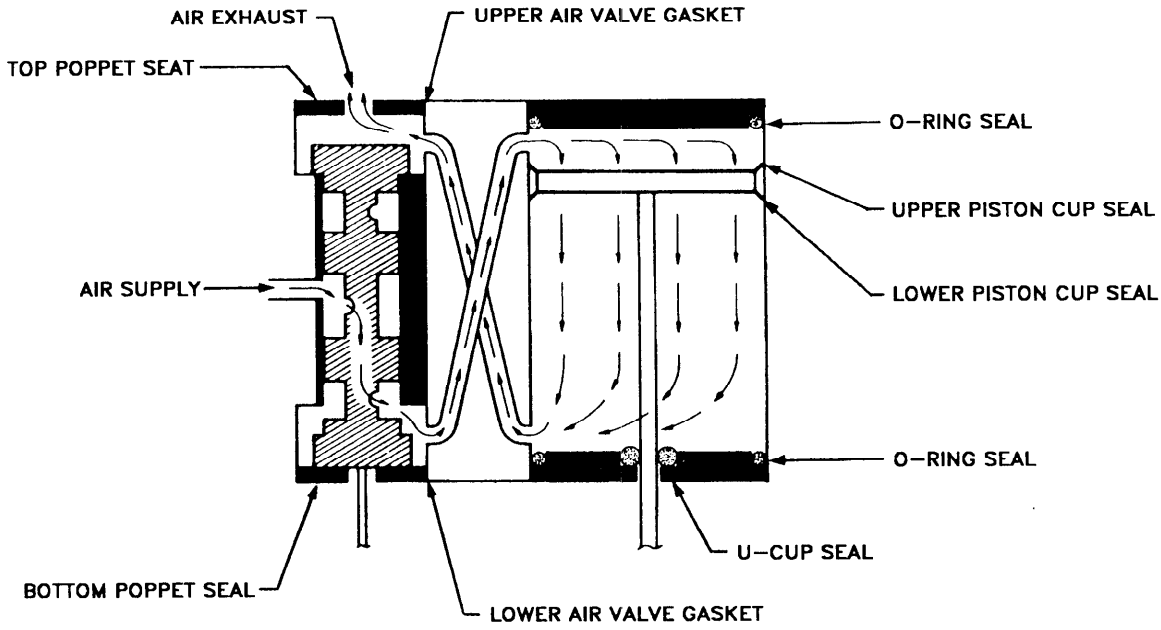

Figure 6.2

Problem	Possible Reason	Corrective Action	Refer to
9. With pump air on, pump stalls on downstroke (with shifter block below spring cams) and air control valve will not begin shifting even with spring cams manually pressed together	With pump air at 30 psi (2 bar), check for air leakage at following points (Figure 6.2 and Figure 8.8): (a) Excessive leakage at air control valve top exhaust port (Section 8, Figure 8.8, item 7) (b) At air control valve bottom exhaust port (Section 8, Figure 8.8, item 7) (c) At top of air cylinder (Section 8, Figure 8.8, item 23) between cylinder and cylinder head (Section 8, Figure 8.8, item 17) (d) Between air control valve and air cylinder If no leakage, go to step 10	Replace failed seal(s) (Figure 6.2 and Figure 8.8): (a) Upper piston cup seal (Section 8, Figure 8.8, item 21) (b) Bottom poppet seat (Section 8, Figure 9, item 3) (c) Air cylinder head o-ring (Section 8, Figure 8.8, item 18) (d) Lower air valve gasket (Section 8, Figure 8.8, item 13) If one air cylinder seal requires replacement, replace all air cylinder seals	Section 8

Pump Not Stroking

(continued)

Problem	Possible Reason	Corrective Action	Refer to
10. With pump air on, shifter block stops between spring cams, or air control valve will shift only if spring cams manually pressed together	Out of line or loose components	(a) Shut pump air off (b) Tighten screws that secure cams to springs (c) Align springs with slide (d) Replace bent shifter rod (e) Tighten loose shifter block (f) Adjust assembly so that shifter slide is perfectly flush against shifter stop when shifter in down position (g) Realign air control valve and shifter assemblies with pump assembly (h) Align rectangular body of air control valve with air cylinder rectangular mounting face	Section 8, Figures 8.8, 8.9 and 8.10
	Shifter rod out of adjustment and binds at air control valve spool To check: (a) Shut pump air off (b) Remove shifter block (c) Manually move shifter rod up and down (d) Normal shifter rod travel = 0.15 - 0.20 in. (3 - 5 mm) and rod does not bind	Adjust shifter rod if required	Section 7
	Pump requires detente upgrade	Install Nordson Detente Kit (P/N 134 944 for domestic units; P/N 136 184 for international units)	Section 8, Figures 8.8, 8.9 and 8.10
11. (Pump air on) Pump shifts once if up/down manual pressure applied to valve/spring assembly spring nuts	Failed valve/spring assembly	Replace valve/spring assembly	Section 8, Figure 8.10
12. (Pump air on) Pump will not shift even if up/down manual pressure applied to valve/spring assembly spring nuts	Failed pump hydraulic components	Rebuild/replace pump	Section 8

Pump Stroking Erratically or Too Fast

Problem	Possible Reason	Corrective Action	Refer to
1. Tank less than half full	No refill during normal operation	Refill tank to at least half full	Section 4
2. Adhesive not melted	Tank temp setting incorrect	Check tank temp setting and correct if necessary	
	Tank temp channel not functioning properly	Go to *Tank/Hose/Gun Fails to Heat or Underheats*	Later in this section
3. Blocked tank relief valve	Charred material from tank lodged in tank relief valve	Clean or replace tank relief valve	
4. Char or foreign material lodged at pump siphon ball seat (Note that rapid strokeup indicates upper ball check valve not seated; rapid strokedown indicates lower ball check valve not seated)	See above	With pump assembly removed, clear char/foreign material from siphon ball seat	Section 7
5. Pump hydraulic section requires attention	See above	Disassemble, clean and reassemble pump hydraulic section	Section 7

Automatic Gun Fails to Deposit When Triggered

Problem	Possible Reason	Corrective Action	Refer to
1. Tank, hose or gun temp setting(s) too low	Incorrect settings used	Reset temp dials	
2. Clogged gun nozzle	Charred material from tank or hose lodged in gun nozzle	Remove and clean gun nozzle	Section 5
3. Clogged gun module	Charred material from tank or hose lodged in gun module To check: (a) Relieve system pressure (b) Remove module from service block (c) Trigger gun and note if air flows from service block	If yes, go to step 4 If no, go to step 5	
4. Clogged gun seat	Charred material from tank or hose lodged in gun seat	Remove and clean gun seat If condition persists after reassembly, rebuild/replace module	Gun manual
5. Faulty gun solenoid valve	Worn components To check: (a) Shut solenoid air off (b) Remove input air line from solenoid (c) Slowly increase air pressure (d) Note if air flows from open line	If yes, replace solenoid If not, go to step 6	
6. Faulty filter/regulator	Worn components To check: (a) Shut gun filter/regulator air off (b) Remove input air line from filter/regulator (c) Slowly increase air pressure (d) Note if air flows from open line	If yes, replace filter/regulator If not, resolve problem with shop air supply	

Adhesive/Air Leaks from Gun Module Bleed Hole

Problem	Possible Reason	Corrective Action	Refer to
1. Material/air seeping past o-rings, seals	Internal components worn excessively	Rebuild or replace gun module	Gun manual

Individual Gun Module Misfires

Problem	Possible Reason	Corrective Action	Refer to
1. Clogged nozzle	Charred material from tank or hose lodged in nozzle	Remove and clean nozzle	Section 5
2. Clogged gun seat	See above	Remove and clean gun seat	Section 5 (*Nozzle Cleaning*)
3. Malfunctioning module	See above; or worn out mechanical components	Rebuild or replace module	Gun manual

Multi-Gun Modules Do Not Fire at Same Time

Problem	Possible Reason	Corrective Action	Refer to
1. Modules out of synch with each other	Adjustment required	Turn loading screw at module top to adjust bead deposit: CW = delays deposit CCW = advances deposit	Gun manual
	Module cannot be synchronized (failed module)	Rebuild or replace gun module(s)	Gun manual

Operation of the Red and Yellow LEDs

The red and yellow LEDs (light emitting diodes) on the indicator panel show when the Series 2300 hot melt system is operating normally and when it is not. Normally, the red LED remains off while the yellow LEDs for the tank, hoses and guns are either on, off or flashing. The yellow LED for a component lights when that component is heating, flashes when the set temperature for the component has been reached and goes off when the component has exceeded the set point by more than 2.7F (1.5C).

The LEDs also indicate malfunction and can be used to isolate the problem. The red LED lights when either of two fault conditions occur in the tank channel or any of the hose or gun channels:

- When an RTD fails closed (short circuit) or open,
- When another component of the hot melt system fails, allowing any of the channels to overheat.

The temperature at which the red LED will light may vary from 425F (218C) to 475F (246C).

A time delay built into the circuitry allows for up to 1½ minutes from the time the red LED lights in order to troubleshoot before the circuit breaker trips, shutting off power from the applicator. The circuit breaker may be switched on again for another 1½ minutes of troubleshooting time. The circuit breaker may be reset indefinitely until the tank wall temperature reaches 450F (230C). At that point, a close-on-rise thermostat automatically prevents further attempts to reset the circuit breaker until the tank wall temperature drops below 450F (230C).

Note that on some units, if the tank channel is the faulty channel, the tank thermostat may cause the circuit breaker to trip before it is tripped by the solid-state overtemperature protection circuitry on the tank channel. This is because there is some tolerance overlap in the setpoint range of the tank thermostat 430F (221C) to 470F (243C) and of the solid state overtemperature circuitry. If the circuit breaker is tripped by the tank thermostat, it cannot be reset until the temperature of the tank wall drops below the setpoint of the thermostat.

See the chart below for a summary of LED operation.

Red LED is	Yellow LED is	The Component (tank, hose, gun)	Condition
OFF	ON	Is heating	Normal
OFF	Flashing	Is at the set point	Normal
OFF	OFF	Is slightly above set point	Normal
OFF	ON	Is not heating (is cold)	Abnormal
ON	ON	Has an RTD that has failed closed (short)	Abnormal
ON	OFF	Is overheating (above 425F /220C) or it has an RTD that has failed open*	Abnormal
* Further troubleshooting required to determine which of the two fault conditions exists.			

Locating the Faulty Channel

1. Turn the circuit breaker off.
2. Electrically disconnect (unplug) the hose from channel No. 1 from the unit.
3. Switch the circuit breaker on and note if the red LED is off or on.
4. If it is off, the problem is in either the No. 1 hose channel or No. 1 gun channel. If the red LED remains on, turn the circuit breaker off, and repeat steps 2 and 3 with channel No. 2.
5. If the red LED remains on after all channels have been unplugged, the problem is in the tank channel.

Red LED Lights

Problem	Possible Reason	Corrective Action	Refer to
1. Problem in tank, hose or gun channel	Failed components, bad connections, etc.	Locate faulty channel	Earlier in this section
	Defective hose or gun To check: (a) Switch circuit breaker off (b) Reconnect all channels (c) Electrically unplug gun from hose, install dust cap to the open hose receptacle (d) Switch circuit breaker on LED stays on	Replace hose	
	Faulty gun/hose electrical connection To check: Red LED turns off when dust cap is replaced with gun plug after steps a, b, c and d (from above)	Resume normal operation	
	Short in tank or gun RTD To check: Red LED and yellow tank or gun LEDs on after a, b, c and d (from above),	Replace RTD in tank or gun	Section 7
	Open circuit in tank or gun RTD To check: (a) Red LED on and tank or gun yellow LED off after a, b, c and d (from above) (b) Resistance (power OFF!)of gun (between pins 3 and 5 of gun plug) or tank (between pins 6 and 8, circuit board connector J6) > 1 megohm or other very high reading	Replace RTD in tank or gun	Section 7
	Failed circuit board To check: Gun overheats and resistance (power off) = 138-309 ohms (normal) OR Tank overheats and resistance (power off) across two large prongs of tank triac >100 ohms	Replace circuit board	Section 7
	Failed tank triac To check: Tank overheats and resistance (power off) across two large prongs of tank triac <100 ohms	Replace tank triac	Section 7

Tank, Hose or Gun Fails to Heat or Underheats

Problem	Possible Reason	Corrective Action	Refer to
1. Incorrect setting	Misadjustment	Reset controller and resume normal operation	Section 4
2. Circuit breaker will not stay on even after repeated attempts to reset (if circuit breaker stays on, go to step 4)	Faulty tank thermostat To check: With power off, thermostat has continuity (stays closed) at less than 450F (230C)	Replace tank thermostat	Section 7
	Faulty circuit breaker To check: With power off, thermostat has no continuity (opens) at less than 450F (230C)	Replace circuit breaker	Section 7
3. Low voltage at input terminal block (TB1)	Faulty input power supply To check: Normal voltage on 200 VAC applicator = 170 - 200 VAC line-to-line Normal voltage on 230 VAC applicator = 194 - 254 VAC line-to-line Normal voltage on 220/380-Y VAC applicator = 198 - 242 VAC line-to-neutral	Troubleshoot and fix input power supply to applicator	

Tank, Hose or Gun Fails to Heat or Underheats

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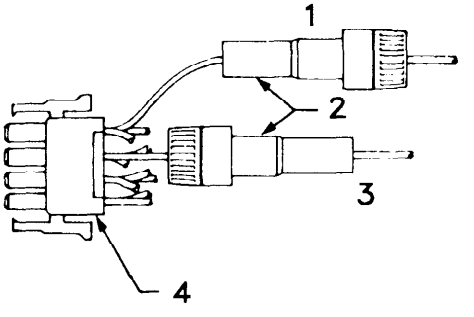

Figure 6.3 —
1 = Line No. 2 (guns)
2 = Fuse holders
3 = Line No. 4 (hoses)
4 = Circuit board plug

Problem	Possible Reason	Corrective Action	Refer to
4a. Hose **and** gun not heating (units with circuit board P/N 276 881 through 276 888)	Failed circuit board fuse(s) To check: Remove fuse for nonheating gun and hose (see schematic) and check for continuity. If fuse OK, reinstall and go to step 10 or 12 of this procedure	Replace failed fuse(s), then go to step 12 of this procedure (check heater and heater-to-ground)	
4b. Hose 1 **and** hose 2 not heating or Gun 1 **and** gun 2 not heating (units with circuit board P/N 276 884 through 276 888)	Failed circuit board fuse(s) To check: Remove fuse for nonheating gun or hose pair (see schematic) and check for continuity. If fuse OK, reinstall and go to step 10 or 12 of this procedure	Replace failed fuse(s), then go to step 12 of this procedure (check heater and heater-to-ground)	
5a. Hose **or** gun not heating (units with circuit board P/N 276 881 through 276 888)	Failed circuit board fuse(s) To check: Remove fuse(s) for nonheating gun or hose (see schematic) and check for continuity. If fuse(s) OK, reinstall and go to step 12 of this procedure	Replace failed fuse(s), then go to step 12 of this procedure (check heater and heater-to-ground)	
5b. Hose **or** gun not heating (units with circuit board P/N 276 889 or 276 890)	Failed inline fuse To check: Remove fuse for nonheating gun or hose (see Figure 6.3) and check for continuity. If fuse OK, reinstall and go to steps 10, 11 and 12 of this procedure	Replace failed fuse, then go to step 12 of this procedure (check heater and heater-to-ground)	

Tank, Hose or Gun Fails to Heat or Underheats

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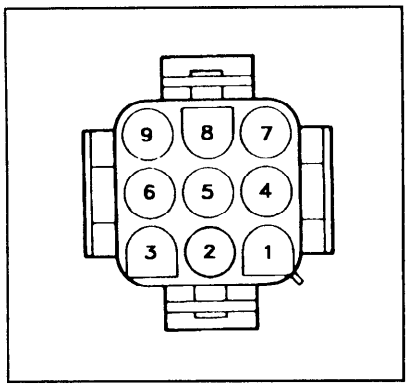

Figure 6.4

Problem	Possible Reason	Corrective Action	Refer to
6. Tank not heating with yellow LED on or off and red LED on)	Failed tank RTD To check (Figure 6.4 circuit board connector J6): Abnormally high resistance reading (power off!) between pins 6 and 8 at connector J6 on circuit board Failed circuit board To check: Resistance reading (power off!) between pins 6 and 8 at connector J6 on circuit board = 133 ohms at 70F (21C) to 309 ohms at 400F (205C)	Replace RTD Replace circuit board	Section 7
7. Tank not heating with yellow LED on, and red LED off	Failed tank heater To check: Abnormally high resistance reading (power off!) between tank triac wire 6 and circuit breaker wire 2A (Normal = 26 - 31 ohms) Failed tank triac Normal resistance reading Failed circuit board Tank still does not heat even with new triac	Contact your Nordson representative for service recommendations Replace tank triac Replace circuit board	 Section 7 Section 7

Tank, Hose or Gun Fails to Heat or Underheats

(continued)

Problem	Possible Reason	Corrective Action	Refer to
8. Yellow LED for nonheating channel off, red LED off	Defective wire or contact To check (power off!, circuit breaker set to on): No continuity on any of circuit breaker legs L1, L2 and L3 (European units L1, L3 and N) between input terminal board TB1 and circuit board J7 OR No continuity on any circuit breaker leg between the input terminal board TB1 and line side of the breaker OR No continuity between load side of circuit breaker (1A, 2A and 3A) and circuit board (L1, L2 and L3 on J7)	Repair/replace defective wiring or contact	
	Faulty circuit breaker To check: Is continuity between load side of circuit breaker (1A, 2A and 3A) and circuit board (L1, L2 and L3 on J7)	Replace circuit breaker	Section 7
	Failed circuit board To check: Is continuity on circuit breaker legs L1, L2 and L3 (European units L1, L3 and N) between input terminal board TB1 and circuit board J7, but unit not wired for single-phase operation OR Is continuity on circuit breaker legs L1, L2 and L3 (European units L1, L3 and N) between input terminal board TB1 and circuit board J7, unit is wired for single-phase operation and jumper 10J at J7 shows continuity	Replace circuit board	Section 7
	Incorrect wiring, failed single-phase jumper	Repair/replace incorrect wiring/single-phase jumper	

Tank, Hose or Gun Fails to Heat or Underheats

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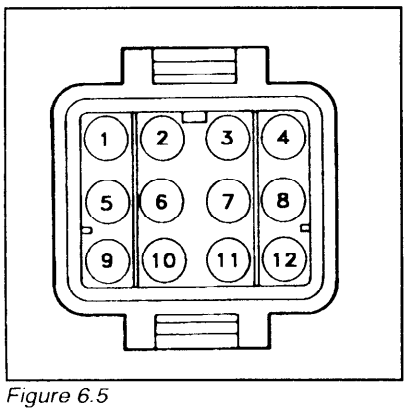

Figure 6.5
Connectors J1A — J5A

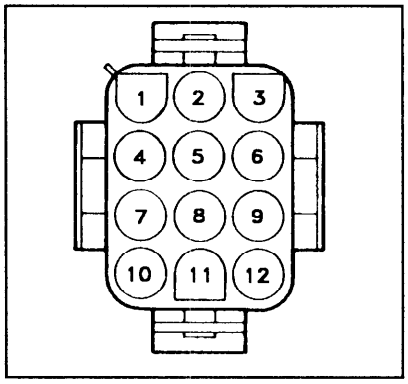

Figure 6.6
Connectors J1 — J5

Problem	Possible Reason	Corrective Action	Refer to
9. Hose alone not heating; yellow LED off, red LED on	Failed hose To check (Figure 6.5, connectors J1A " J5A): (a) Disconnect hose plug (nonheating hose) from applicator (b) Abnormal resistance reading (power off!) between hose plug pins 8 and 9 (RTD) at appropriate connector J1A - J5A Normal = 133 ohms at 70F (21C) to 309 ohms at 400F (205C)	Replace hose	
	Failed circuit board To check: Normal resistance reading (power off!) between hose plug pins 8 and 9 (J1A - J5A as above) AND (a) Disconnect circuit board plug (nonheating hose) from circuit board (b) Normal resistance reading (power off!) between hose plug pins 8 and 9 (RTD) at appropriate connector J1 - J5 (Figure 6.6, connectors J1 " J5)	Replace circuit board	Section 7
	Failed hose/gun connector assembly To check: Normal resistance reading (power off!) between hose plug pins 8 and 9 (J1 - J5 as above) AND Abnormal resistance reading (power off!) between hose plug pins 8 and 9 (J1 - J5 as above)	Replace hose/gun connector assembly	Section 7, Section 8

Tank, Hose or Gun Fails to Heat or Underheats

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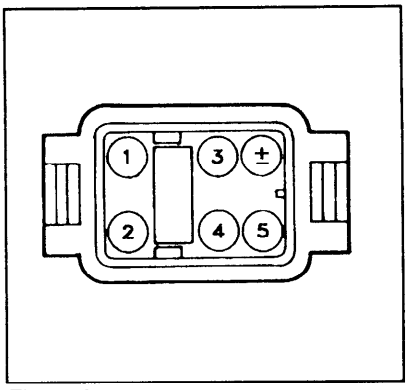


Figure 6.7

Problem	Possible Reason	Corrective Action	Refer to
10. Hose and gun OR Gun alone not heating; yellow LED off, red LED on	Failed hose To check (Figure 6.6): (a) Disconnect hose plug (nonheating gun) from applicator (b) Abnormal resistance reading (power off!) between hose plug pins 3 and 5 (RTD) at connector J1A - J5A Normal = 133 ohms at 70F (21C) to 309 ohms at 400F (205C) AND (a) Disconnect gun plug (nonheating gun) from hose (b) Normal resistance reading (power off!) between hose plug pins 3 and 5 (RTD) at connector J1B - J5B (Figure 6.7)	Replace hose	
	Failed RTD or wiring To check (Figure 6.6): (a) Disconnect hose plug (nonheating gun) from applicator (b) Abnormal resistance reading (power off!) between hose plug pins 3 and 5 (RTD) at connector J1A - J5A Normal = 133 ohms at 70F (21C) to 309 ohms at 400F (205C) AND (a) Disconnect gun plug (nonheating gun) from hose (b) Abnormal resistance reading (power off!) between hose plug pins 3 and 5 (RTD) at connector J1B - J5B (Figure 6.7)	Replace RTD, repair wiring as required	Section 7, Section 6 (wiring diagrams)

Tank, Hose or Gun Fails to Heat or Underheats

(continued)

Problem	Possible Reason	Corrective Action	Refer to
10. Hose and gun OR Gun alone not heating; yellow LED off, red LED on (continued)	Failed circuit board To check (Figure 6.5): (a) Disconnect hose plug (nonheating gun) from applicator (b) Normal resistance reading (power off!) between hose plug pins 3 and 5 (RTD) at connector J1A - J5A Normal = 133 ohms at 70F (21C) to 309 ohms at 400F (205C) AND (a) Disconnect circuit board plug (nonheating hose) from circuit board (b) Normal resistance reading (power off!) between hose plug pins 3 and 5 (RTD) at appropriate connector J1 - J5 (Figure 6.6)	Replace circuit board	Section 7
	Failed hose/gun connector assembly To check: Normal resistance reading (power off!) between hose plug pins 3 and 5 (J1A - J5A as above) AND Abnormal resistance reading (power off!) between hose plug pins 3 and 5 (J1 - J5 as above)	Replace hose/gun connector assembly	Section 7, Section 8

Tank, Hose or Gun Fails to Heat or Underheats

(continued)

Problem	Possible Reason	Corrective Action	Refer to
11. Hose alone not heating; yellow LED on, red LED off	Failed hose To check (Figure 6.5): (a) Disconnect hose plug (nonheating hose) from applicator (b) Abnormal resistance reading (power off!) between hose plug pins 4 and 6 (heater), pins 4 and 7 (heater-to-ground), and pins 6 and 7 (heater-to-ground) at appropriate connector J1A - J5A Normal (pins 4 and 6) = %10% of resistance value listed in Section 9; (pins 4 and 7) >1 megohm; (pins 6 and 7) >1 megohm	Replace hose	
	Failed circuit board To check: Normal resistance reading (power off!) between hose plug pins 4 and 6, 4 and 7 and 6 and 7 (J1A - J5A as above) AND (a) Disconnect circuit board plug (nonheating hose) from circuit board (b) Normal resistance reading (power off!) between hose plug pins 4 and 6, 4 and 7 and 6 and 7 (J1 - J5 as above; Figure 6.6)	Replace circuit board	Section 7
	Failed hose/gun connector assembly To check: Normal resistance reading (power off!) between hose plug pins 4 and 6, 4 and 7 and 6 and 7 (J1A - J5A as above) AND (a) Disconnect circuit board plug (nonheating hose) from circuit board (b) Abnormal resistance reading (power off!) between hose plug pins 4 and 6, 4 and 7 and 6 and 7 (J1 - J5 as above)	Replace hose/gun connector assembly	Section 7, Section 8

Tank, Hose or Gun Fails to Heat or Underheats

(continued)

Problem	Possible Reason	Corrective Action	Refer to
11. Hose and gun OR Gun alone not heating; yellow LED on, red LED off	Failed hose To check (Figure 6.5): (a) Disconnect hose plug (nonheating hose) from applicator (b) Abnormal resistance reading (power off!) between hose plug pins 4 and 6 (heater), pins 4 and 7 (heater-to-ground), and pins 6 and 7 (heater-to-ground) at appropriate connector J1A - J5A Normal (pins 4 and 6) = %10% of resistance value listed in Section 9; (pins 4 and 7) >1 megohm; (pins 6 and 7) >1 megohm AND (a) Disconnect gun plug (nonheating gun) from hose (b) Normal resistance reading (power off!) between hose plug pins 1 and 2 (heater), pins 1 and ground (heater-to-ground), and pins 2 and ground (heater-to-ground) at appropriate connector J1B - J5B (Figure 6.7) Normal (pins 4 and 6) = %10% of resistance value listed in Section 9; (pins 4 and 7) >1 megohm; (pins 6 and 7) >1 megohm	Replace hose	
	Failed heater or wiring To check: (a) Disconnect hose plug (nonheating gun) from applicator (b) Abnormal resistance reading (power off!) between hose plug pins 4 and 6 (heater), pins 4 and 7 (heater-to-ground), and pins 6 and 7 (heater-to-ground) at appropriate connector J1A - J5A as above AND (a) Disconnect gun plug (nonheating gun) from hose (b) Abnormal resistance reading (power off!) between hose plug pins 1 and 2 (heater), pins 1 and ground (heater-to-ground), and pins 2 and ground (heater-to-ground) at appropriate connector J1B - J5B (Figure 6.7) as above	Replace heater, repair wiring as required	Section 7, Section 6 (wiring diagrams)

Tank, Hose or Gun Fails to Heat or Underheats

(continued)

Problem	Possible Reason	Corrective Action	Refer to
12. Hose and gun OR Gun alone not heating; yellow LED on, red LED off (continued)	Failed circuit board To check (Figure 6.5): (a) Disconnect hose plug (nonheating gun) from applicator (b) Normal resistance reading (power off!) between hose plug pins 4 and 6 (heater), pins 4 and 7 (heater-to-ground), and pins 6 and 7 (heater-to-ground) at appropriate connector J1A - J5A Normal (pins 4 and 6) = %10% of resistance value listed in Section 9; (pins 4 and 7) >1 megohm; (pins 6 and 7) >1 megohm AND (a) Disconnect circuit board plug (nonheating hose) from circuit board (b) Normal resistance reading (power off!) between hose plug pins 4 and 6 (heater), pins 4 and 7 (heater-to-ground), and pins 6 and 7 (heater-to-ground) at appropriate connector J1 - J5 (Figure 6.6)	Replace circuit board	Section 7
	Failed hose/gun connector assembly To check: Normal resistance reading (power off!) between hose plug pins 4 and 6 (heater), pins 4 and 7 (heater-to-ground), and pins 6 and 7 (heater-to-ground) at appropriate connector J1A - J5A as above AND (a) Disconnect circuit board plug (nonheating hose) from circuit board (b) Abnormal resistance reading (power off!) between hose plug pins 4 and 6 (heater), pins 4 and 7 (heater-to-ground), and pins 6 and 7 (heater-to-ground) at appropriate connector J1 - J5 as above	Replace hose/gun connector assembly	Section 7, Section 8

Hot Melt Material Application Problems

Problem	Possible Reason	Corrective Action	Refer to
Adhesive Spitting on Extrusion	Adhesive output exceeds maximum continuous delivery rate of system	Reduce output to maximum of 10 lbs/hr (4.5 kg/hr)	
	Hydraulic pressure set below recommended minimum hydraulic pressure	Increase hydraulic pressure to at least 300 psi (20 bar)	Section 4
	Adhesive in tank is cold or tank is low or empty and pump is drawing in air	If adhesive is cold, either increase tank setpoint, or complete *Tank, Hose or Gun Fails to Heat or Underheats* troubleshooting procedure in this Section; if tank is low, refill as required.	Section 4, Section 6
Waviness in bead deposit	Hot melt material in system is too cold	Increase setpoints to appropriate level	Section 4
	Ambient temperature below 32F (0C)	Increase ambient temperature	
	Gun nozzles exposed to draft	Prevent draft	
	Rated gun temperature too low	Set gun temperature to appropriate level	Section 4
	Nozzle distance from substrate too large	Set distance to 0.50 in. (13 mm)	
Excessive hot melt material at beginning of bead	Nozzle distance from substrate too large	Set distance to 0.50 in. (13 mm)	Section 4
	Partially clogged nozzle	Clean nozzle	Section 5
	Insufficient air pressure to gun	Increase air pressure	
	Pump hydraulic pressure too high	Lower hydraulic pressure as required	Section 4
	Nozzle too large, resulting in excessive instantaneous delivery rate	Use proper nozzle size	
Excessive Adhesive at End of Bead	Hydraulic pressure too low	Increase hydraulic pressure as required	Section 4
	Adhesive too cold	Raise channel setpoints as required	Section 4
	Insufficient air pressure to gun	Increase air pressure to gun as required	Section 4

Hot Melt Material Application Problems

(continued)

Problem	Possible Reason	Corrective Action	Refer to
Adhesive Stringing at Cut-Off	Nozzle positioned too far from substrate	Reposition nozzle closer to substrate (recommended distance is 0.50 in./13 mm from substrate)	Section 4
	Adhesive too viscous	Increase temperature slightly, or change to compatible adhesive with lower viscosity	Section 4
	Cold adhesive	Raise channel setpoints as required	Section 4
	Gun speed too slow	Use a faster-acting gun, use an air-piloted relay valve between solenoid and gun, or reduce distance between solenoid and gun	Section 4
	Adhesive too old	Flush system and refill with fresh adhesive	Section 5
	Gun temperature too low	Increase gun temperature as required	Section 4
Adhesive Drooling from Gun	Spring tension of gun too low	Readjust gun spring tension as required.	Gun manual (all versions)
	Ball or needle and/or seat of gun module worn or partially clogged by char	Clean or replace gun module	
Unequal Deposits Between Nozzles in Multi-Module Installation	Different nozzle sizes	Use same size nozzles	Gun manual (all versions)
	Unequal spring tension or improper needle lift adjustment in zero-cavity guns	Adjust modules	
	Nozzle clogged or damaged	Clean or replace nozzle	
	Foreign material in gun module	Rebuild or replace module	
	Insufficient and/or unequal air pressure to guns	Adjust as required	
	Hydraulic pressure not equal at guns	Compensate for difference by using different nozzle sizes or adjusting gun travel	
	Debris or slight imperfections in nozzles	Clean or replace nozzles	
	Adhesive in air motor section of module	Rebuild or replace module	

Hot Melt Material Application Problems

(continued)

Problem	Possible Reason	Corrective Action	Refer to
Adhesive Bouncing or Splashing from Substrate	Adhesive too hot	Decrease channel setpoints as required	Section 4
	Hydraulic pressure too high	Decrease hydraulic pressure as required	Section 4
	Adhesive viscosity too low	Decrease temperature slightly, or change to compatible adhesive with lower viscosity	Section 4
	Nozzle diameter too small	Change to a larger diameter nozzle	
Adhesive Not Penetrating Substrate	Adhesive not hot enough	Increase channel setpoints slightly	Section 4
	Special coating on substrate	Increase channel setpoints slightly. If condition persists, check with adhesive manufacturer for compatible adhesive	Section 4
	Not enough adhesive being applied	Use higher flow-rated nozzle, increase temperature slightly, or increase hydraulic pressure	
	Adhesive viscosity too high	Increase temperature slightly, or change to compatible adhesive with lower viscosity	Section 4

Hot Melt Material Application Problems

(continued)

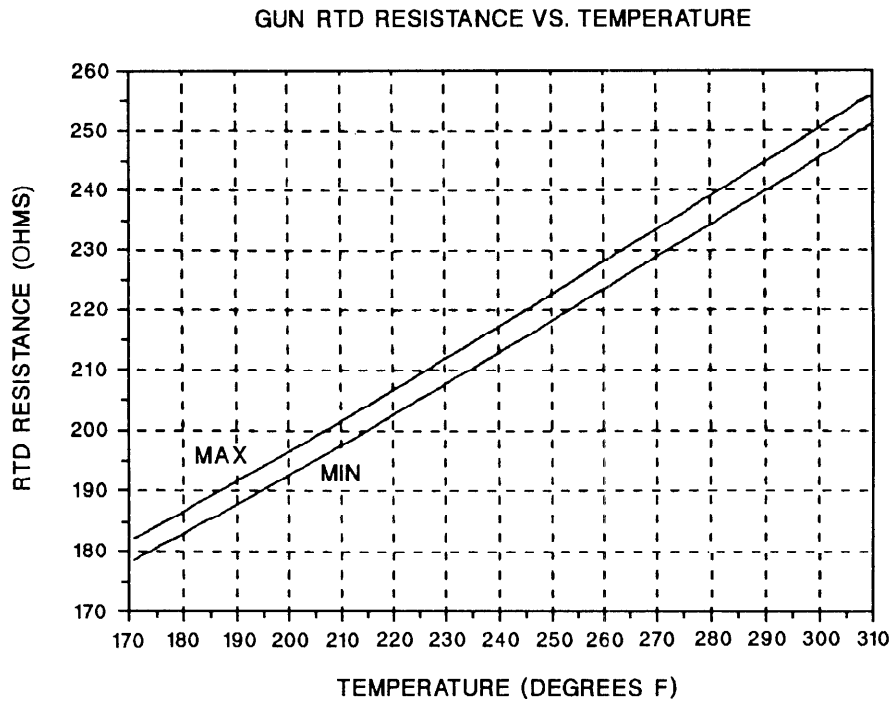
Problem	Possible Reason	Corrective Action	Refer to
Container Pops Open After Leaving Compression Section	Adhesive not cooling fast enough	**(Any or all)** Decrease bead size, decrease adhesive temperature slightly, increase distance between nozzle and substrate, increase distance between bead deposit and bead compression, increase length of compression section, reduce line speed through compression section, cool the substrate, use a lower flow-rated nozzle, or use stitched bead pattern	
	Open time of adhesive too long	Use an adhesive with a shorter open time, or reduce application temperature slightly	
	Adhesive cooling too fast	**(Any or all)** Increase bead size, increase adhesive temperature slightly, decrease distance between nozzle and substrate, shorten distance between bead deposit and bead compression, heat the substrate, use a higher flow-rated nozzle, increase bead length and avoid stitched bead pattern, or protect bead deposit and/or gun from cold or moving air	
	Open time of adhesive too short	Use an adhesive with a longer open time, or increase application temperature slightly	
	Shearing of adhesive deposit	Check for twisting, compression/relaxing/more compression or other adverse movement in the compression section. If movement through compression section is smooth, check with adhesive manufacturer	
	Insufficient compression force	Increase compression force as required	
	Insufficient hot tack	Change to new batch or different formulation of adhesive	

Hot Melt Material Application Problems

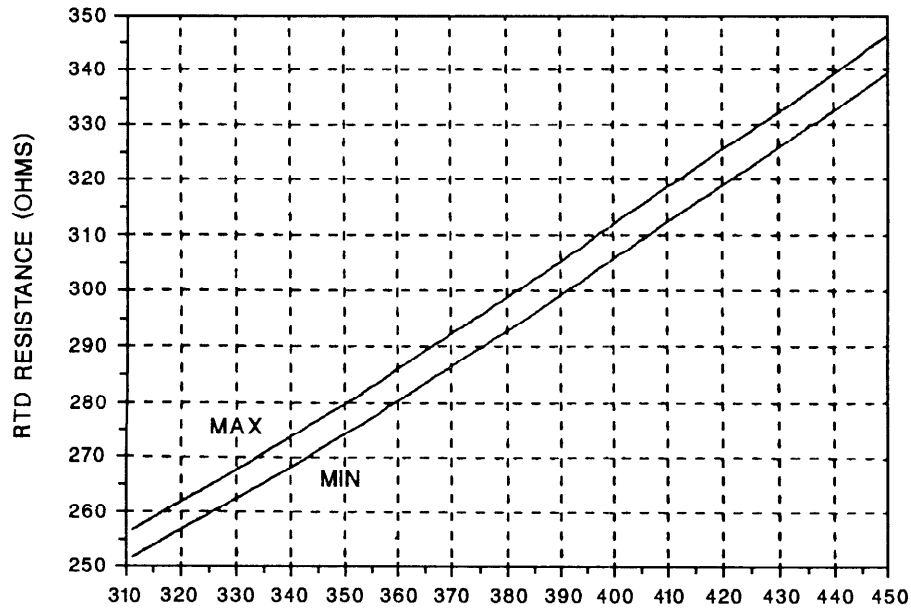
(continued)

Problem	Possible Reason	Corrective Action	Refer to
Gelling of Adhesive	System not properly flushed before changing to an incompatible adhesive	Attempt to pump remaining adhesive from system, then properly flush system; refill with fresh adhesive	
	Type R solvent used to flush a system which was operating with Polyamide, Surlyn, Polyester or certain other high performance hot melt materials	Attempt to pump remaining adhesive from system, then properly flush system. See Section 9 of this manual on Type R solvent for recommendations on choosing a compatible solvent	
	Adhesive heated for too long	Do not heat adhesive longer than recommended pot life of adhesive. Use system STANDBY mode during prolonged hold situations	
	Adhesive heated at too high a temperature	Reduce temperature or consult with adhesive manufacturer about recommended adhesive temperature range	
Adhesive Charring in System	Temperature setpoints too high	Lower setpoints as required	Section 4
	Zone overheats	Complete troubleshooting procedure for overheating channel as required	
	Adhesive level kept too low	Keep tank at least one-half full of adhesive	
	Adhesive oxidizing in tank	Keep tank lid closed during operation. If problem persists, change the adhesive or switch to an applicator with a nitrogen blanket	
	System maintained at operating temperature with no delivery	Reduce channel temperatures during prolonged hold situations	
Adhesive Fuming or Smoking	Temperature setpoints too high	Lower setpoints as required	Section 4
	Use of unstable adhesive	Change adhesives	

Graphs of Nickel RTD Resistance Values



RANGE: 170-310 DEGREES F

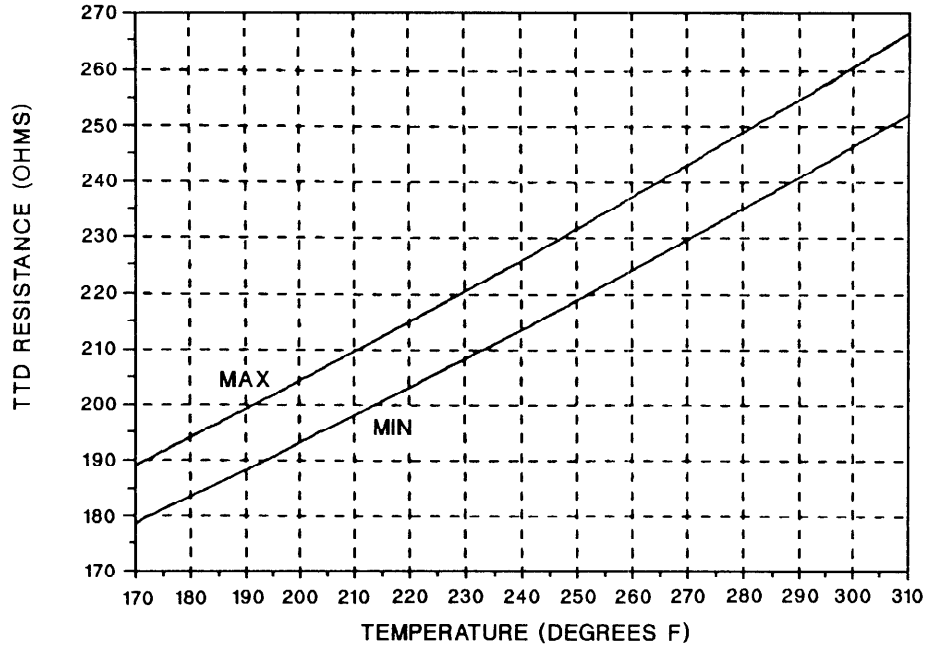


RANGE: 310-450 DEGREES F

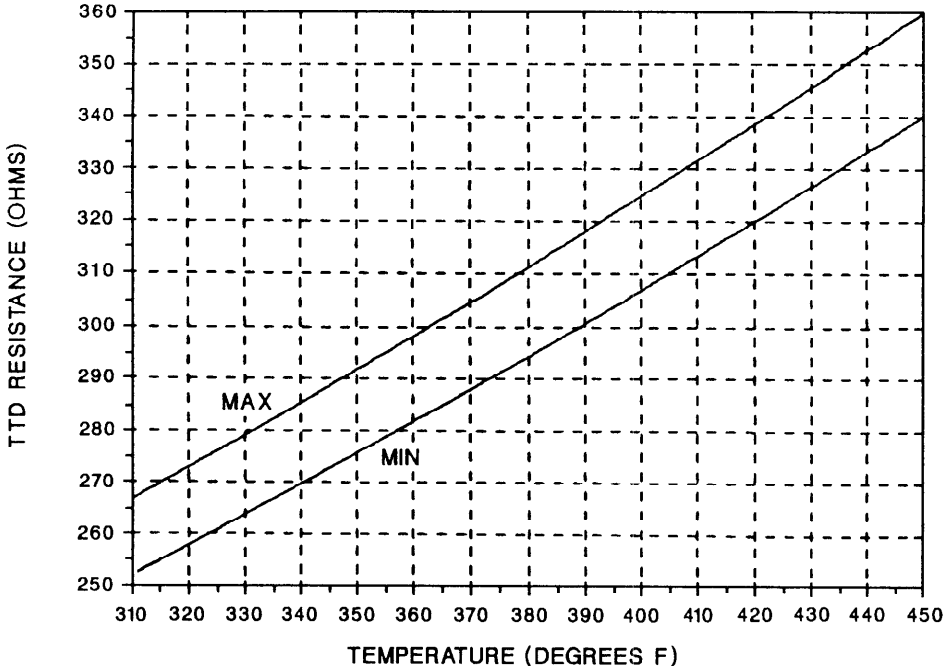
Graphs of Nickel RTD Resistance Values

(Continued)

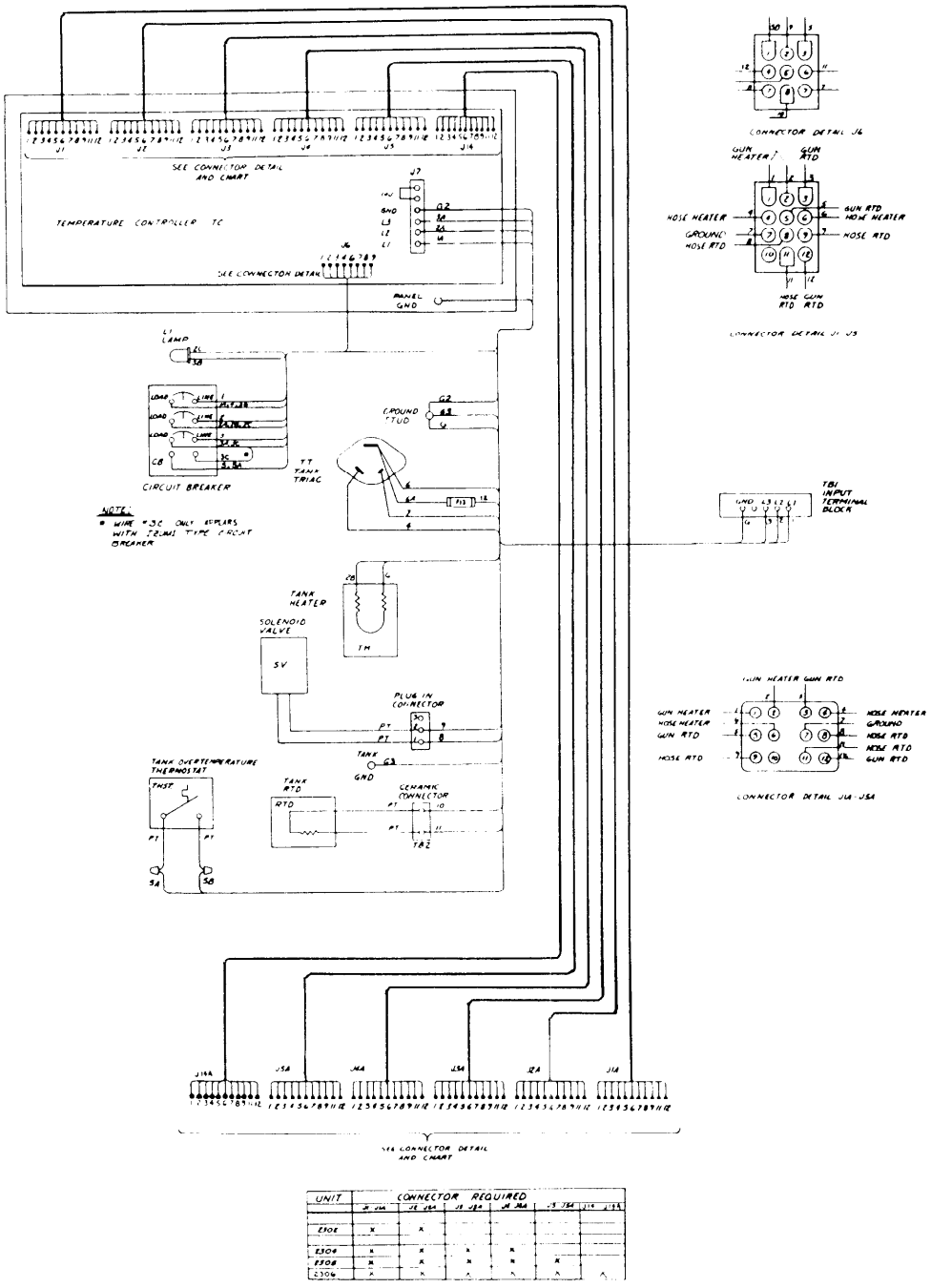
HOSE TTD RESISTANCE VS. TEMPERATURE



RANGE: 170-310 DEGREES F

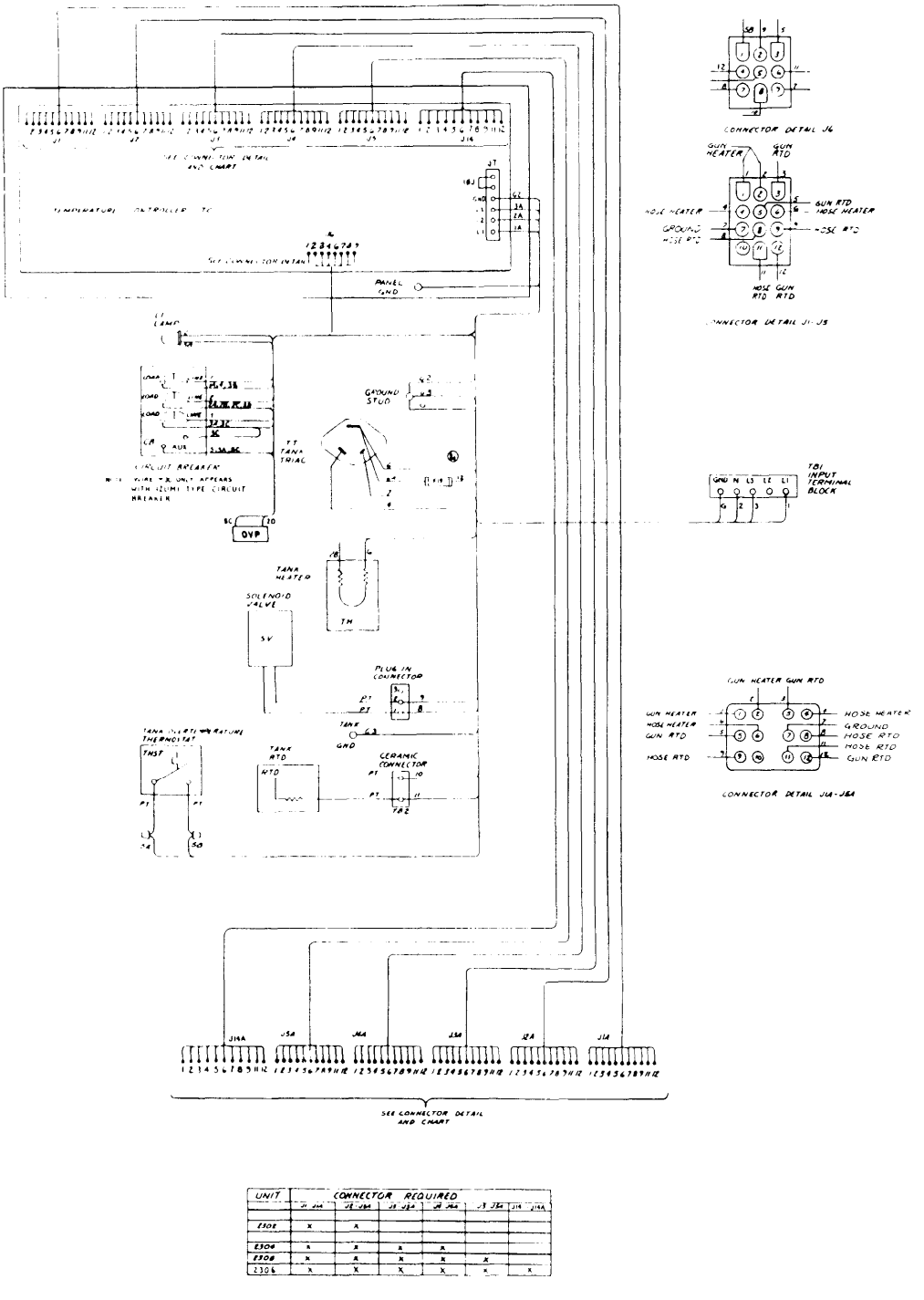


RANGE: 310-450 DEGREES F



UNIT	CONNECTOR REQUIRED						
	J1 J3A	J2 J4A	J3 J5A	J4 J6A	J5 J7A	J14	J15A
E10E	X	X					
E30E	X	X	X	X			
E30B	X	X	X	X	X		
E30C	X	X	X	X	X	X	X

Figure 6.8 — Wiring Diagram - 200/230 VAC Units



UNIT	CONNECTOR REQUIRED					
	J1-J1A	J2-J2A	J3-J3A	J4-J4A	J5-J5A	J6-J6A
E502	X	X				
E504	X	X	X	X		
E508	X	X	X	X	X	
E506	X	X	X	X	X	X

Figure 6.9 — Wiring Diagram - 380-Y VAC Units

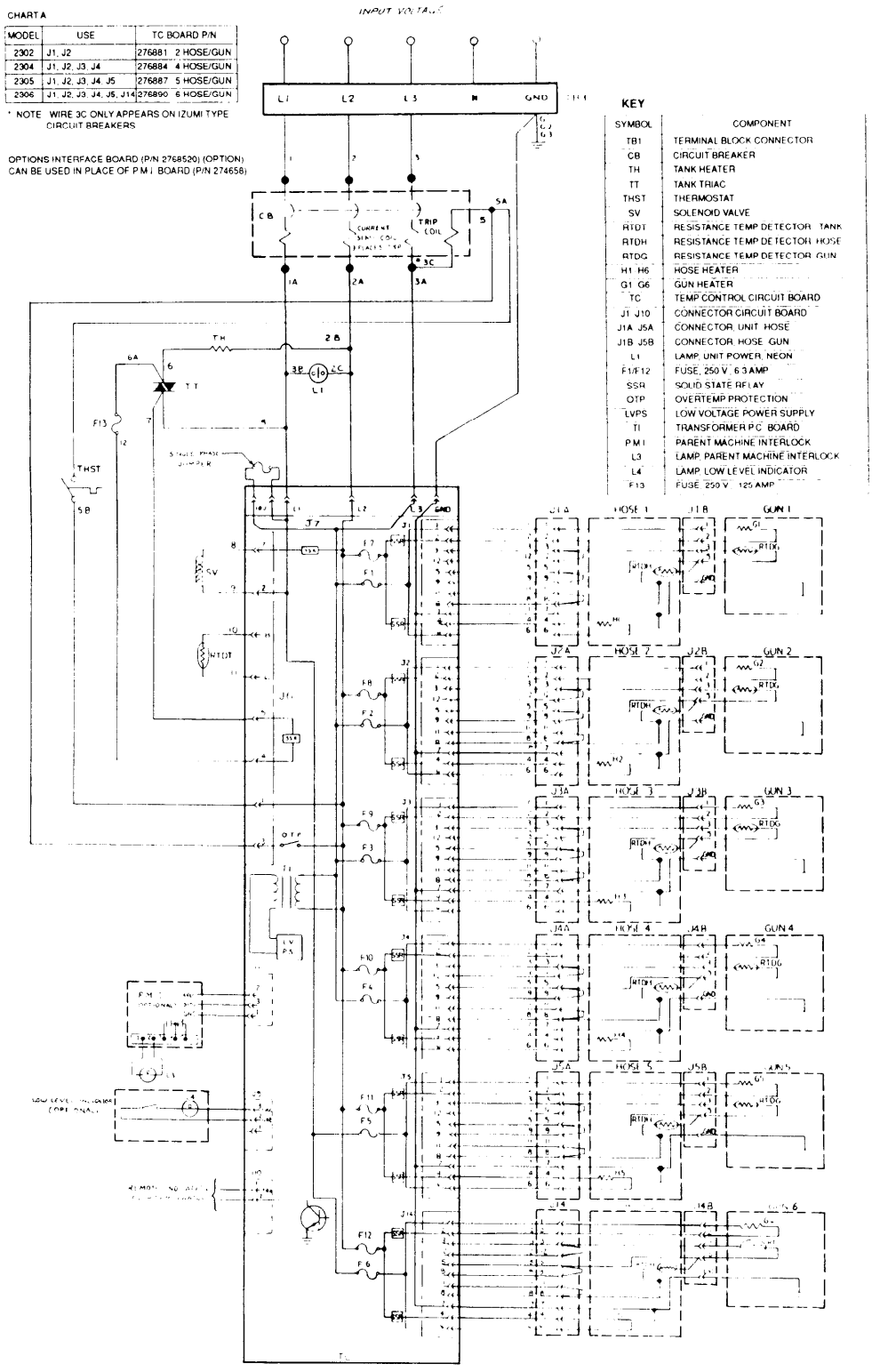


Figure 6.10 — Schematic - 200/230 VAC Units

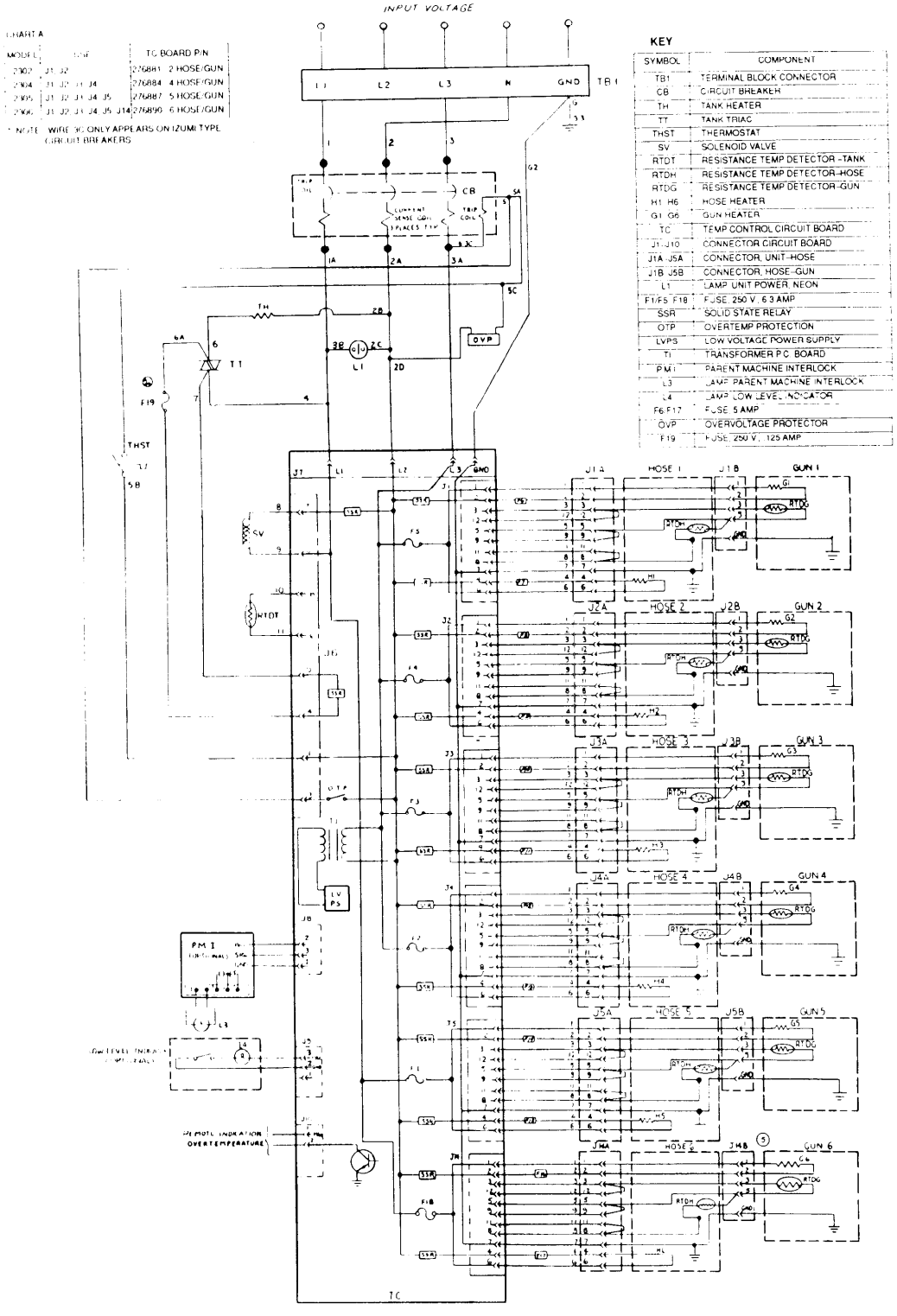


Figure 6.11 — Schematic - 380-Y VAC Units

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SECTION 7

SECTION 7

Disassembly and Repair

List of Illustrations

List of Illustrations *(continued)*

Section 7
Disassembly and Repair

1.Introduction

Section 7 contains instructions for repairing or replacing various parts of the Series 2300 Applicator system. The instructions describe how to disassemble, repair or replace, and reassemble system components.

WARNING: Allow only qualified personnel to perform repair on this equipment. Observe the safety instructions in Section 1. Failure to do so may result oin equipment damage, personal injury or death.

2. Repair of applicator (mechanical)

Preparation for repairs on hydraulic system

If the pump is operable, flush the system before disassembly. If the pump is not operable, but the heating system is functional, heat the applicator to operating temperature to ease disassembly. Otherwise, a heat gun or other flameless heating device must be used to melt solidified material in or on system components.

Replacement of o-rings on hose connectors and o-ring plugs

The O-rings on the hose connectors and o-ring plugs on the applicator manifold and gun service blocks should be replaced whenever there is evidence of leakage or whenever these fittings are removed.

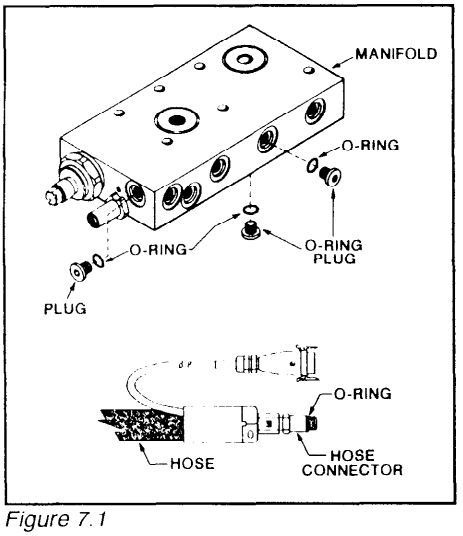

Figure 7.1

Refer to Figure 7.1 for locating the correct O-ring.

NOTE: Use only o-ring P/N 945 032 as a replacement.

1. Remove the hose connector or the o-ring plug from the manifold with a socket wrench.
2. Remove the o-ring on the connector or plug.
3. Be sure that the new o-ring and its groove are clean, then lubricate with **PTFE** paste (P/N 900 236).
4. Stretch the o-ring and carefully roll it over the threads and onto the groove in the hose connector or o-ring plug. Be sure not to stretch the o-ring any more than is necessary for installation.
5. Lubricate the fitting threads with **PTFE** paste (P/N 900 236).
6. Thread the fitting by hand into the threaded port in the manifold or gun service block.
7. Tighten the fitting only enough to seat it (7 to 10 ft-lbs or 10 to 14 N-m of torque), stopping when the body of the metal fitting contacts the manifold or service block
8. Trigger the gun(s) to remove any trapped air, then resume operation.

Pump disassembly and repair

Refer to Figure 7.2 for identification of pump components (enclosure not included).

WARNING: Risk of burns. Wear protective clothing, safety goggles, and safety gloves (P/N 902 514).

1. With the applicator at application temperature, turn the main electrical switch OFF at the applicator. Allow time for the adhesive to cool down but not to solidify.

NOTE: Removing the pump after the adhesive has begun to solidify could damage the o-ring on the crossover tube of the pump.

WARNING: Trigger the gun(s) to relieve all system pressure in order to avoid the release of pressurized molten material.

2. Remove the pump enclosure by removing the screw on top of the housing.

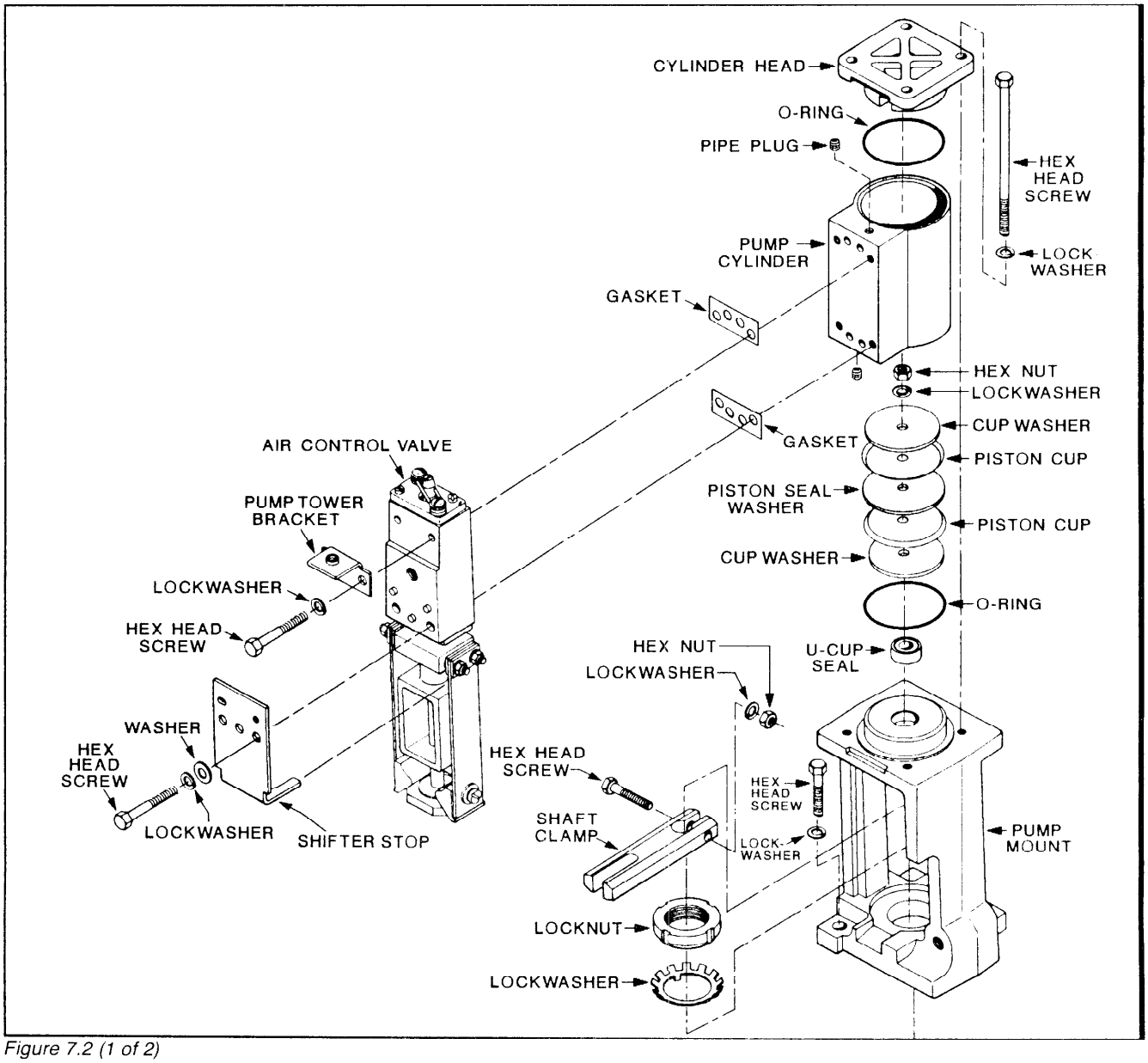

Figure 7.2 (1 of 2)

Pump disassembly and repair

(continued0

3. Set the pump air regulator to zero (0) and shut off a valve upstream of the regulator in the air supply line.
4. Remove the air regulator from the pump mount.
5. Disconnect the solenoid valve electrical plug from its receptacle.
6. Remove the three hex head screws and washers that secure the pump and pump mount to the applicator.

WARNING: Molten material will flow from the pump inlet, outlet, and bleed hole.

7. Rotate the pump slightly in a circular motion to the break suction and then pull it straight up to disengage the crossover tube from the manifold. Take it to a convenient location for further disassembly.
8. Remove the airline connecting the solenoid valve and the base of the pump mount.
9. Remove the air control valve by removing the four hex heads screws and lockwashers and the two washers that secure it to the pump cylinder.
10. The two gaskets between the air control valve and the cylinder, the shifter stop and the pump tower bracket will come off at this time also. Inspect the gaskets and replace them if they are damaged.
11. Remove the cylinder head from the pump cylinder by removing the four hex head screws and lockwashers that secure it to the pump mount.
12. Check the o-ring on the cylinder head for any deformities or foreign particles. Replace the o-ring if necessary.
13. Hold the shaft of the piston with a wrench (a wrench flat is provided on the shaft) and remove the hex nut and lockwasher at the top of the piston shaft.
14. Remove the two piston cup washers, the two piston cups and the piston seal washer from the pump shaft.
15. Inspect the cups and the seal washer for damage and for any metallic residue. Clean or replace them if necessary.
16. Loosen the nut on the hex head screw that secures the shaft clamp to the pump shaft. Slide the shaft clamp up the shaft.
17. Using a screwdriver, straighten the lock tab on the tab lockwasher that keeps the locking nut from turning. Loosen the locking nut and slide it and the tab lockwasher away from the pump body.
18. Pull the pump body away from the pump mount. Set the shaft clamp, the locking nut and the tab lockwasher aside.
19. Inspect the u-cup seal and the o-ring in the upper face of the pump mount. Replace them if they show evidence of damage or wear.
20. Using a retaining ring tool, remove the retaining ring at the top of the pump body.
21. Manually stroke the pump shaft up and down to loosen the pump seal and washer and remove them. It may be necessary to apply a flameless source of heat to remove these parts. Inspect the seal and replace it if necessary.

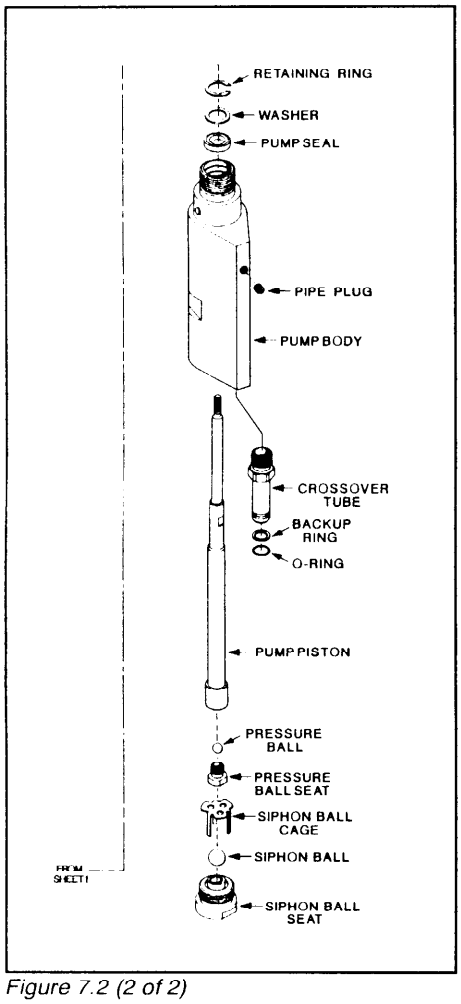

Figure 7.2 (2 of 2)

Pump disassembly and repair
(continued0

22. Secure the pump body with either a jawless vise or a 16-inch-handle adjustable wrench on the wrench slots. Remove the crossover tube; then use a large wrench to unscrew the siphon ball seat from the pump body.
23. Pull the siphon ball and its cage from the bottom of the pump body. If there is cold adhesive in the pump, it may be necessary to use a source of flameless heat to soften the adhesive.

NOTE: Avoid scratching the pump piston or the inside of the pump body during disassembly and repair of pump. Surface scratches on these parts may cause excessive leakage during operation.

24. Carefully pull the piston out of the pump body.
25. Remove the pressure ball seat and the pressure ball from the piston by unscrewing the seat from the piston.
26. With the pump now fully disassembled, inspect both the pressure and the siphon balls and their seats for wear or damage. Inspect the o-ring on the crossover tube. Replace them if necessary.
27. Clean all components of the hydraulic section by heating them in a container of Type R solvent to the melting point of the adhesive.

NOTE: Alternate heating and cleaning methods include:

a. Heat the components with a flameless electric heat gun. Wipe them with a clean cloth.

b. Or, submerge the components in an ultrasonic cleaner.

WARNING: Do not clean any component of a pressurized fluid system in halogenated hydrocarbon solvents. See the Safety Summary, Section 1, for further details. Using a halogenated hydrocarbon solvent could cause an explosion.

c. Or, submerge the components in an appropriate chemical cleaner.

Pump assembly

NOTE: Read the instructions and notes in this procedure carefully. The positioning and alignment of certain parts in this assembly are critical to satisfactory performance of the pump. Refer to Figure 7.2 for identification of parts.

1. After putting the pressure ball into the plunger of the piston, screw the pressure ball seat onto the piston. Torque the seat 50-60 ft-lbs (68-81 N-m).
2. Carefully insert the piston into the pump body, taking care not to scratch the surfaces of these parts.
3. Put the siphon ball onto the siphon ball seat. Attach the siphon ball cage to the seat. If the cage does not fit securely, so that the assembly can be turned upside down without the cage falling off, bend the legs of the cage slightly inward by hand and then reattach it.
4. Apply Loctite adhesive (P/N 900 419) to the threads of the seat and screw it into the pump body. Use either a jawless vise or a 16-inch adjustable wrench to secure the pump body.
5. With the o-ring and backup ring assembled onto the crossover tube, apply **PTFE** paste to the threads of the tube and screw it onto the pump body. Torque it 140-160 ft-lbs (190-217 N-m).
6. Lubricate the seat with Parker lubricant (P/N 900 223) and pull the shaft up from the top of the pump body. Insert the seal into the body with the groove in the seal facing down. Put the washer on the shaft and slide the shaft down to help guide the washer and seal into place.

NOTE: Remove all adhesive from the seal cavity and the retaining ring groove in the pump body before installing this seal.

7. Using a retaining ring tool, snap the retaining ring into place.
8. Guide the upper part of the pump body and the piston shaft through the bottom hole in the pump mount. The shaft must be inserted through three parts before it passes through the top hole in the mount. From bottom to top, these are the lockwasher, the locknut, and the shaft clamp (see Figure 7.2, part 1 of 2).

NOTE: The two prongs on the shaft clamp must be positioned so that they are pointing towards the shifter and spring assembly when the mount is attached to the applicator.

9. Secure the pump body to the pump mount with the locking nut, but do not tighten the locking nut at this time. The pump body should be loose enough that it can still be rotated. The tab lockwasher should still be loose.
10. Insert the u-cup seal into the upper face of the pump mount with the groove facing up.
11. Insert the O-ring into the upper face of the pump mount.

Pump assembly
(continued)

12. Pull the piston shaft up as far as possible and install the two piston cup washers, the two piston cups, and the piston seal washer onto the shaft in the proper order, making sure that they are free of foreign particles.

NOTE: The curved edges of the lower piston cup should be pointing down; the curved edges of the upper piston cup should be pointing up.

13. Holding the piston with a wrench at the wrench flats, replace the hex nut and lockwasher. Torque the hex nut to 100-120 in.-lbs (11-14 N-m).

14. Roll the O-ring into place on the cylinder head.

15. Place the cylinder on the pump mount with the mating face for the air valve positioned as shown in Figure 7.3. The cylinder should be aligned as shown in Figure 7.4.

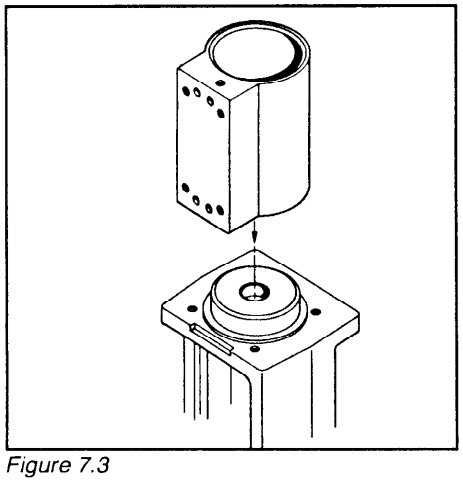

Figure 7.3

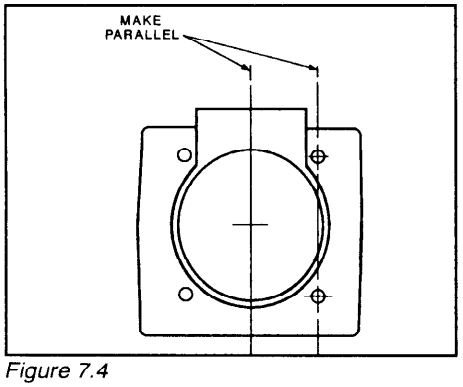

Figure 7.4

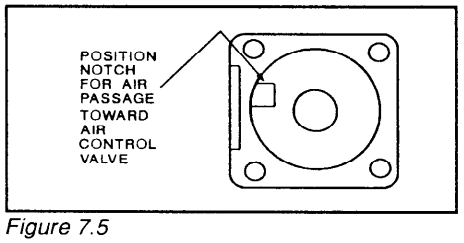

Figure 7.5

16. Attach the cylinder head with the four hex head screws and lockwashers. Torque the screws 45-55 in.-lbs (5-6 N-m).

NOTE: The notch in the cylinder head, which serves as an air passage, must face toward the air valve. This notch is identified in Figure 7.5.

Pump assembly
(continued)

17. With the two gaskets, the pump tower bracket and shifter stop in place, attach the air control valve assembly and shifter spring assembly to the air cylinder with the four hex screws, four lockwashers and two washers as shown in Figure 7.2, part 1 of 2. Torque the screws to 100-120 in.-lbs (11-14 N-m).

NOTE: Make sure that the gaskets are not kinked or torn. Kinked or torn gaskets could cause air leakage.

NOTE: The valve and attached shifter should be visually aligned with the pump piston.

NOTE: The bottom of the shifter stop goes under the top part of the shifter.

18. Torque the hex nut on the shaft clamp to 100-120 in.-lbs (11-14 N-m).

NOTE: The shaft clamp should be seated on the shoulder of the piston.

19. Replace the air line connecting the solenoid valve and the base of the pump mount.

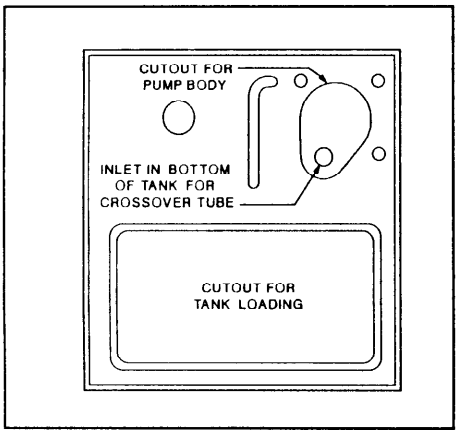

Figure 7.6

20. Pick up the pump solenoid assembly and carefully position the crossover tube of the pump into the inlet port of the manifold. Rotate the pump mount until the bolt holes for the three hex head screws line up correctly. The appropriate position of the pump body in relation to the tank walls can be determined from the cutout on the tank cover (see Figure 7.6).
21. Replace the three hex head screws and washer that secure the pump and solenoid assembly to the applicator. Torque the screws to 15-17 ft-lbs (20-23 N-m).
22. Tighten the locking nut. Lock it in place by bending one tab of the tab lockwasher into one of the slots of the locking nut.
23. Reconnect the electrical plug on the solenoid to its receptacle.
24. Attach the air regulator to the pump mount, using **PTFE** paste (P/N 900 236) on the threads of the pipe nipple.
25. Connect the air regulator to the air supply line and open the shutoff valve in the supply line.
26. Replace the tank enclosure and install the screw which secures it.
27. Resume operation by triggering the gun(s) to remove air trapped in the system, then reapply power and resume normal system operation.

Air control valve repair or replacement

NOTE: Because of the danger of bending the shifter rod, it is not recommended to do any repair on the air control valve except replacement of the poppet seats. Even a small bend in the shifter rod will cause the shifter to malfunction.

Replace Top Poppet Seat

To replace the top poppet seat, perform the following steps while refering to Figure 7.7.

WARNING: Risk of burns. Wear protective clothing, safety goggles, and safety gloves (P/N 902 514).

1. Turn the main electrical switch OFF at the applicator. Allow the unit to cool down.
2. Set the pump air pressure to zero (0).

WARNING: To avoid the spraying of molten material, trigger the gun(s) to relieve the system of all pressurized molten material.

3. Remove the tank enclosure by removing the screw on top of the enclosure.
4. Remove the four screws, two spacers, detent pin and detent that secure the poppet seat to the valve. Install a new seat. Torque the screws 20-25 in.-lbs (2-3 N-m).
5. Replace the tank enclosure and resume normal operation.

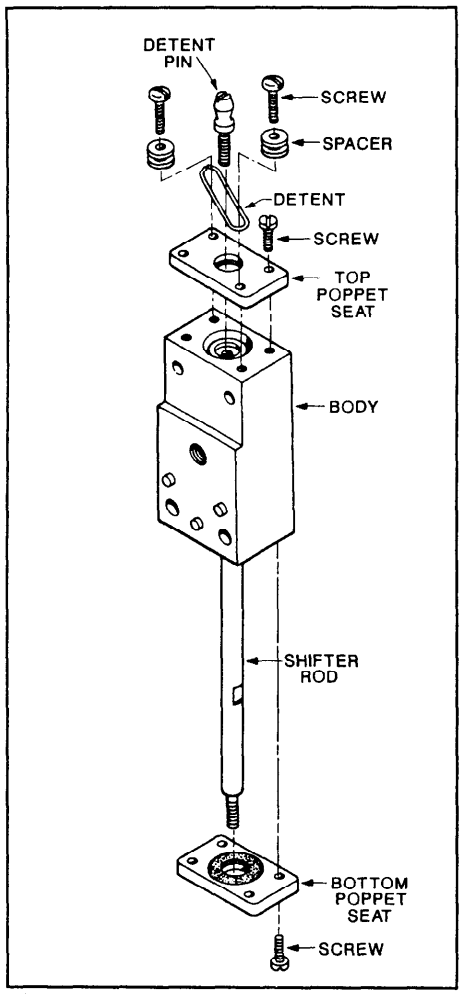

Figure 7.7

Air control valve repair or replacement

(continued)

Replace Bottom Poppet Seat/Valve Assembly

To replace the bottom poppet seat or to replace the entire valve assembly, perform the following steps and refer to Figures 7.8, 7.9, and 7.10.

WARNING: Risk of burns. Wear protective clothing, safety goggles, and safety gloves (P/N 902 514).

1. Turn the main electrical switch OFF at the applicator. Allow the unit to cool down.
2. Set the pump air pressure to zero (0).

WARNING: To avoid the spraying of molten material, trigger the gun(s) to relieve the system of all pressurized molten material.

2. Set the pump air pressure to zero.
3. Remove the tank enclosure by removing the screw on top of the enclosure.
4. Separate the solenoid valve electrical plug from its receptacle.
5. Disconnect one end of the air line running between the solenoid valve and the base of the pump mount (see Figure 7.8).

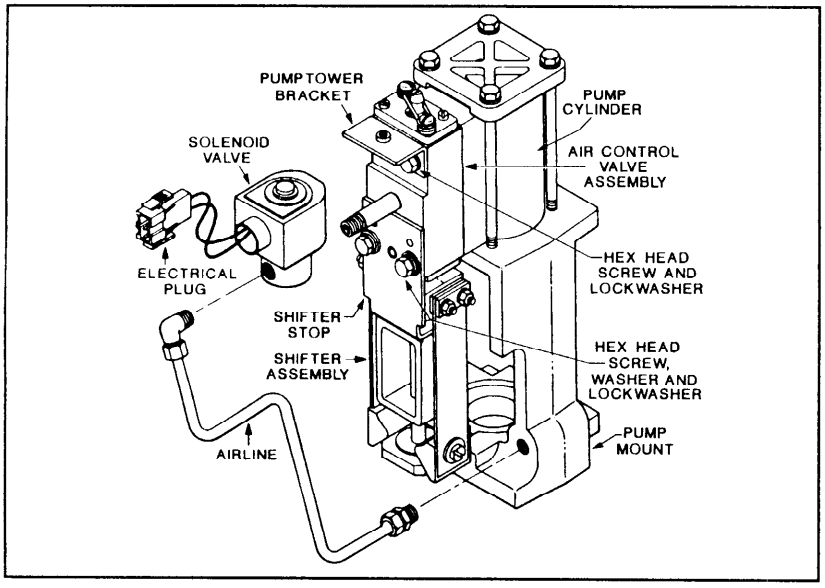

Figure 7.8

6. (Figure 7.2, part 1 of 2; also Figure 7.8) Remove the four hex head screws, the two washers and four lock- washers that secure the air control valve to the air cylinder of the pump. The pump tower bracket, the shifter stop and the valve gaskets will also come off at this time.

Air control valve repair or replacement
(continued)

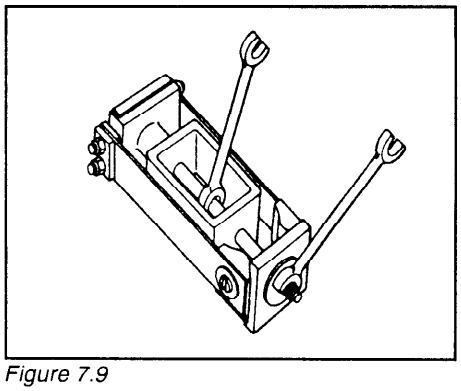

Figure 7.9

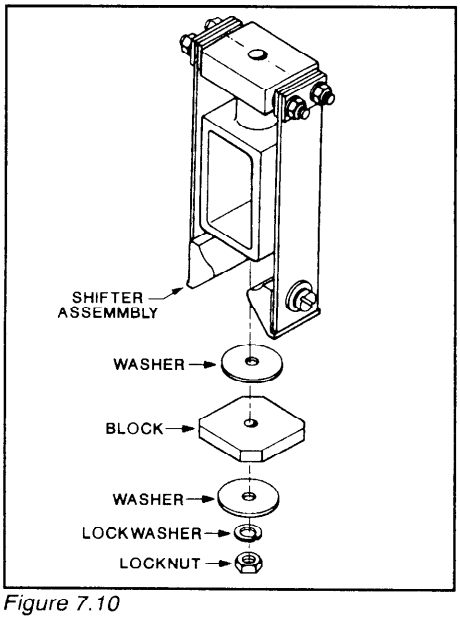

Figure 7.10
Details.

7. Refer to Figure 7.9 and use a wrench on the shifter rod flats to remove the locknut and lockwasher at the bottom of the shifter assembly (see Figure 7.10).

8. The two large washers the spring shifter block and the shifter assembly can now be removed and set aside.

NOTE: The entire air control valve may be replaced at this point by removing the solenoid valve (Figure 8.7, item 2) and attaching it to a new air control valve. After this procedure is complete, proceed to step 11.

9. Remove the poppet seat by removing the four screws that secure it to the air control valve.

10. Install a new poppet seat on the air control valve and secure with the four screws previously removed. Torque the screws 20-25 in.-lbs (2-3 N-m).

11. Slide the shifter assembly onto the shifter rod (see Figure 7.7) and follow it with the two washers, the shifter block, the lockwasher, and the locknut in the order shown at Figure 7.10.

12. Using a wrench on the wrench slots in the shifter rod (see Figure 7.9) torque the locknut 45-50 in.-lbs (5-6 N-m).

13. With the two gaskets, the pump tower bracket, and the shifter stop in place, attach the air control valve assembly/shifter assembly to the air cylinder with four hex head screws, four lockwasher and two washers (see Figure 7.2, part 1 of 2; also Figure 7.8). Torque the screw 100-120 in.-lbs (11-14 N-m).

NOTE: Make sure that the gaskets are not kinked or torn. Kinked or torn gaskets could cause air leakage.

NOTE: The valve and attached shifter should be visually aligned with the piston pump shaft.

NOTE: The bottom of the shifter stop goes under the top part of the shifter.

14. Reconnect the air line running between the solenoid valve and the base of the pump mount.

15. Connect the electrical plug of the solenoid valve to its receptacle.

16. Replace the pump enclosure and tighten its securing screw on top.

17. Resume operation.

Shifter and spring assembly replacement

It is not recommended to repair or replace parts on the shifter and spring assembly. The alignment of parts in this assembly is critical to proper performance of the pump.

The entire assembly may be replaced by following steps 1 through 8 and 11 through 17 within the procedure *Replace Bottom Poppet Seat/Valve Assembly of the Air Control Valve*.

Drain valve o-ring replacement

The drain valve O-ring should be replaced whenever there is leakage at the manifold connection.

WARNING: Risk of burns. Wear protective clothing, safety goggles, and safety gloves (P/N 902 514).

1. Turn the main electrical switch OFF at the applicator.
2. Set the pump air pressure to zero (0).
3. Trigger the gun(s) until the system has been relieved of all pressurized molten material.

WARNING: Before performing the next step, be sure that all system pressure has been relieved to avoid the spraying of molten material.

4. Open the drain valve over a suitable container and drain the manifold.
5. Remove the positioning screw and lockwasher (see Figure 7.11).
6. Use a deep-end socket wrench to remove the drain valve from the manifold.
7. Remove the o-ring and the backup ring from their groove in the valve.

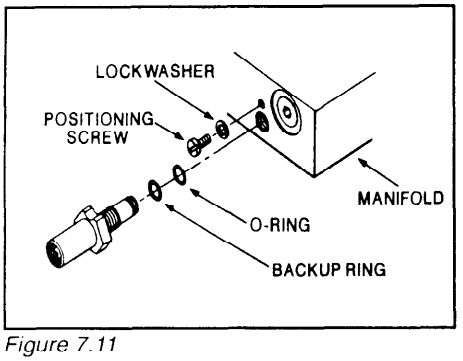

Figure 7.11

NOTE: The o-ring and backup ring should be replaced any time the valve is removed. Otherwise, leakage may occur at the manifold connection.

NOTE: Clean the valve if it is charred. Use a retaining ring tool to remove the retaining ring. Clean the valve body, the ring, the ball, and the ball tip. Use the procedures described in Section 4 under *Nozzle Cleaning*. Reassemble the valve with a new o-ring and backup ring.

8. Install a new O-ring (P/N 940 101) and backup ring (P/N 940 105) according to the following procedure:
   a. Make sure that the groove in the valve is free of foreign material.
   b. Inspect the new O-ring and backup ring for nicks and foreign material.
   c. Install the backup ring in the groove and push it to the side of the groove that is nearest the threads of the valve (see Figure 7.11).
   d. Lubricate the O-ring with **PTFE** paste.
   e. Carefully roll the O-ring into its groove, taking care not to stretch it any more than necessary.
7. Using the deep-end socket wrench, screw the drain valve into the manifold until it is flush with the surface of the manifold.
8. Back the valve out until the drain port is facing down.

Drain valve o-ring replacement
(continued)

9. With the lockwasher in place, install the positioning screw through the slot in the flat part of the hex nut.

10. Resume operation by triggering the gun(s) to remove any trapped air in the system.

3. Repair of applicator (electrical)

Circuit board replacement

1. Turn the main electrical switch OFF at the applicator and disconnect input line voltage from the applicator.

WARNING: Shock hazard. Disconnect the applicator from input electrical line voltage. Failure to disconnect line voltage from the applicator may result in a serious electrical shock.

2. Remove the electrical cabinet cover by unscrewing the captive screws on top of the cabinet.

3. Disconnect the white circuit board plug from its connector (labelled J6 on the board) in the lower right corner of the circuit board.

4. Disconnect circuit board plug J7 from its receptacle on the circuit board (see Figure 7.12).

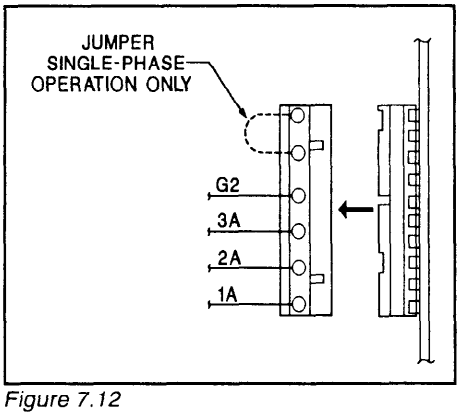

Figure 7.12

5. Disconnect the white circuit board plugs from their connectors along the top of the circuit board. There will be two of these plugs on a Model 2302 Applicator, four on a Model 2304, and five on a Model 2305.

6. Using a long screwdriver, remove the two screws which secure the frame for the circuit board and control panel door to the base of the unit.

7. Rotate the top of the frame away from the unit and down towards the floor. Now the whole frame assembly may be removed from the base.

8. Remove the six screws which secure the circuit board to the frame.

9. Secure the new circuit board to the frame with the six screws removed in step 8.

10. Connect circuit board plug J7 to its receptacle on the circuit board.

11. Holding the frame so that its top is tilted away from applicator, match the slots in the bottom of the frame with the slots in the base of the unit. When the keyed slots interlock, rotate the top of the frame up and towards the unit until it is standing upright.

12. Secure the frame to the base of the unit with the two large screws.

13. Connect the hose electrical plugs to their connectors along the top of the circuit board. Connect the plug labeled 1 to the connector labeled J1 on the circuit board, plug No. 2 to connector J2, and so forth until all plugs are connected.

14. Replace the electrical cabinet enclosure and secure it with the captive screw on top of the cabinet.

15. Reconnect input electrical line voltage to the applicator and resume operation.

Tank triac replacement

1. Turn the main electrical switch OFF at the applicator and disconnect input line voltage from the applicator.

WARNING: Shock hazard. Disconnect the applicator from input electrical line voltage. Failure to disconnect line voltage from the applicator may result in a serious electrical shock.

2. Remove electrical enclosure cover by first removing the captive screw on top of the cabinet.
3. Disconnect the three wires from the tank triac attached to the base of the unit.
4. Remove the two screws that secure the triac to the base unit.
5. Secure the new triac to the base of the unit with the two screws removed in step 4. The orientation of the triac is not important.
6. Connect the three wires to the tank triac in accordance with the following instructions (see Figure 7.13).
7. Locate the smallest of the three prongs on the relay. There will be one narrow prong and two wider ones.
8. Connect wire 7 to the narrow prong.
9. Connect wire 4 to the first prong clockwise (looking down) from the narrow prong.
10. Connect wires 6 and 6A (fastened together in one crimp socket) to the first prong counterclockwise (looking down) from the narrow prong.
11. Replace the electrical cabinet enclosure and secure it with the captive screw on top of the cabinet.
12. Set the temperature controls to the minimum setting.
13. Restore input electrical power to the applicator.
14. Restore the system to operation in accordance with the *Daily Startup* procedure in Section 3.

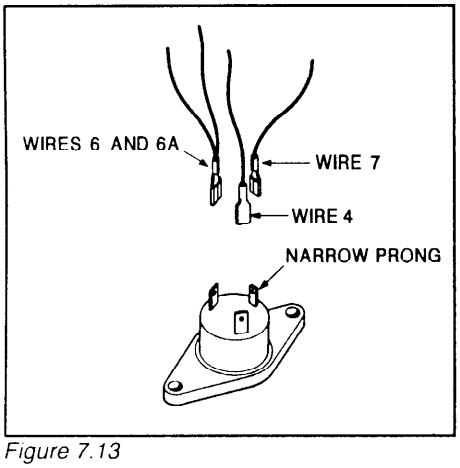

Figure 7.13

Circuit breaker replacement

1. Turn the main electrical switch OFF at the applicator and disconnect input line voltage from the applicator.

WARNING: Shock hazard. Disconnect the applicator from input electrical line voltage. Failure to disconnect line voltage from the applicator may result in a serious electrical shock.

2. Remove the electrical enclosure cover by removing the captive screw on top of the cabinet.
3. To obtain working room, remove the white plugs along the top of the circuit board from their receptacles on the board (there will be two of these on a Model 2302 applicator, four on a Model 2304 and five on a Model 2305).
4. Remove the two screws which secure the control panel frame to the base of the unit. Tilt the circuit board away from the unit until it can be removed from the slots that secure it at the bottom of the board. It can now be pulled away from the circuit breaker area to provide more working room.

NOTE: Do not try to remove it entirely from the applicator because it is still connected by several wires.

5. Remove the screws which secure the circuit breaker assembly to the base of the applicator.
6. Pull the circuit breaker and the attached faceplate away from the base. Remove all the wires at the six screw-type terminals and from the one push-on terminal.
7. Remove the two screws that secure the faceplate to the breaker, then remove the faceplate.
8. Attach the faceplate to the new circuit breaker with the two screws removed in step 7.
9. Attach the wires removed in Step 6 to the new circuit breaker in accordance with the wiring diagram in Section 6. The line wires connect to the top terminals and the load wires connect to the bottom terminals. (Refer to Section 6 *Table of Contents* for the correct wiring diagram.)

NOTE: Take care to wire the circuit breaker correctly. Failure to do so may cause the applicator to malfunction or the circuit board to be destroyed.

10. Place the faceplate in its slot in the base and secure it to the base with the two screws removed in Step 5.
11. Holding the circuit board frame so that its top is tilted away from the applicator, match the slots in the bottom of the frame with the slots in the base of the unit. When the keyed slots interlock, rotate the top of the frame up and toward the unit until it is standing upright.
12. Secure the frame to the base of the unit with the two screws removed in step 4.

Circuit breaker replacement
(continued)

13. Connect the hose electrical plugs to their connectors along the top of the circuit board. Connect the plug labeled plug 1 to the connector labeled J1 on the circuit board, plug 2 to connector J2, and so forth until all plugs are connected.
14. Replace the electrical cabinet enclosure and secure it with the captive screw on top of the cabinet.
15. Restore input electrical line voltage and resume operation.

Tank RTD replacement

1. Turn the main electrical switch OFF at the applicator and disconnect input line voltage from the applicator.

WARNING: Shock hazard. Disconnect the applicator from input electrical line voltage. Failure to disconnect line voltage from the applicator may result in a serious electrical shock.

2. Remove the four screws that secure the panel of the hose connector assembly to the base of the applicator.
3. Remove the cut-away part of the tank insulation. This cutaway part is located directly behind the panel that was just removed.

NOTE: The cut-away insulation is still attached to the rest of the insulation at the corners, but it can be easily pulled away. If a knife is used to sever this connection, take care not to cut any of the wires behind the insulation.

4. Remove the two screws that secure the RTD retainer plate to the tank, then remove the plate (see Figure 7.14).
5. Disconnect the leads to the RTD at the terminals on the left side of the 2-station porcelain connector. Pull terminals through the fiberglass tubing that insulates the wire.
6. Thread the lead of the new RTD (P/N 937 283) through the fiberglass tubing.
7. Place the new RTD in its slot in the tank. Put the retainer plate over it and secure with the two screws previously removed.
8. Connect the leads from the RTD to the 2-station porcelain connector.

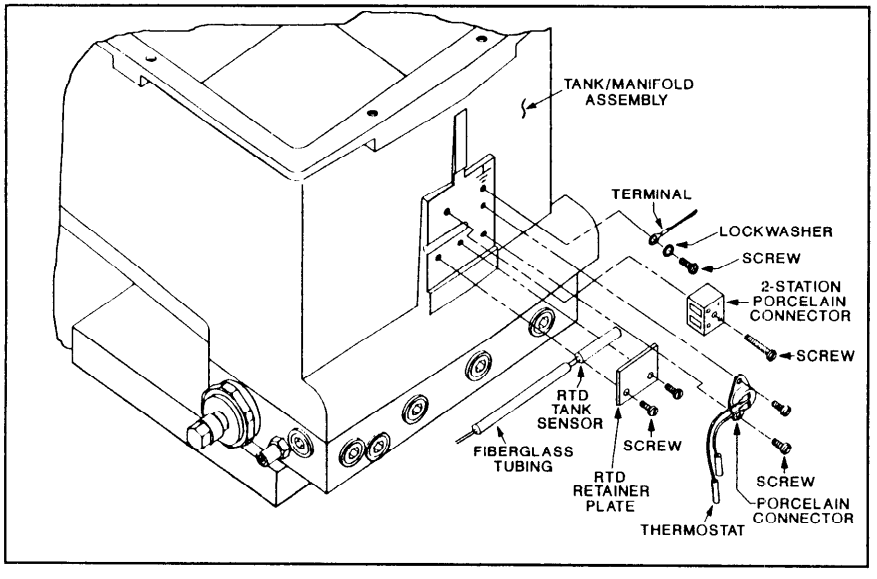

Figure 7.14

Tank RTD replacement
(continued)

9. Replace the cut-away piece of insulation with the foil side facing out. It should not be necessary to tape the insulation in place. If tape is used, it should be high-temperature tape, such as aluminum furnace tape.
10. Install the hose-connector assembly plate with four screws.
11. Resume normal operation.

Tank thermostat replacement

1. Turn the main electrical switch OFF at the applicator and disconnect input line voltage from the applicator.

WARNING: Shock hazard. Disconnect the applicator from input electrical line voltage. Failure to disconnect line voltage from the applicator may result in a serious electrical shock.

2. Remove the electrical cabinet cover by unscrewing the captive screw on top of the cabinet.
3. Disconnect the incoming power supply at the input terminal block, remove the strain relief bracket by removing the two screws that secure it. Pull the incoming power line out through the cord connector hole.
4. Shut off the air supply to the pump air regulator. Disconnect the incoming air line from the regulator.
5. Remove the pump enclosure by removing the screw on top.
6. Disconnect the quick-disconnect electrical plug to the pump solenoid (see Figure 7.8).
7. Remove the three hex head screws securing the pump mount to the applicator (see Figure 7.2, 1 of 2) and carefully pull the entire pump assembly straight up and away from the applicator.
8. Remove the seven screws securing the tank enclosure, then remove the tank enclosure and the tank cover.
9. Remove the hose connector assembly by removing the four screws that secure it to the base and then disconnecting the hose electrical plugs from the circuit board.
10. Remove the tank insulation and the bottom insulation.
11. Pull the rubber thermostat insulator from the tank thermostat and slide it back along the thermostat leads.
12. Remove the tank thermostat by removing the two screws that secure it to the tank.
13. Untwist the two wire nuts which connect the leads of the tank thermostat to two other wires, then discard the old thermostat.
14. Twist each lead of the new tank thermostat into one of the ceramic wire nuts with one of the other wires.

NOTE: It does not matter which lead is connected to which wire because the thermostat is not polarity sensitive.

15. Replace the thermostat with two screws. The top screws must go through the ring-tongued terminal of the ground connection (the green wire).

Tank thermostat replacement

(continued)

16. Slide the rubber insulator over the thermostat.
17. Put the tank insulation back into place. The double thickness goes on the side of the tank nearest the electrical cabinet. Keep the foil side out.
18. Attach the hose connector assembly to the base and secure with four screws. Connect the hose electrical plugs to their receptacles on the top of the circuit board. The hose plug labeled No. 1 goes in receptacle J1, and so forth, until all plugs are connected.
19. Place the tank cover on top of the tank.
20. Place the tank strainer in the tank.
21. Carefully place the hose connector assembly wires along the base, under the tank insulation on the side of the tank.
22. Replace the tank enclosure, being careful not to tear the insulation. Make sure that the electrical connector to the pump solenoid is pulled up through the notch provided for it in the tank cover. About 6 inches (15 cm) of cord will be needed in order to plug the two ends of the quick-disconnect together. Do not connect them at this time.
23. Carefully maneuver the pump into position until the crossover tube drops into its cavity in the tank/manifold. Secure the pump with three hex head screws and washers. Torque the screws 15-17 ft-lbs (20-23 N-m).
24. Reconnect the electrical plug to the pump solenoid.
25. Make the incoming power connections to the unit in accordance with the instructions in Section 3, *Electrical Installation*.
26. Replace the electrical enclosure.
27. Reconnect the air supply line to the pump air regulator.
28. Replace the pump enclosure.
29. Resume operation by triggering the gun(s) to remove any trapped air in the system.

4. Repair of Guns

Heater cartridge replacement

1. Turn the main electrical switch OFF at the applicator and disconnect input line voltage from the applicator.

WARNING: Shock hazard. Disconnect the applicator from input electrical line voltage. Failure to disconnect line voltage from the applicator may result in a serious electrical shock.

2. Disconnect the electrical connection between the gun and the hose.
3. Remove the screws that secure the cover to the service block.

NOTE: A cartridge heater is larger in diameter than an RTD and its leads are connected to other leads by porcelain wire nuts.

4. Remove the cylindrical cartridge heater from its mounting hole in the service block.
5. Untwist the wire nuts that connect the heater leads to two other wires and throw the heater away.
6. Twist each lead of the new heater into a ceramic wire nut with one of the wires disconnected in step 5.
7. Slide the heater into its mounting hole in the service block.
8. Replace the service block cover and cover screws.
9. Reconnect the hose to the gun electrically and restore input electrical line voltage.
10. Resume operation.

Gun RTD replacement

Use the RTD Replacement Kit (P/N 274 783) to replace defective RTDs in the H20 and H200 guns for the Series 2300 Applicator.

1. Turn the main electrical switch OFF at the applicator and disconnect input line voltage from the applicator.

WARNING: Shock hazard. Disconnect the applicator from input electrical line voltage. Failure to disconnect line voltage from the applicator may result in a serious electrical shock.

2. Disconnect the electrical connection between the gun and the hose.
3. Remove the screws that secure the cover to the service block.
4. Remove the cylindrical RTD from its mounting hole in the service block.

NOTE: Although an RTD looks somewhat like a cartridge heater, which is also contained in a hole in the service block, it is smaller in diameter than a heater and, unlike a heater, it is a part of the cordset.

5. Cut the two RTD lead wires approximately ½ inch (1.3 c m) from the defective RTD, then discard the RTD.
6. Strip about ¼ inch (0.6 cm) of insulation from the cut wires.
7. Using parts supplied in the RTD Replacement kit, twist each of the new RTD leads with a cordset lead , then secure each pair with the two ceramic wire nuts.
8. Slide the RTD into its mounting hole in the service block.
9. Replace the service block cover and cover screws.
10. Reconnect the hose to the gun electrically and restore input electrical line voltage.
11. Resume operation.

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SECTION 8

SECTION 8

Illustrated Parts Lists

List of Illustrations

List of Illustrations (continued)

Section 8
Illustrated Parts Lists

1. Introduction

Section 8 contains illustrations and matching parts lists for the Series 2300 Applicator and all hoses that can be used with it. The components of the various assemblies which make up the Series 2300 unit are shown here and referenced by part number where appropriate. Parts list pages shipped with the guns used in this system should also be inserted at the end of Section 8.

In addition to the illustrated parts list in this section is a list of recommended spare parts, a ship-with parts list (containing those items shipped with the unit and used or assembled later), and a service kits parts list.

2. Use of the illustrated parts list

1. Refer to the table of contents of this section under Parts Lists to find the page number of the list that contains the part or parts you want to identify.
2. Study the illustration to find the specific part you want to identify, then note the item number that goes with it.
3. Locate the item number in the parts list.
4. Use the next three columns of the parts list to find the part number, part description and quantity of the part used per assembly.

The Part Number column contains any of three possible designations " a six-digit part number, a dash (-) or an asterisk (*).

a. If the part number is given, the part is saleable and can be ordered using this number.

b. A dash means that the part is nonsalable and cannot be order by itself; in this case the assembly to which the part belongs or the service kit containing the part must be ordered.

c. An asterisk refers the reader to a footnote at the bottom of the page.

In the Description column, bullets () indicate the level of assembly of the part in question. For example, a description preceded by one bullet () is a component of the assembly above it whose description is preceded by no bullet. A part preceded by two bullets ( ) is a component of the assembly above it which is preceded by one bullet (). See the example below.

Item No.	Part No.	Description	Required
-	274 700	Pump/Solenoid Assembly	Ref
1	274 996	• Pump Assembly	1
2	274 669	• Solenoid Valve/Wiring Assembly	1
-	901 137	• • Valve, Solenoid, Two-Way, 230 VAC, NC	1
-	-	• • Connector, Receptacle	1

Use of the Illustrated Parts List
(continued)

The Required column contains the quantity of the part required per assembly in the illustration. This is expressed either by a number or by an amount, such as feet or inches. A dash (-) in this column means that the item exists but not in a quantifiable form. This is true with such items as **PTFE** paste. Ref indicates that the part is listed for reference purposes only and may not actually be shown on the accompanying illustration.

Selection Chart of Series 2300 Applicators (and their circuit boards): 200/230 VAC

Options	Model 2302 Unit P/N (CB P/N)	Model 2304 Unit P/N (CB P/N)	Model 2305 Unit P/N (CB P/N)	Model 2306 Unit P/N (CB P/N)
None (Std. Unit)	276 033 (276 881)	276 034 (276 884)	276 035 (276 887)	276 808 (276 890)
LL	276 478 (276 881)	276 494 (276 884)	276 561 (276 887)	276 812 (276 890)
PMI	276 477 (276 881)	276 493 (276 884)	276 560 (276 887)	276 810 (276 890)
LL + PMI	276 479 (276 881)	276 495 (276 884)	275 562 (276 887)	276 814 (276 890)
S	276 246 (276 882)	276 248 (276 885)	276 250 (276 888)	xxx xxx
S + LL	276 481 (276 882)	276 497 (276 885)	276 564 (276 888)	xxx xxx
S + PMI	276 480 (276 882)	276 496 (276 885)	276 563 (276 888)	xxx xxx
S + PMI + LL	276 482 (276 882)	276 498 (276 885)	276 565 (276 888)	xxx xxx
S + D	276 242 (276 883)	276 244 (276 886)	276 818 (276 889)	xxx xxx
S + D + LL	276 484 (276 883)	276 551 (276 886)	276 822 (276 889)	xxx xxx
S + D + PMI	276 483 (276 883)	276 499 (276 886)	276 820 (276 889)	xxx xxx
All four options	276 386 (276 883)	276 388 (276 886)	276 824 (276 889)	xxx xxx

Selection Chart of Series 2300 Applicators (and their circuit boards): 380-Y VAC

Options	Model 2302 Unit P/N (CB P/N)	Model 2304 Unit P/N (CB P/N)	Model 2305 Unit P/N (CB P/N)	Model 2306 Unit P/N (CB P/N)
None (Std. Unit)	276 239 (276 881)	276 240 (276 884)	276 241 (276 887)	276 809 (276 890)
LL	276 486 (276 881)	276 553 (276 884)	276 567 (276 887)	276 813 (276 890)
PMI	276 485 (276 881)	276 552 (276 884)	276 566 (276 887)	276 811 (276 890)
LL + PMI	276 487 (276 881)	276 554 (276 884)	275 568 (276 887)	276 815 (276 890)
S	276 247 (276 882)	276 249 (276 885)	276 251 (276 888)	xxx xxx
S + LL	276 489 (276 882)	276 556 (276 885)	276 570 (276 888)	xxx xxx
S + PMI	276 488 (276 882)	276 555 (276 885)	276 569 (276 888)	xxx xxx
S + PMI + LL	276 490 (276 882)	276 557 (276 885)	276 571 (276 888)	xxx xxx
S + D	276 243 (276 883)	276 245 (276 886)	276 819 (276 889)	xxx xxx
S + D + LL	276 492 (276 883)	276 559 (276 886)	276 823 (276 889)	xxx xxx
S + D + PMI	276 491 (276 883)	276 558 (276 886)	276 821 (276 889)	xxx xxx
All four options	276 387 (276 883)	276 389 (276 886)	276 825 (276 889)	xxx xxx

NOTE: Two of the four optional features (Parent Machine Interlock and Low Level Indicator) may be added to the applicator any time. The PMI feature part number is 274 658; the Low Level Indicator part number for flat-bottom tanks is 276 176; the Low Level Indicator part number for finned tanks is 276 334.

LL = Low Level Indicator
PMI = Parent Machine Interlock
D = Digital Readout
S = Temperature Setback
xxx xxx = Not Available

Unit Assembly Parts List

Item No.	Part No.	Description	Required
-	*	Series 2300 Hot Melt Applicator (Models 2302, 2304, 2305 and 2306; 200/230 and 380-Y VAC)	Ref
1	985 112	• Rivet, Blind, 3/32 x 0.250 in.	5
2	-	• Nameplate	1
3	276 237	• Tag, Input Power (380-Y V units only)	1
3	274 589	• Tag, Input Power (200/230 V units only)	1
4	-	• Tag Set, HM Unit	1
5	-	• Control Frame Assembly	1
-	274 507	• Frame, Control Panel	1
-	-	• Door, Control Panel	1
-	-	• Hinge, Door	1
-	985 112	• Rivet, Blind	6
-	981 857	• Stud (Door Latch)	1
-	981 858	• Washer, Special (Door Latch)	1
-	981 855	• Receptacle (Door Latch)	1
-	981 856	• Nut, Special (Door Latch)	1
6	*	• Circuit Board Assembly	1
-	-	• Graphics Panel	1
-	274 590	• Knob, Control, Panel	10
-	276 091	• Knob, Control Panel, Digital (units w/digital readout only)	1
-	-	• Filter, Optical, Red (units w/digital readout only)	1
-	276 584	• Tag, Warning, Heatsink	1
-	981 016	• Screw, Round Head, Slotted, Tap, 4-40 x 1/4 in. (all units except 9-channel units w/digital readout)	2
-	981 008	• Screw, Self-Tapping (9-channel units w/digital readout only), 4-40 x 1/4 in.	2
-	981 759	• Screw, Pan Head, 4-40 x 0.312 in.	1
7	981 727	• Screw, Hi-Lo, 4-24 x 0.375 in.	6
8	982 119	• Screw, Pan Head, M5-0.8 x 10 mm	2
9	274 706	• Electrical Enclosure Assembly	1
-	274 504	• Enclosure, Electrical	1
-	274 993	• Screw, Captive, M5 x 0.8 x 25 mm	1
-	983 408	• Washer, Flat, Narrow, M5	1
-	940 073	• O-Ring, Viton	1
-	983 523	• Washer, Neoprene	1
10	**	• Base Assembly	1
11	274 638	• Decal, Graphics Panel, 5-Channel (Model 2302)	1
11	274 637	• Decal, Graphics Panel, 9-Channel (Model 2304)	1
11	274 516	• Decal, Graphics Panel (all other units)	1
12	276 200***	• Strainer (Units w/o Low Level Indicator Only)	1
-	276 084	• Single-Phase Jumper (Domestic Single-Phase Operation Only)	1
-	276 236	• Single-Phase Jumper (European Single-Phase Operation Only)	1
-	276 334	• Low Level Indicator, Finned Tanks (Optional Feature)****	1
-	276 176	• Low Level Indicator, Flat-Bottomed Tanks (Optional Feature)****	1
13	274 658	• Parent Machine Interlock (Optional Feature)	1
-	939 665	• Lamp, PMI	1
-	242 867	• Tag, Warning (380-YV units only)	2
-	118 949	• Adapter Assembly, 1/4 ISO x 1/4 NPT	1

* See Selection Chart on previous page for part number of specific units.
** See the Base Assembly parts lists (three parts).
*** The strainer part number for units with low level indication is either 276 330 (finned tanks) or 276 329 (flat-bottomed tanks).
**** See Section 10 for the Low Level Indicator parts list.

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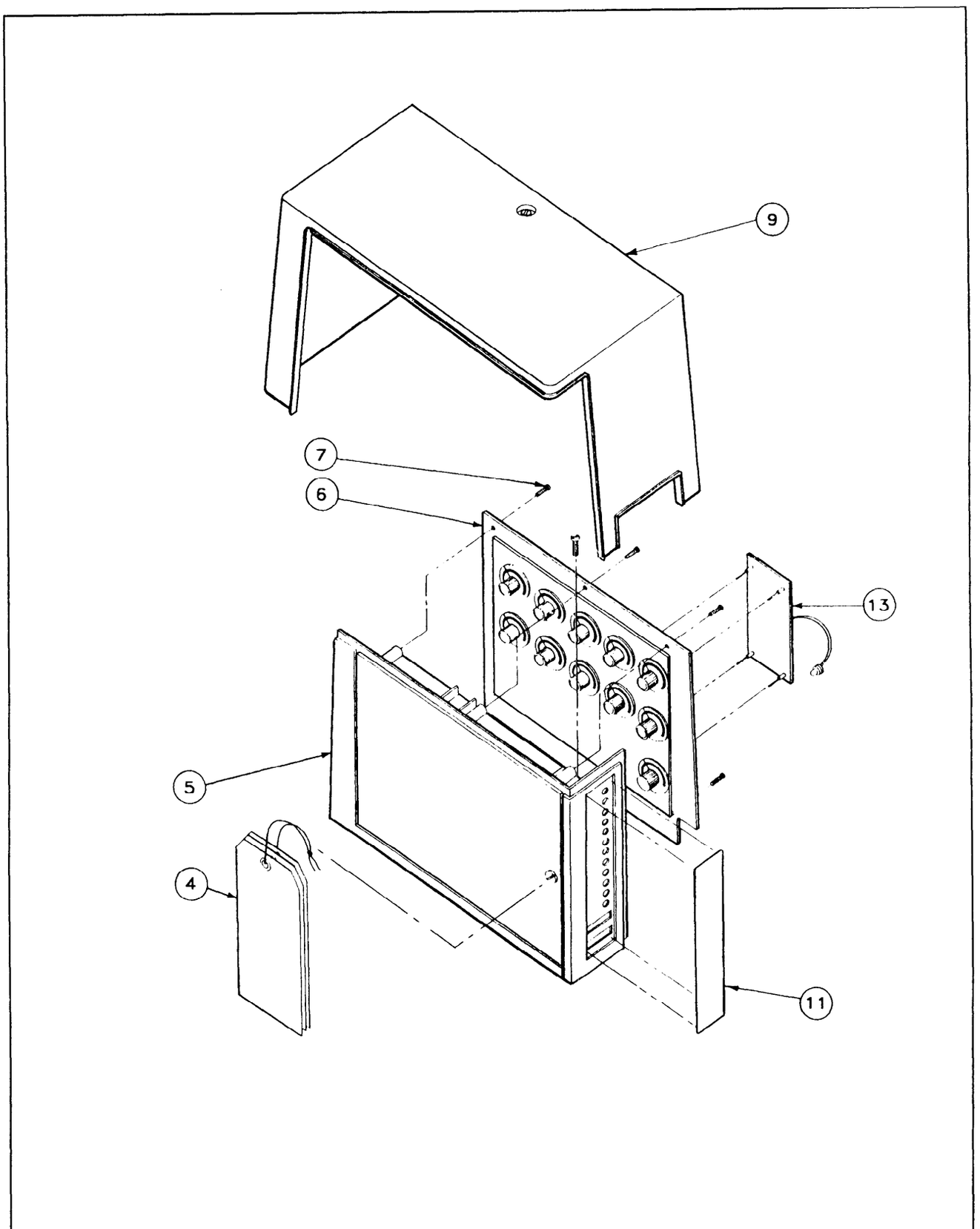

Figure 8.1 — Series 2300 Unit Assembly (Drawing 1 of 2).

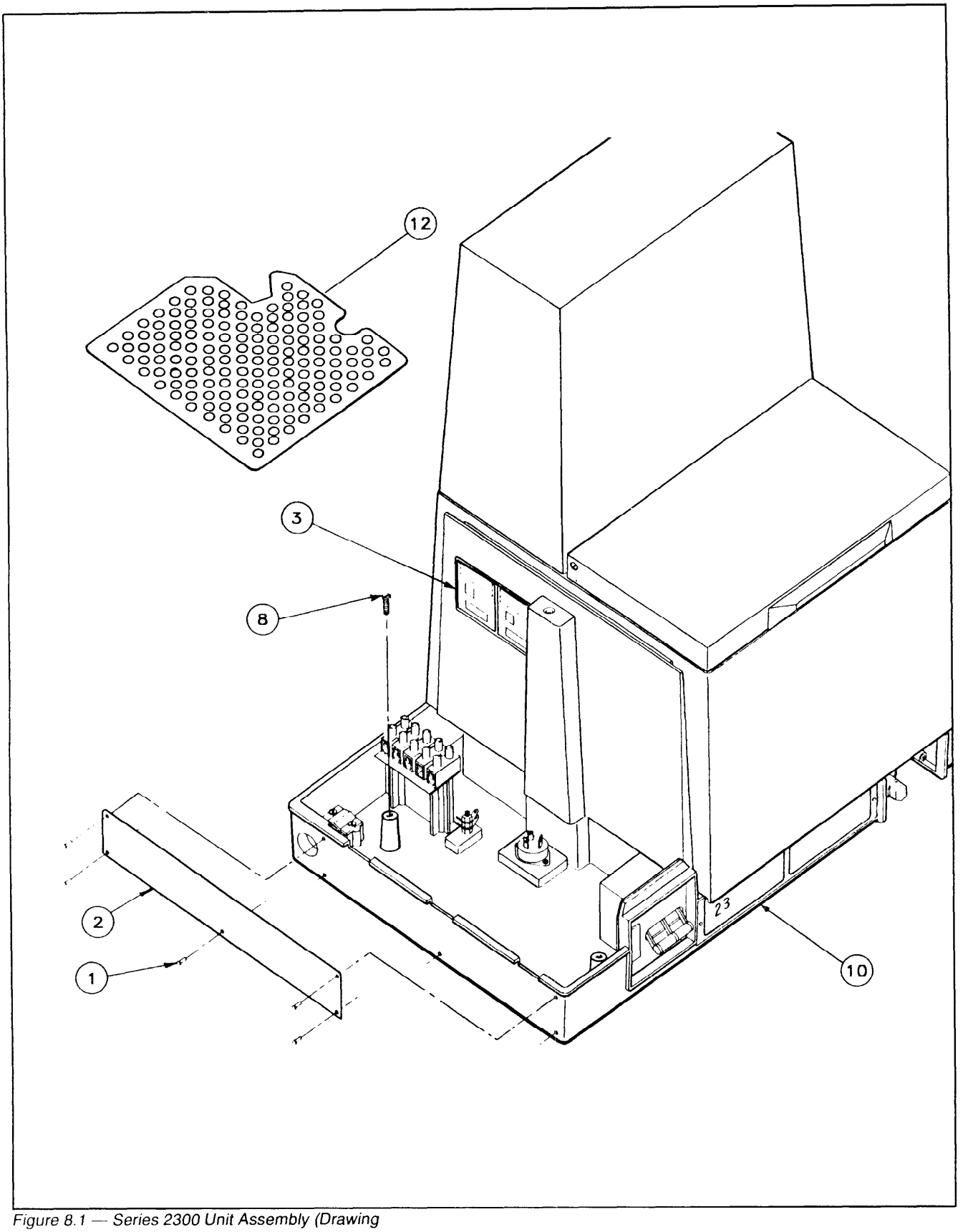

Figure 8.1 — Series 2300 Unit Assembly (Drawing 2 of 2).

Base Assembly Parts List #1 (see Figure 8.2)

Item No.	Part No.	Description	Required
-	-	Base Assembly (Models 2302, 2304, 2305 and 2306 " Drawing 1 of 3)	Ref
1	276 215	• Screw, Hex Head, Self-Tap, M8 x 16 mm	4
2	274 659	• Bracket, Mounting	4
3	985 112	• Rivet, Pop	4
4	-	• Nameplate	1
5	982 096	• Screw, Pan Head, M4 x 8 mm	2
6	274 690	• Base Unit, Painted	1
7	939 644	• Triac, Tank Control, 25 A	1
8	982 091	• Screw, Pan Head, M3 x 6 mm	4
9	274 636	• Clip, Strain Relief	1
10	982 214	• Screw, Pan Head, M5 x 20 mm	2
-	274 767	• Wiring Harness, Non-380-Y VAC units	1
-	276 231	• Wiring Harness, 380-Y VAC units	1
-	274 616	• Circuit Breaker Panel Assembly (units w/out temp setback)	1
-	276 165	• Circuit Breaker Panel Assembly (units w/ temp setback)	1
-	274 514	• Panel, Circuit Breaker	1
11	274 585	• Circuit Breaker, 3 Pole, 30 A	1
-	982 123	• Screw, Pan Head, M3 x 6 mm	2
-	939 646	• Lamp, Rectangular, White (units w/out temp setback)	1
-	276 120	• Lamp, Rectangular, White (units w/ temp setback)	1
-	276 316	• Terminal Block Assembly	1
12	933 295	• Terminal Block, 5 Station (TB1)	1
13	933 297	• Strip, Marker, 5 Station	1
-	939 537	• Connector, 9-Pin (J6)	1
-	933 320	• Connector, Plug (Solenoid Valve)	1
-	933 369	• Connector, 6-Station (J7)	1
-	276 578	• Cover, Circuit Breaker	1
-	*	• Wires and Wire Terminals	-
14	982 124	• Screw, Pan Head, M4 x 20 mm	2
15	982 212	• Screw, Hex Head, Cap, M8 x 30 mm	3
16	983 414	• Washer, Flat, M8	3
17	-	• Tag, Patent	1
18	274 518	• Spacer, Tank	6
19	276 899	• Hose Connection Assembly, 2-Plug (2302)**	1
19	276 900	• Hose Connection Assembly, 4-Plug (2304)**	1
19	276 901	• Hose Connection Assembly, 5-Plug (2305)**	1
19	276 832	• Hose Connection Assembly, 6-Plug (2306)**	1
-	274 653	• Dust Cover	2-6
20	982 119	• Screw, Pan Head, M5 x 10 mm	4
21	982 232	• Screw, Pan Head, M5 x 35 mm	1
22	240 674	• Tag, Ground	1
23	271 221	• Lug, Terminal	2
24	983 401	• Lockwasher, Split, M5	4
25	984 702	• Nut, Hex, M5	3
26	275 386	• Compound, Thermal Joint	-

* The various wires and terminals in the wiring harness are saleable parts but they are too numerous to list. Contact your local Nordson representative for part numbers.
** A kit for replacing a single-hose wiring harness and the hose receptacle is available as Nordson P/N 276 319.

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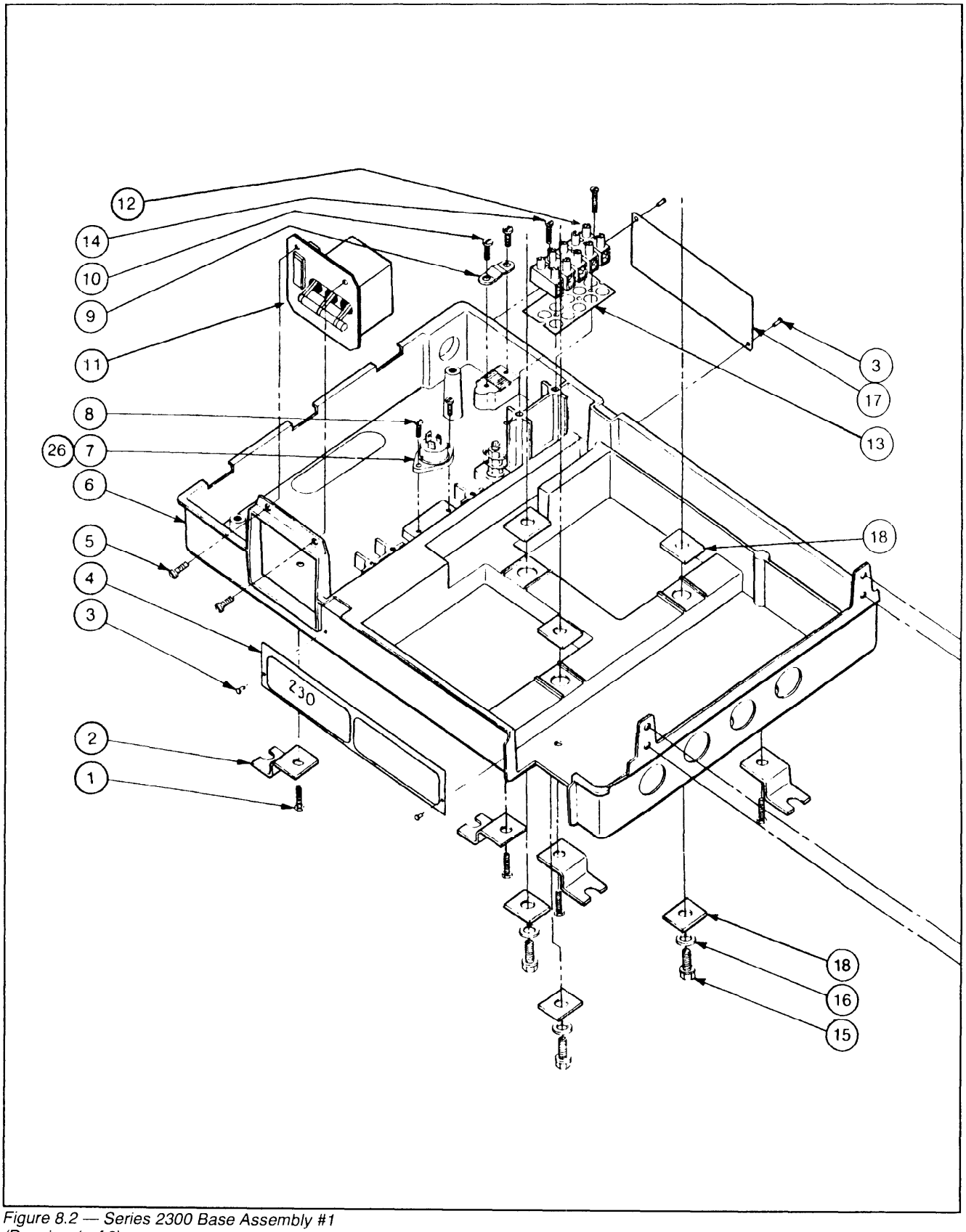
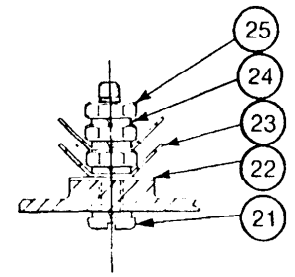


Figure 8.2 — Series 2300 Base Assembly #1 (Drawing 1 of 2).



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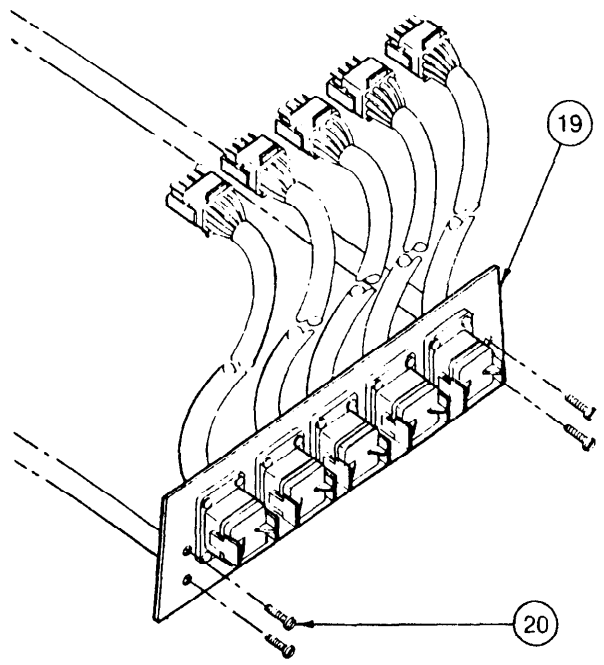

Figure 8.2 — Series 2300 Base Assembly #1 (Drawing 2 of 2).

Base Assembly Parts List #2 (see Figure 8.3)

Item No.	Part No.	Description	Required
-	-	Base Assembly (Models 2302, 2304, 2305 and 2306 " Drawing 2 of 3)	Ref
1	Not Used		
-	276 313	• Kit, Insulation Replacement	1
2	274 631	• Insulation, Bottom, Tank	1
3	274 625	• Insulation, Side	1
4	274 612	• Insulation, Tank	1
5	Not Used		
-	276 312	• Tank Cover Assembly	1
6	-	• Cover, Tank	1
7	274 511	• Gasket, Tank	1
8	276 209	• Tank/Manifold Kit*	1
9	983 400	• Lockwasher, Split, M3	1
10	939 586	• Connector, Porcelain, 2 Station	1
11	982 213	• Screw, Pan Head, M3 x 18 mm	1
12	276 022	• Thermostat w/Insulator, 450F	1
13	933 056	• Connector, Porcelain	2
14	274 667	• Plate, Retainer, RTD	1
15	937 283	• Sensor, RTD, Tank	1
16	276 029	• Tubing, Fiberglass	3.25 ft
-	931 123	• Sleeving, Insulation, 0.20 in. ID	0.27 ft.
17	982 091	• Screw, Pan Head, M3 x 6 mm	5
18	900 341	• Never Seez	-
19	900 413	• Sealant, Silicone, RTV-106	-

* See the Tank/Manifold Assembly Parts List.

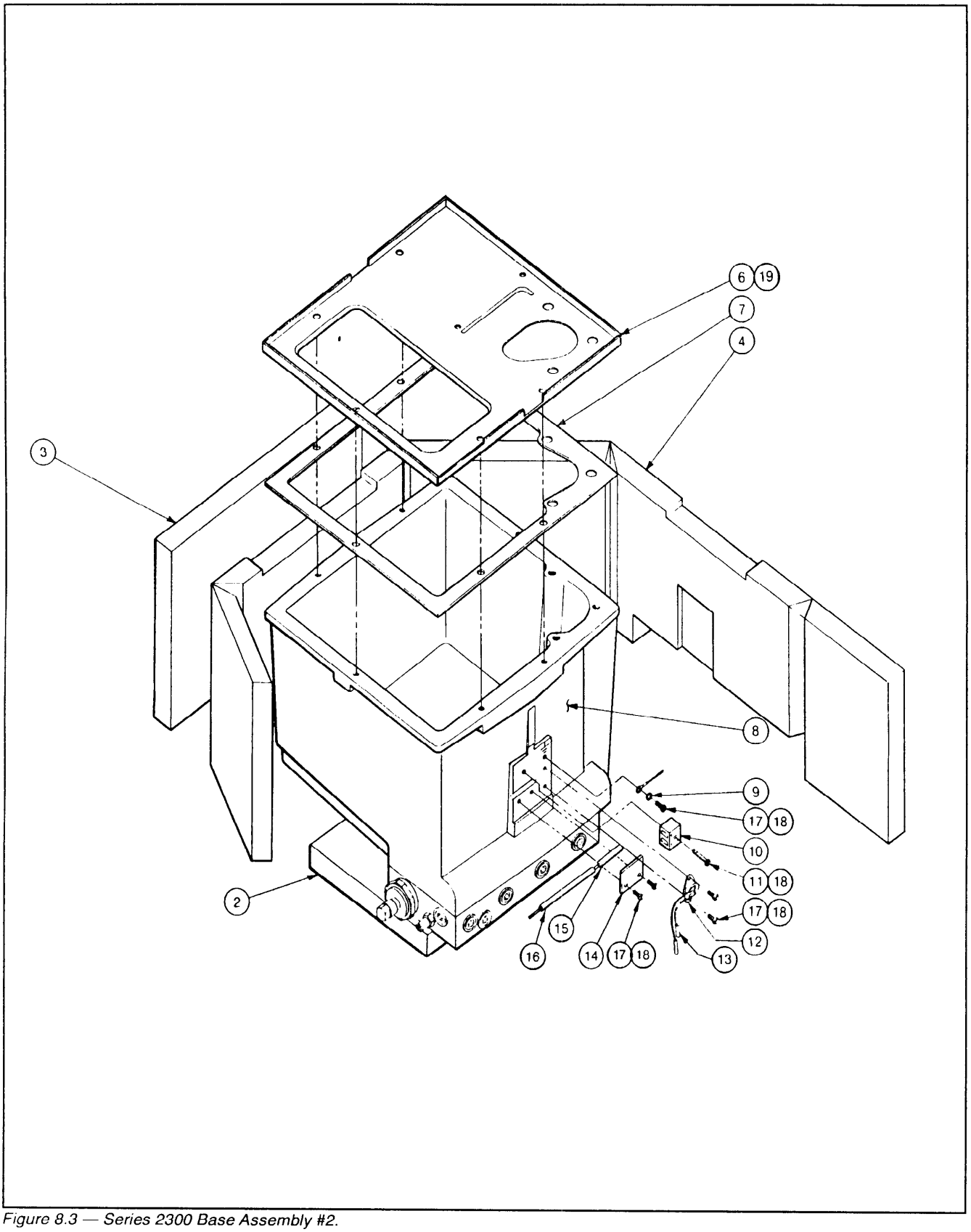

Figure 8.3 — Series 2300 Base Assembly #2.

Base Assembly Parts List #3 (see Figure 8.4)

Item No.	Part No.	Description	Required
-	-	Base Assembly (Models 2302, 2304, 2305 and 2306 " Drawing 3 of 3)	Ref
1	Not Used		
2	274 716	• Lid Assembly	1
-	981 017	• Screw, Bind Head, 6-32 x 0.25 in.	2
-	983 100	• Lockwasher	2
-	274 656	• Lid, Inner, Flat	1
-	902 523	• Stud, Serrated	2
-	981 759	• Screw, Pan Head, 4-40 x 0.312 in.	4
-	902 522	• Retainer, Stud Ball	2
-	275 366	• Brace, Retainer, Ball Stud	2
-	274 505	• Lid, Pin Hinged, Tank	1
-	900 419	• Adhesive, Retaining Cylindrical	-
3	274 646	• Pin, Hinged Lid	2
4	274 710	• Pump Enclosure Assembly	1
-	274 506	• Enclosure, Pump	1
-	274 993	• Screw, Captive, M5 x 24 mm	1
-	275 075	• Nameplate, Oval	1
-	986 316	• Ring, Retaining, Push-On	3
-	983 408	• Washer, Flat, Narrow, M5	1
-	940 073	• O-Ring, Viton, 0.16 in. ID x 0.28 in. OD	1
-	-	• Tag, Maximum Air Pressure	1
-	985 112	• Rivet, Pop	2
-	271 960	• Washer, Backup, 0.09 in. ID x 0.25 in. OD	2
5	-	• Pump /Solenoid Assembly*	1
6	982 212	• Screw, Cap, Hex Head, M8 x 30 mm	3
7	983 414	• Washer, Flat, M8	3
8	274 691	• Regulator Assembly	1
-	901 491	• Regulator, Air, Ports 1/4 in. NPT	1
-	901 254	• Gage, Air, 1/8 in. NPT	1
-	973 372	• Bushing, Pipe, Hydraulic, 1/4 in. x 1/8 in.	1
-	900 236	• Paste, **PTFE**	-
-	973 001	• Nipple, 1/8 x 2.50 in.	1
-	-	• Tag, No Oiled Air	1
9	274 979	• Spring, Lid Support	1
10	274 503	• Enclosure, Tank	1
11	982 214	• Screw, Pan Head, M5 x 20 mm	7
12	900 341	• Never Seez	-

* See the Pump/Solenoid Assembly Parts List.

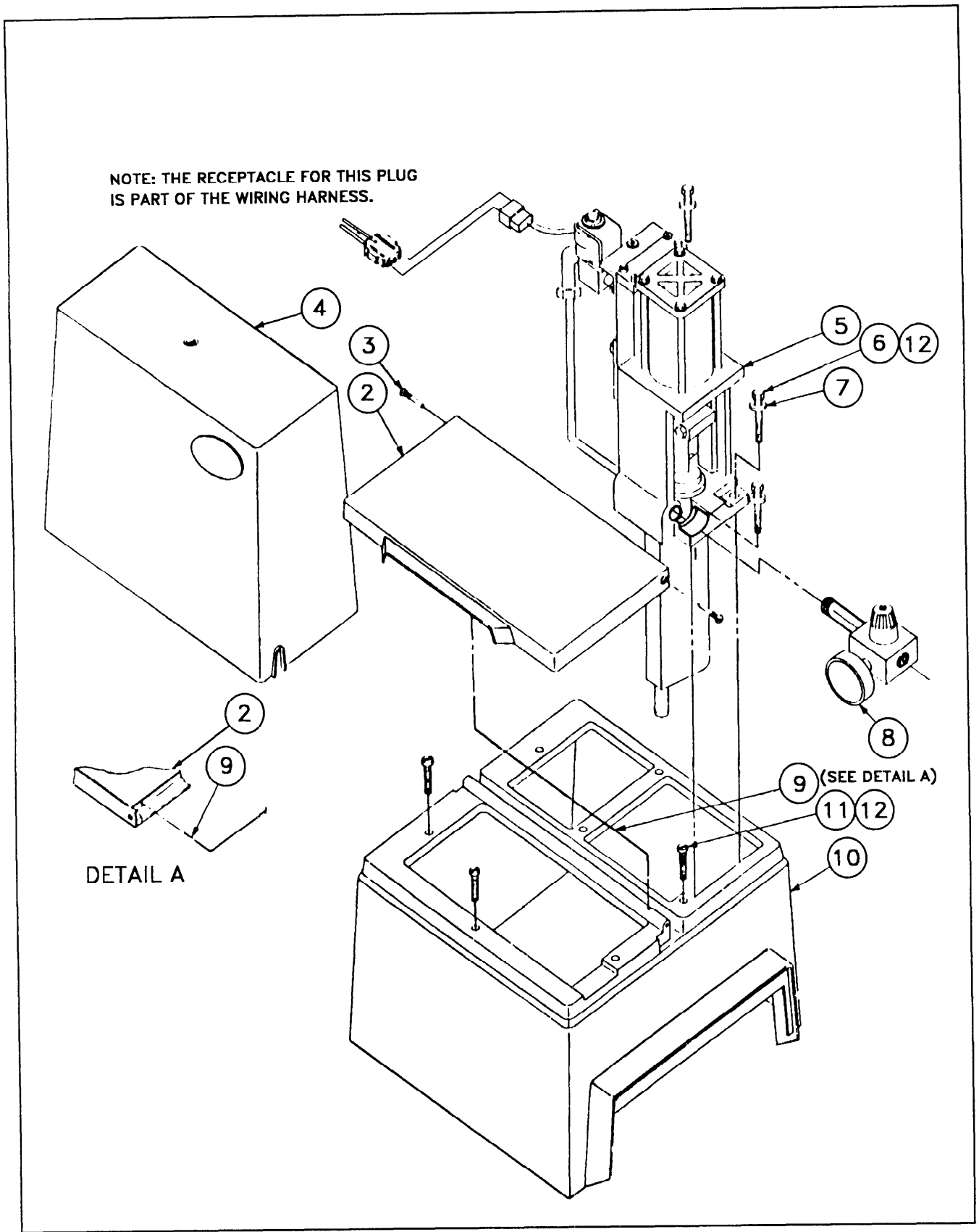

Figure 8.4 — Series 2300 Base Assembly #3.

Tank/Manifold Assembly Parts List (see Figure 8.5)

Item No.	Part No.	Description	Required
-	276 209	Tank/Manifold Assembly	Ref
-	276 310	• Kit, Tank w/Tag	1
1	-	• Tank, Finned	1
-	-	• Tag, Warranty	1
2	276 109	• Valve, Pressure Relief, 1600 psi	1
3	940 281	• O-Ring, Viton, 1.50 in. OD x 1.38 in. ID	2
4	982 211	• Screw, Spline, Socket Cap, M8 x 45 mm	6
5	900 236	• Paste, **PTFE**	-
6	983 518	• Washer, Flat, 0.53 in. ID x 0.32 in. ID	6
-	274 686	• Manifold Assembly	1
7	276 311	• Manifold	1
8	973 574	• Plug, O-Ring, 9/16-18, Str. Thd.	8
9	945 032	• O-Ring, Viton, 0.38 in. Tube	1
-	-	• Plug	1
10	274 581	• Filter Assembly*	1
11	276 024	• Valve, Drain	1
-	276 623	• Body, Drain Valve	1
-	276 621	• Tip, Drain Valve	1
-	900 037	• Ball, 440SS, 0.25 in. Dia.	1
-	986 239	• Ring, Retaining	1
12	940 101	• O-Ring, Viton	1
13	954 036	• Ring, Backup	1
14	274 569	• Adapter, Filter Bung	1
15	941 220	• O-Ring, Viton, 1.13 in. ID x 1.31 in. OD	1
16	900 419	• Adhesive, Loctite 620	-
17	982 096	• Screw, Pan Head, M4 x 8 mm	1
18	983 403	• Lockwasher, Split, M4	1
19	900 341	• Never Seez	1
-	900 445	• Sealant, RTV	-

* See the Filter Assembly parts list.

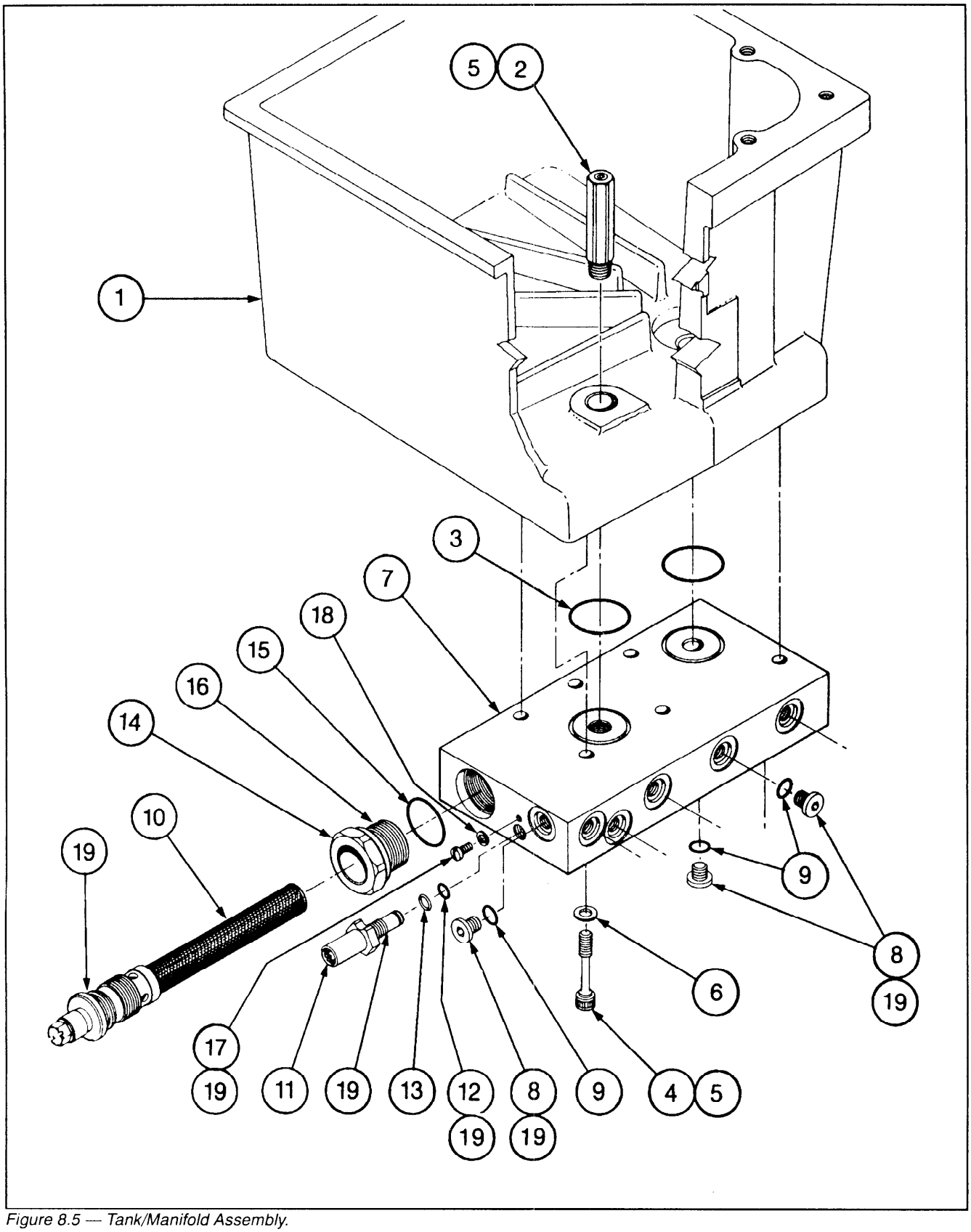

Figure 8.5 — Tank/Manifold Assembly.

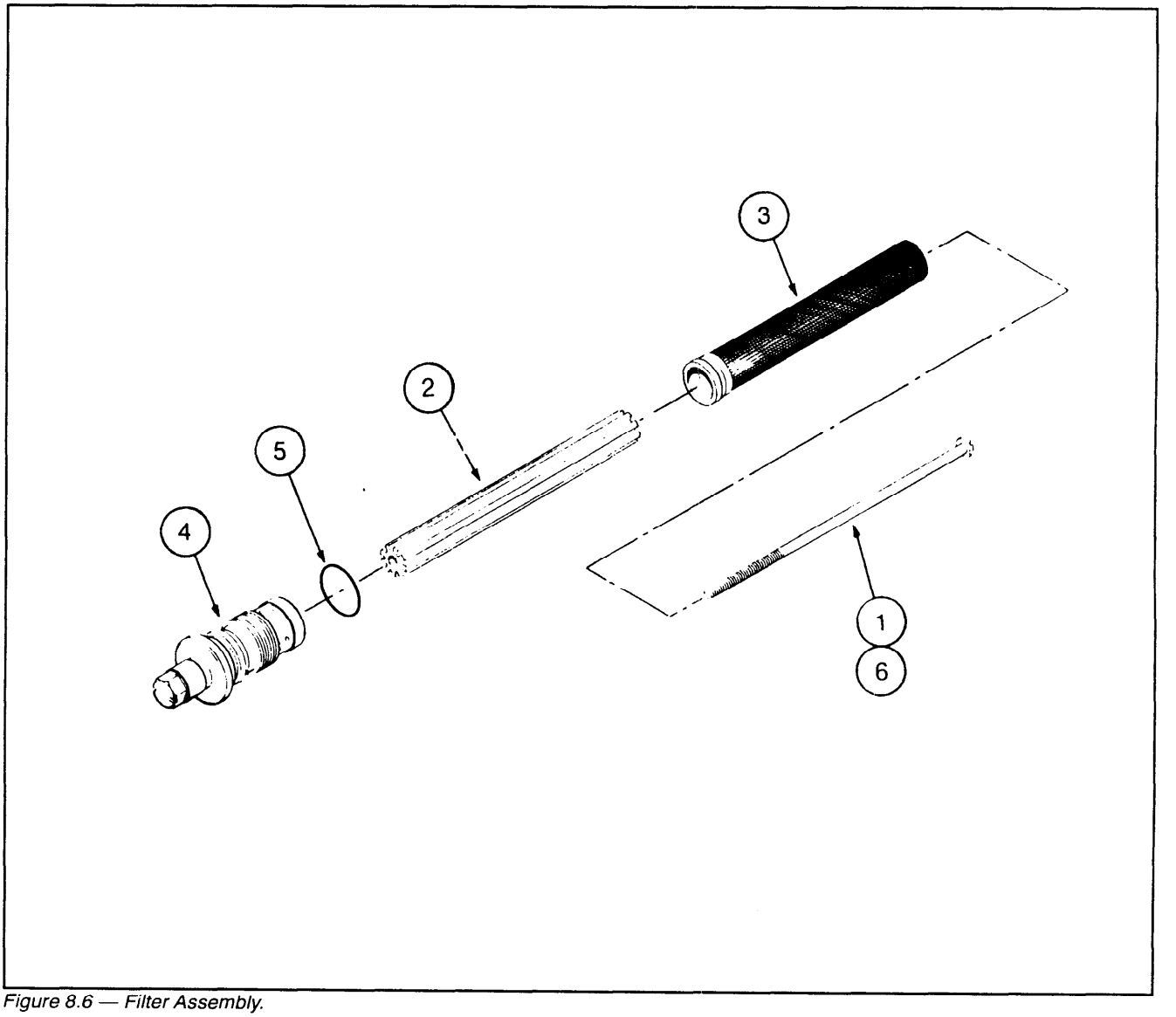

Figure 8.6 — Filter Assembly.

Filter Assembly Parts List

Item No.	Part No.	Description	Required
-	274 581	Filter Assembly	Ref
1	981 747	• Screw, Round Head, 10-32 x 6.25 in.	1
2	274 579	• Core, Filter	1
3	274 578*	• Screen, Filter, 0.006 in. mesh	1
4	274 513	• Bung, Filter	1
5	941 172	• O-Ring, Viton, 0.81 in. ID x 1.0 in. OD	1
6	900 341	• Never Seez	-

* Shipped with the unit or filter assembly unless otherwise specified on the purchase order. See Section 10, Optional Parts and Equipment, for listing of optional filter screens.

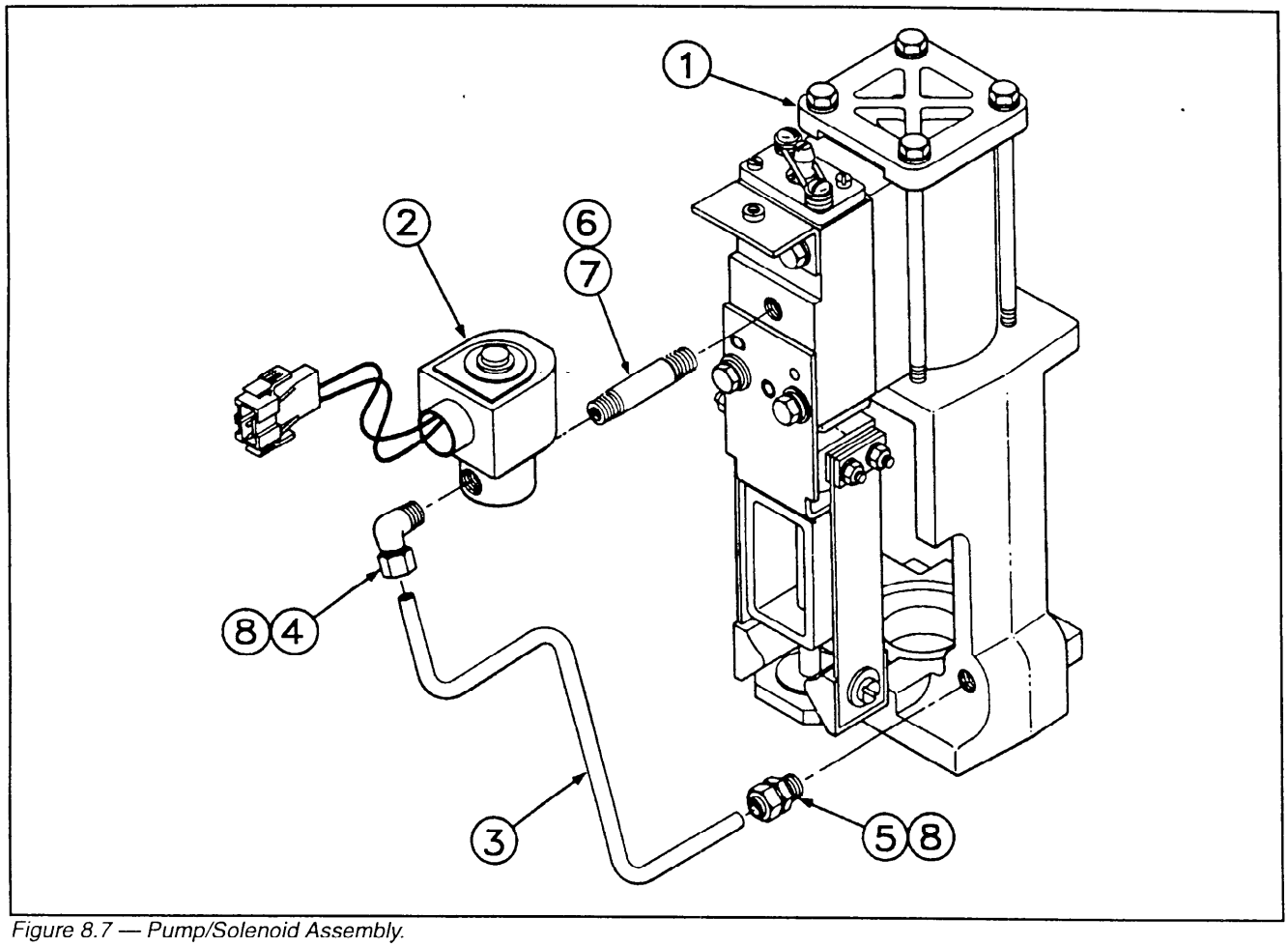

Figure 8.7 — Pump/Solenoid Assembly.

Pump/Solenoid Assembly Parts List

Item No.	Part No.	Description	Required
-	-	Pump/Solenoid Assembly	Ref
1	-	• Pump Assembly*	1
2	274 669	• Solenoid Valve/Wiring Assembly (non-380-Y V units)	1
2	276 872	• Solenoid Valve/Wiring Assembly (380-Y V units)	1
-	901 137	• • Valve, Solenoid, Two-Way, 230 VAC (non-380-Y V units)	1
-	901 139	• • Valve, Solenoid, Two-Way, 250 VAC (380-Y V units)	1
-	-	• • Connector, Receptacle	1
-	939 916	• • Terminal, Pin, 16-18 Gauge	2
3	274 568**	• Tubing, Aluminum, ¼ in. OD	1
4	971 400	• Elbow, Male, 0.25 in. T x ⅛ in. NPT	1
5	971 151	• Connector, Male, 0.25 in. T x ⅛ in. NPT	1
6	973 007	• Nipple, Steel, ⅛ in. NPT x 2.0 in.	1
7	900 470	• Loctite, No. 272	-
8	900 341	• Lubricant, Never Seez	-

* See the Pump Assembly parts list.

** Items 4 and 5 are required whenever new tubing is installed.

Pump Assembly Parts List (see Figure 8.8)

Item No.	Part No.	Description	Required
-	274 996	Pump Assembly (Non-380-Y V units)*	Ref
-	276 500	Pump Assembly (380-Y V units)*	Ref
1	973 402	• Plug, Pipe, 1/8 in. NPTF	1
2	130 545	• Clamp, Valve Actuator	1
3	983 409	• Lockwasher, Split, M6	9
4	982 146	• Screw, Hex Head, M6 x 50 mm	2
5	983 503	• Washer, Flat, M6	2
6	130 639	• Stop, Shifter	1
-	-	• Valve/Spring Assembly	1
7	-	• Air Control Valve Assembly**	1
8	274 997	• Shifter and Spring Assembly***	1
9	276 141	• Locknut, M5	1
10	983 401	• Lockwasher, Split, M5	1
11	274 538	• Block, Spring Shifter	1
12	983 519	• Washer, Flat, 0.20 in. ID x 1.0 in. OD	2
13	274 532	• Gasket, Shifter Valve	2
14	274 994	• Bracket, Pump Tower	1
15	973 403	• Pipe Plug, 1/16 in. NPTF	2
16	982 147	• Screw, Hex Head, M6 x 120 mm	4
17	274 523	• Head, Air Cylinder	1
18	940 332	• O-Ring, Viton	2
19	984 703	• Nut, Hex, M6	2
20	503 687	• Washer, Cup, Piston	2
21	503 686	• Cup, Piston	2
22	503 688	• Washer, Seal, Piston	1
23	274 522	• Cylinder, Piston, Pump	1
-	274 777	• Piston Assembly, Pump	1
-	503 708	• Pressure Ball and Seat Assembly	1
24	-	• Seat, Ball, Pressure	1
25	900 000	• Ball, 440SS, 0.38 in.	1
-	985 302	• Pin, Roll	1
26	-	• Piston, Pump, Hydraulic	1
27	952 100	• U-Cup, Viton	1
28	-	• Mount, Pump	1
29	986 602	• Ring, Retainer	1
30	273 138	• Washer, 0.80 in.OD x 0.54 in. ID	1
31	273 139	• Seal, Pump	1
32	984 534	• Locknut, PN-06	1
33	983 183	• Lockwasher, W-06	1
34	273 108	• Body, Hydraulic Pump	1
-	503 694	• Siphon Ball and Seat Assembly	1
35	503 696	• Cage, Ball, Siphon	1
36	900 001	• Ball, .500 Dia.	1
37	-	• Seat, Ball, Siphon	1
-	276 317	• Crossover Tube Assembly	1
38	-	• Tube, Crossover	1
39	954 013	• Ring, Backup, 9/16 in. OD	1
40	940 133	• O-Ring, 9/16 in. OD	1
41	900 236	• Paste, **PTFE**	-
42	900 223	• Lubricant, Parker	-
43	900 465	• Adhesive, Loctite 277	-

Pump Assembly Parts List (continued)

Item No.	Part No.	Description	Required
44	982 237	• Screw, Hex Head, M6 x 35 mm	1
45	982 207	• Screw, Hex Head, M6 x 45 mm	2
46	900 341	• Lubricant, Never Seez	-
47	900 470	• Adhesive, Loctite 272	-
-	900 465	• Adhesive, Threadlocking (380-Y V units)	-
-	982 237	• Screw, Hex Head, Cap, M6 x 35 mm (380-Y V units)	1
-	982 207	• Screw, Hex Head, Cap, M6 x 45 mm (380-Y V units)	1
-	900 341	• Lubricant, Never Seez (380-Y V units)	-

* See Service Parts Kits listing for Pump Seal Replacement Kit.
** See the Air Control Valve Assembly parts list.
*** See the Shifter and Spring Assembly parts list.

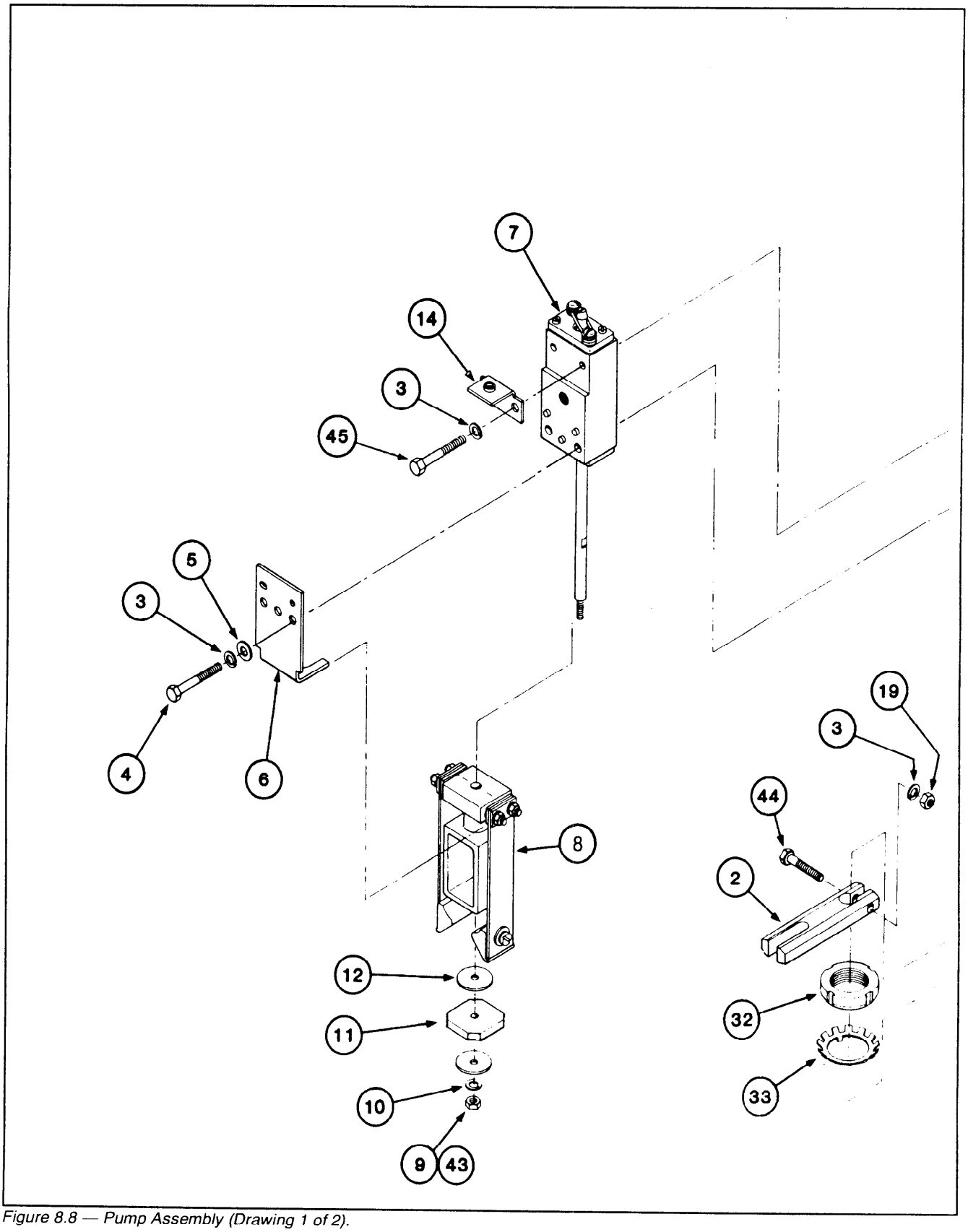

Figure 8.8 — Pump Assembly (Drawing 1 of 2).

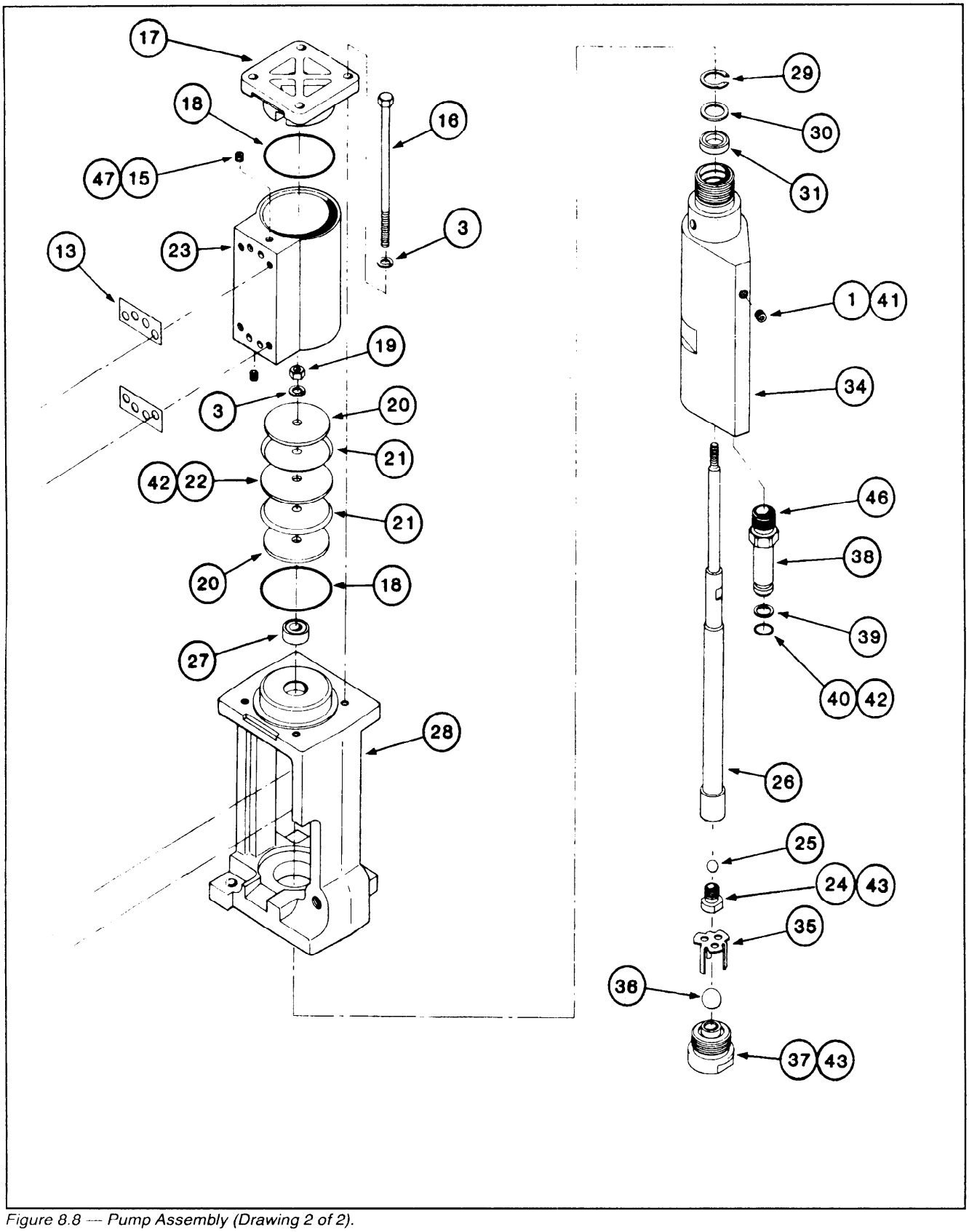

Figure 8.8 — Pump Assembly (Drawing 2 of 2).

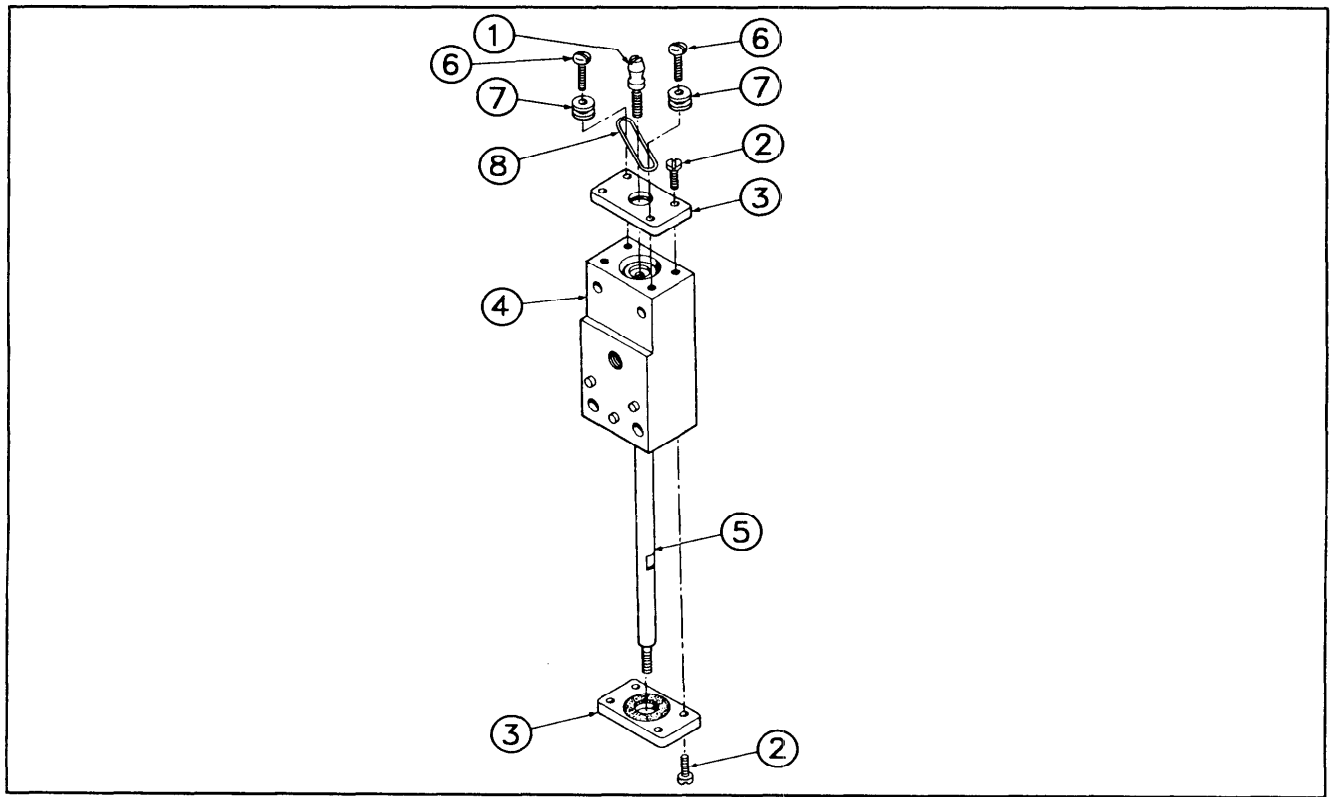

Figure 8.9 — Air Control Valve Assembly.
(200/230 V version shown; 380V version similar)

*Air Control Valve Assembly Parts List**

Item No.	Part No.	Description	Required
-	276 861	Air Control Valve Assembly (200/230 V)	Ref
-	276 928	Air Control Valve Assembly w/Mufflers (220/380 V)	Ref
1	133 980	• Pin, Detent	1
2	982 206	• Screw, Fillister Head, M4 x 0.7 (200/230 V)	6
2	982 206	• Screw, Fillister Head, M4 x 0.7 (380 V)	4
3	105 519	• Seat, Poppet	2
4	-	• Body, Air Control Valve	1
5	-	• Rod, Shifter, Air Valve	1
6	982 275	• Screw, Fillister Head, Lock, M4 x 0.7-16 mm	2
7	503 737	• Spacer	2
8	243 512	• Detent	1
-	-	• Lubricant, Moly Disulfide	-
-	270 042	• Poppet, 4-Way Air Valve	2
-	-	• Spool, Valve	1
-	-	• Lubricant, Graphite, Dry	-
-	276 360	• Disc, Sintered Muffler Top (380 V)	1
-	276 359	• Cap, Muffler (380 V)	2
-	276 361	• Disc, Sintered Muffler Bottom (380 V)	1
-	135 911	• Adapter, Muffler, Pump (380 V)	1
-	983 111	• Lockwasher, External, Spt, #8 (380 V)	2

* Nordson recommends no repairs to this assembly other than seat replacement. Any damage to the shifter rod may cause the valve shifter to malfunction.

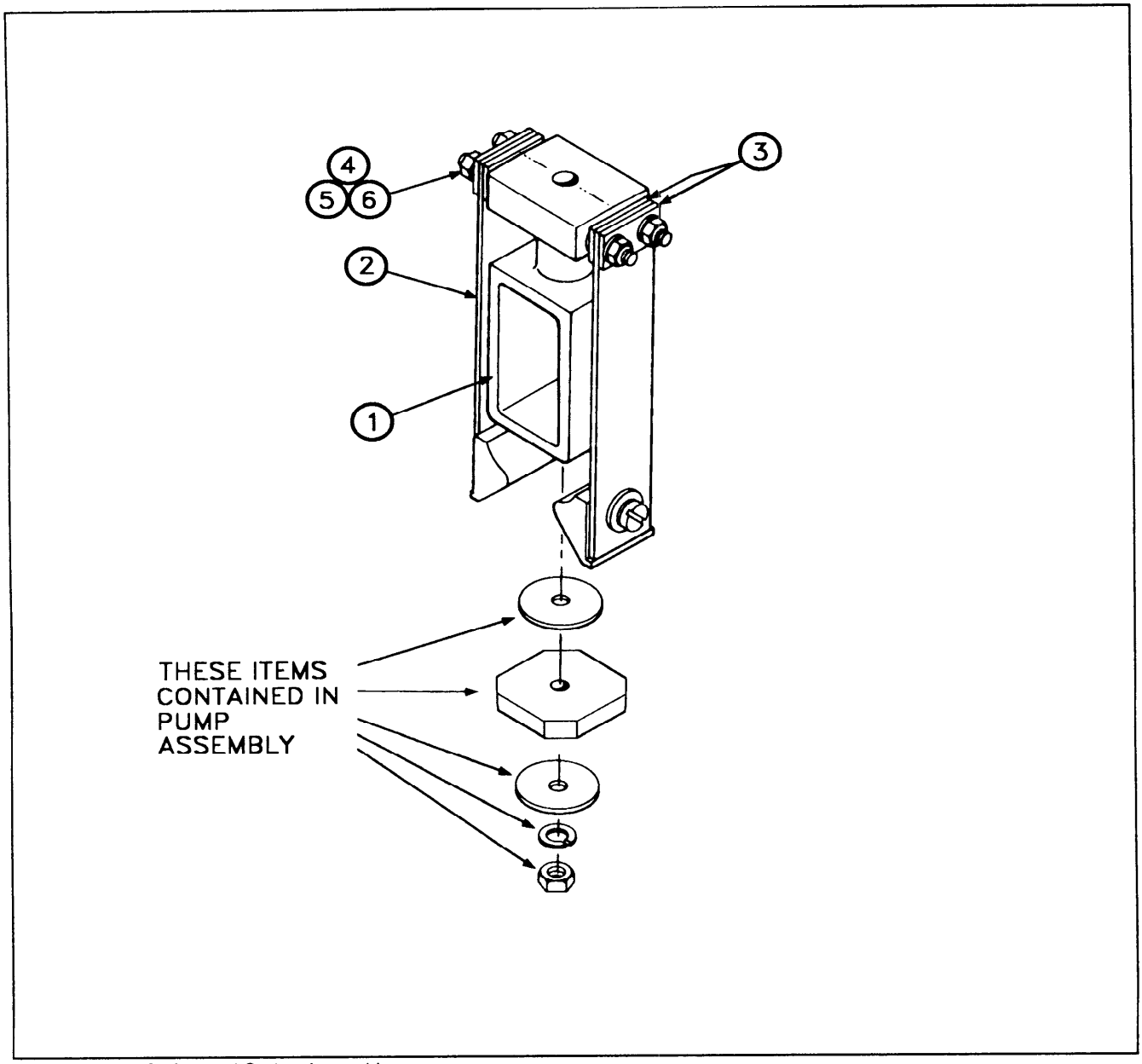

Figure 8.10 — Shifter and Spring Assembly.

Shifter and Spring Assembly

Item No.	Part No.	Description	Required
-	274 997	Shifter and Spring Assembly	1
1	-	• Slide	1
2	-	• Spring Assembly, Valve	2
3	276 175	• Retainer, Spring	4
4	983 401	• Lockwasher, Split, M5	4
5	276 141	• Nut, Lock, M5	4
6	900 419	• Adhesive, Retaining Cylindrical	-

Recommended Spare Parts List

Part No.	Description	Req'd
	Manifold and Tank	
274 511	• Tank Gasket	1
274 581	• Filter Assembly	1
*	• Filter Screen	1
941 172	• O-Ring, Viton (filter bung)	1
276 109	• Pressure Relief Valve	1
954 036	• Backup Ring (drain valve)	1
940 101	• O-Ring, Viton (drain valve)	1
	Piston Pump Assembly	
274 532	• Gasket, Shifter Valve	2
503 686	• Piston Cup	2
952 100	• U-Cup, Viton	1
940 332	• O-Ring, Viton (air cylinder)	2
503 687	• Piston Cup Washer	2
503 688	• Piston Seal Washer	1
273 139	• Pump Seal	1
274 777	• Pump Piston Assembly	1
986 602	• Retainer Ring	1
276 315	• Valve/Shifter Replacement Kit	1
983 183	• Lockwasher, W-06	1
940 133	• O-Ring (crossover tube)	1
	Electrical Components	
**	• Circuit Board	1
937 283	• Tank RTD Sensor	1
274 585	• Circuit Breaker, 3-pole, 30-amp	1
939 646	• Power-On Lamp, 240 VAC	1
276 022	• Thermostat w/Insulator, 450F	1
939 683	• Fuse, Circuit Board, 6.3 amp (hose channel)	3
939 091	• Fuse, Inline, 5-amp	4
939 644	• Tank Triac, 25-amp	1
	Pump Air Supply System	
901 254	• 1/8 in. NPT Air Gauge	1
274 669	• Solenoid Valve/Wiring Assembly (non-380-Y V units)	1
276 872	• Solenoid Valve/Wiring Assembly (380-Y V units)	1
	Miscellaneous	
900 236	• **PTFE** Paste	-
900 223	• Parker Lubricant	-
900 419	• Loctite No. 620 Adhesive	-
900 341	• Never Seez Lubricant (16 oz. can)	1

* See Section 10 (Optional Parts and Equipment) for list of available filter screen sizes.

** See selection charts on page 8-3 for correct circuit board part number.

Service Parts List

Part No.	Description	Req'd
	Piston Pump Assembly Kits	
276 861	Service Kit, 4-Way Air Valve w/Mufflers,	
274 532	• Gasket, Valve Shifter	2
-	• Valve, Air Control	1
130 639	• Stop, Shifter, Air Control	1
276 928	Service Kit, 4-Way Air Valve w/out Mufflers	
274 532	• Gasket, Valve Shifter	2
-	• Valve, Air Control	1
130 639	• Stop, Shifter, Air Control	1
503 694	Service Kit, Siphon Seat w/Ball	
-	• Seat, Ball, Siphon	1
503 696	• Cage, Ball, Siphon	1
900 001	• Ball	1
503 780	Service Kit, Pressure Seat w/Ball	
-	• Seat, Pressure Ball	1
900 000	• Ball	1
276 315	Service Kit, Valve/Shifter Assembly	
-	• Valve, Spring Assembly	1
130 639	• Stop, Shifter, Air Control	1
274 532	• Gasket, Valve Shifter	2
127 324	Service Kit, Pump, Electric Shifter	
-	• Pump, Electric Shifter	1
900 874	• Cap/Plug, Tapered	3
900 772	• Cap, Sleeve, 9/16 OD Tube	1
134 944	Service Kit, Detent, Series 2300 w/out Muffler	
243 521	• Detent	1
503 737	• Spacer	2
133 980	• Pin, Detent	1
982 275	• Screw, Fillister Head, Lk, M4 x 0.70-16 mm	2
136 184	Service Kit, Detent, Series 2300 w/Muffler	
134 944	• Service Kit, Detent, Series 2300 w/out Muffler	1
982 276	• Screw, Fillister Head, Lk, M4 x 0.70-25 mm	2
135 911	• Adapter, Muffler, Pump	1
145 817	Service Kit, Solenoid Valve-1	
126 115	• Solenoid Assembly, Electric Shifter-1	1
145 818	Service Kit, Solenoid Valve-2	
126 116	• Solenoid Assembly, Electric Shifter-2	1
105 519	Service Kit, Poppet Seat	
-	• Seat, Poppet	2
-	• Tag, Info	1

Service Parts List

(continued)

Part No.	Description	Req'd
	Piston Pump Assembly Kits (continued)	
276 314	Service Kit, Pump Seal	
273 139	• Seal, Pump	1
274 532	• Gasket, Valve Shifter	2
503 686	• Cup, Piston	2
940 133	• O-ring, Viton	1
940 033	• O-ring, Viton	2
952 100	• U-Cup, Viton	1
954 013	• Ring, Back-up, Single	1
	Tank and Manifold Kits	
276 310	Service Kit, Tank w/Tag	
-	• Tag, Warranty, Tank	1
274 511	• Gasket, Tank	1
276 200	• Strainer, Tank	1
-	• Tank, Machined	1
276 320	• Adapter, Terminal, Tank Heater	2
900 445	• Sealant, RTV, White	-
276 311	Service Kit, Manifold Replacement	
274 569	• Adapter, Filter Bung	1
-	• Manifold	1
276 109	• Valve, Relief, 1,600 psi	1
900 236	• Sealant, **PTFE** Paste	-
900 419	• Adhesive, Retaining, Cylindrical	-
940 101	• O-ring, Viton	1
940 281	• O-ring, Viton	2
941 172	• O-ring, Viton	1
941 220	• O-ring, Viton	1
973 574	• Plug, O-ring	8
276 312	Replacement Kit, Tank Cover	
274 511	• Gasket, Tank	1
-	• Cover Assembly	1
276 317	Service Kit, Crossover Tube	
-	• Tube, Crossover	1
940 133	• O-ring, Viton	1
954 013	• Ring, Back-up, Single	1
276 313	Replacement Kit, Insulation	
274 612	• Insulation, Tank	1
274 625	• Insulation, Side, Tank	1
274 631	• Insulation, Bottom, Tank	1
	Electrical Kits	
276 316	Replacement Kit, Terminal Block	
933 295	• Terminal Block, Input Power, 5-station	1
933 297	• Strip, Marker, 5-station	1

Service Parts List

(continued)

Part No.	Description	Req'd
	Electrical Kits (continued)	
276 320	Kit, Terminal Adapter, Tank Heater	
933 325	• Terminal, Flag, Noninsulated	1
139 672	Repair Kit, Hose End, Series 2300 Hose	
-	• Pin, Connector, Holder	5
940 202	• O-ring, Buna N	5
100 307	• Shell, Convertible Connector	5
981 754	• Screw, Flat Head, Self-Tapping, 4-40	10
-	• Connector, Strain Relief	5
139 671	• Tool, Crimping, Ratchet	1
100 586	• Extractor	2
-	• Accessory Group, Unit End, Series 2300	1
139 675	Repair Kit, Gun End, Series 2300 Hose	
-	• Cuff, Hose w/Connector	5
-	• Collar, Cover, Hose Cuff	5
-	• Collar, Hose Cuff	5
981 776	• Screw, Fillister Head, Rec, Tap, 6-32 x 0.437 in.	10
940 202	• O-ring, Buna N	5
139 671	• Tool, Crimping, Ratchet	1
100 586	• Extractor	2
-	• Accessory Group, Unit End, Series 2300	1
276 319	Kit, Unit Hose Wiring Harness	
274 652	• Connector, Socket, 12-pin	1
-	• Wire Group, Hose Power Supply	1
982 221	• Screw, Pan Head, M3 x 0.30 x 10 mm	4
983 411	• Washer, Flat, Narrow, M3	4
984 700	• Nut, Hex, M3	4
274 651	• Gasket, Connector	1
274 653	• Cover, Connector, Socket, 12-pin	1
274 650	• Gasket, Connector, Cordset, Unit	1
939 683	Fuse, Fast-Acting, 250 V, 6.3 Amp, 5 x 20 mm	11

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SECTION 9

SECTION 9

Specification Summary

List of Illustrations

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Section 9
Specification Summary*

1. General

Viscosity Range		1,000 to 30,000 centipoise
Tank Volume** (to top flange)		520 in^3 (8,521 cm^3)
Tank Capacity** (to top flange)		18.7 lbs (8.5 kg)
System Melt Rate**		20.0 lb/hr (9.1 kg/hr)
Maximum Instanteous Pumping Rate**		72.0 lb/hr (32.7 kg/hr)
Tank Heating Method		Cast-in resistive heating element
Ambient Temperature Range		32 to 120F (0 to 50C)
Operating Temperature Range		220 to 400F (105 to 205C)
Temperature Control Stability		±1F (±0.5C)
Recommended Pump Operating Air Pressure		10 to 60 psi (69 to 414 kPa)
Number of Hoses per Unit		
	2302	2 Hoses
	2304	4 Hoses
	2305	5 Hoses
	2306	6 Hoses
Hose and Gun Capacity		See Tables 9.1 and 9.2 in this Section
Maximum Allowable Hose Length		16 ft (4.9 m) maximum per channel 64 ft (19.5 m) total of all hoses
Electrical Requirements		196 to 254 VAC, 50/60 Hz, 1-phase or 3-phase; 380-Y/230 VAC, 50/60 Hz, 3-phase only
Maximum System Power Requirements***		
	2302 and 2304	3,500 watts at 230 VAC
	2305 and 2306	5,200 watts at 230 VAC
Dimensions		See Figure 9.1
Enclosure Rating		Meets IP-54 requirements
Weight, Empty (approximate)		60 lbs (27.2 kg)
Working Hydraulic Pressure (maximum at 125 psi/862 kPa air pressure)		1,500 psi (10.4 MPa)
Recommended Operating Air Pressure, Guns		35-80 psi (207 - 690 kPa)
Maximum Operating Speed, Guns		
	H20	3,000 cycles per minute
	H200	3,000 cycles per minute
	AD-24	3,000 cycles per minute
	AD-31	Manual Gun
Gun Heating Method		RTD-controlled cartridge heater
Air Consumption		1 SCFM at 60 psi (414 kPa) and 60 strokes per minute

*Due to possible technological and/or quality improvements, equipment specifications are subject to change without notice.

**See definition of this term in the Glossary at the end of Section 2.

***The actual power requirement for the hot melt system is determined by adding the power requirements of the individual components used (tanks, hoses and guns). See *Calculating System Electrical Power Requirements* in this Section.

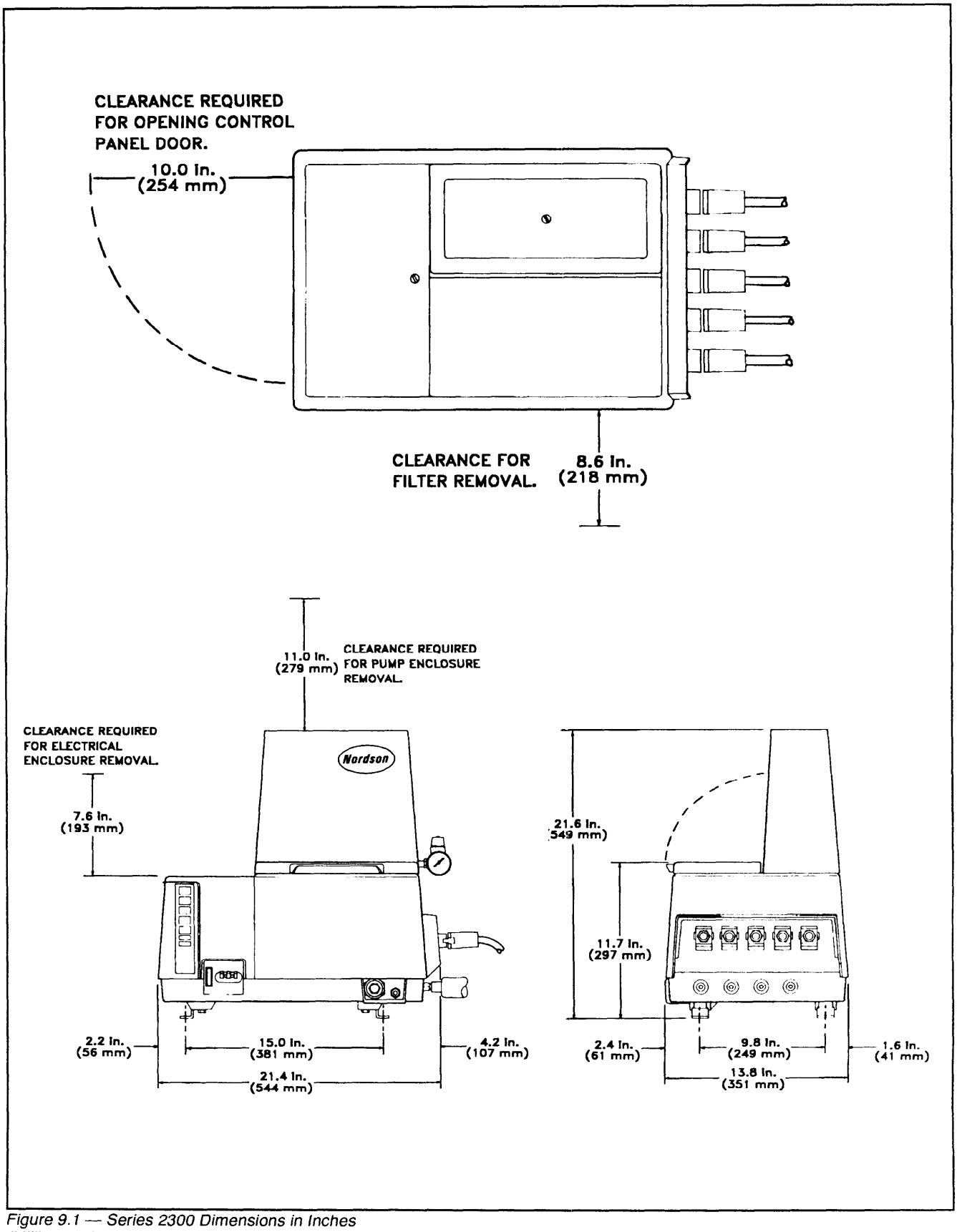

Figure 9.1 — Series 2300 Dimensions in Inches (Millimeters).

2. Power requirements

TABLE 9.1 " HEATER AND ELECTRICAL DATA FOR TANKS AND HOSES

Part No.	Description	Wattage	Voltage (VAC)	Resistance (in Ohms at 75F/24C)*
-	Tank w/Cast-In Heater	1,800	220/230	29
-	Tank w/Cast-In Heater	1,360	200	29
	Standard Automatic Hoses			
274 790	Automatic Hose, 2 ft	47	220/230	1,119
274 791	Automatic Hose, 4 ft	100	220/230	516
274 792	Automatic Hose, 6 ft	153	220/230	336
274 793	Automatic Hose, 8 ft	206	220/230	240
274 794	Automatic Hose, 10 ft	259	220/230	167
274 795	Automatic Hose, 12 ft	313	220/230	139
274 796	Automatic Hose, 16 ft	419	220/230	104
274 797	Automatic Hose, 24 ft	632	220/230	78
276 150	Automatic Hose, 2 ft	47	200	846
276 151	Automatic Hose, 4 ft	100	200	390
276 152	Automatic Hose, 6 ft	153	200	244
276 153	Automatic Hose, 8 ft	206	200	159
276 154	Automatic Hose, 10 ft	259	200	127
276 155	Automatic Hose, 12 ft	313	200	120
276 156	Automatic Hose, 16 ft	419	200	78
	Water-Res. Automatic Hoses (IP-56 at gun end only)			
276 739	Automatic Hose, 2 ft	47	220/230	1,119
276 740	Automatic Hose, 4 ft	100	220/230	516
276 741	Automatic Hose, 6 ft	153	220/230	336
276 742	Automatic Hose, 8 ft	206	220/230	240
276 743	Automatic Hose, 10 ft	259	220/230	167
276 744	Automatic Hose, 12 ft	419	220/230	78
	Automatic Hoses with High-Flex Construction			
107 288	Automatic Hose, 4 ft	100	220/230	516
107 286	Automatic Hose, 6 ft	153	220/230	336
107 287	Automatic Hose, 8 ft	206	220/230	240
107 289	Automatic Hose, 10 ft	259	220/230	167
107 310	Automatic Hose, 12 ft	313	220/230	139
104 008	Automatic Hose, 16 ft	419	220/230	104
100 832	Automatic Hose, 24 ft	632	220/230	78
	Handgun Hoses with Corrugated Cover			
274 798	Handgun Hose, 8 ft	206	220/230	240
115 833	Handgun Hose, 10 ft	259	220/230	167
274 799	Handgun Hose, 16 ft	419	220/230	103
101 354	Handgun Hose, 24 ft	632	220/230	78
276 533	Handgun Hose, 8 ft	206	200	159
276 534	Handgun Hose, 16 ft	419	200	78
	Handgun Hoses with Braided Cover			
133 913	Handgun Hose, 8 ft	206	220/230	240
138 927	Handgun Hose, 10 ft	259	220/230	193
132 494	Handgun Hose, 16 ft	419	220/230	103

2. Power requirements

(continued)

TABLE 9.2 " HEATER AND ELECTRICAL DATA FOR GUNS

Gun Part No.	Description	Wattage	Voltage (VAC)	Resistance (in Ohms at 75F/24C)
	H20 Automatic Guns (all with RTD Temperature Control)			
274 702	H20A	147	220/230	333 - 392
276 096	H20A	180	200	189 - 222
120 664	H20 LBS (5/16 in. ID)	147	220/230	333 - 392
276 954	H20 LBS (5/8 in. ID)	147	220/230	333 - 392
274 728	H20 w/Micro-Adjust	147	220/230	333 - 392
276 778	H20W (water-wash)	147	220/230	333 - 392
815 138	H20 w/Filtered Body	130	220/230	392 - 465

NOTE: H20B, H20C, H20D, H20E and H20F guns are not available with RTD temperature control.

Other RTD-Temperature-Controlled Guns

NOTE: Due to the sheer number of these guns now available, refer to your *Nordson Adhesives and Sealants Equipment Catalog* for data on H200 Automatic Guns, AD-24 Automatic Guns, the A-1 Handgun, AD-31 Spray Handguns, AD-31 Swirl Handguns, AD-31 Extrusion Handguns, and CF-200 Controlled Fiberization Automatic Guns, or contact your Nordson representative for this information.

3. Calculating system electrical power requirements

The total power requirements of the tank, hoses and guns in terms of total wattage must not exceed the maximum power rating of the system as given in Table 9.3.

To determine your systems total power requirements, add up the individual tank, hose(s) and gun(s) wattages, then compare your total with the maximum power rating for the system given in Table 9.3. Remember " your total must not exceed the figure in the table for your system.

Tank and hose data are given in Table 9.1. Some gun data is in Table 9.2, the rest is provided in your *Nordson Adhesives and Sealants Equipment Catalog.*

TABLE 9.3 " SYSTEM MAXIMUM POWER RATINGS IN WATTS*

Type of Series 2300 Applicator	230 VAC Systems	200 VAC Systems	380-Y VAC Systems
Model 2302 (2 hoses maximum)	3,500	2,930	3,160
Model 2304 (4 hoses maximum)	5,250	4,360	4,950
Model 2305 (5 hoses maximum)	5,250	4,360	4,950
Model 2306 (6 hoses maximum)	5,250	4,360	4,950

* At 350F (177C)

4. Material safety data information

I. IDENTITY

Product Name	Nordson Type R Solvent
Nordson Part No.	270 755 (1 Gallon) 270 756 (5 Gallon) 270 757 (55 Gallon)
Chemical Name	Adipate Polyester Plasticizer

II. HAZARDOUS INGREDIENTS

None

III. PHYSICAL DATA

Boiling Point	>600F (92.2C)
Vapor Pressure	<0.01 mm Hg @ 68F (20C)
Vapor Density	N/A
Water Solubility	Negligible
Appearance and Odor	Viscous, clear liquid Mild, inoffensive odor
Percent Volatile by Volume	0%
Evaporation Rate	Negligible (Butyl Acetate = 1)
Specific Gravity	1.09

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point	572F (300C) COC
Extinguishing Media	CO_2, Dry Chemical, Water Fog
Flammability Limits	Not Available
Special Firefighting Procedures	Wear MESA/NIOSH-approved, self-contained breathing apparatus. Use water spray to cool fire-exposed containers.
Unusual Fire and Explosion Hazards	Water may cause frothing

V. HEALTH HAZARD DATA

Threshold Limit Value	Not determined by ACGIH
Effects of Overexposure	Liquid may cause mild eye irritation. Repeated or prolonged skin contact may cause irritation.
Emergency First Aid Procedures:	
Inhalation	Move subject to fresh air.
Eye Contact	Remove contact lenses. Hold eyelids away from eyeballs to assure thorough rinsing. Flush eyes with large amounts of water for at least 15 minutes. Consult physician if irritation persists.
Skin Contact	Wash affected skin areas with soap and water.

4. Material safety data information

(continued)

VI. REACTIVITY DATA

Stability	Stable
Conditions to Avoid	None
Incompatability (materials to avoid)	Strong oxidizers
Hazardous Decomposition Products	None under normal conditions of use. Oxides of carbon when burned.
Hazardous Polymerization	Will not occur.

VII. SPILL OR LEAK PROCEDURES

Steps to Be Taken If Material Released or Spilled	Dike and contain spill with inert material (sand, earth, Fuller's Earth, etc.) and transfer liquid and solid diking materials to separate containers for recovery and disposal. Wash floor with hot water and solution of Oakite or equivalent. Remove contaminated clothing and wash before reuse. Wash affected skin areas with soap and water. Keep spill out of sewers and open bodies of water.
Waste Disposal Method	Incinerate liquid in approved equipment. Landfill contaminated diking materials according to current local, state and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection	None required for normal operations
Ventilation	Normal room ventilation
Protective Gloves	Impervious
Eye Protection	Do not wear contact lenses. Splashgoggles (ANSI Z87.1, 1979)
Other	Eyewash facility Impervious apron

IX. SPECIAL PRECAUTIONS

Precautions to Be Taken in Handling and Storage	Stainless steel and aluminum are acceptable for storage. Recommended storage temperature is 80F (27C). Material freezes below 41F (5C).

X. NFPA 704M RATINGS

Health Hazard	1
Flammability	2
Reactivity	0
Other Hazards	None

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SECTION 10

Optional Parts and Equipment

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Section 10
Optional Parts and Equipment

1. Introduction

Here you will find those parts, kits and equipment that are available for use with the Series 2300 applicator and associated hoses and guns.

Service kits, service parts and spare parts are listed in Section 9 of this manual. The list of hoses and guns, as well as their accessories, is too long for inclusion here but is included in your *Adhesives and Sealants Equipment Catalog.*

Add to this Section 10 of this manual any instruction sheets for kits or equipment ordered later.

Equipment	Nordson Part No.	Description
Field-Installed Options*:		
Parent Machine Interlock	274 658	Permits operation of the parent machine only after the adhesive has reached application temperature.
Low-Level Indicator Kits:		
(Flat-Bottomed Tank)	276 176	Provides warning when tank adhesive level falls to refill point.
(Finned Tank)	276 334	
Unit Temperature Control Conversion Kit	276 587	Adds either temperature setback feature or both temperature setback and digital readout features.
Hoses and Guns	See your *Adhesives and Sealants Equipment Catalog*	
Gun Nozzles, hose filter screens and miscellaneous fittings	See your *Adhesives and Sealants Equipment Catalog*	
Handgun Hose Support Bracket Kit	276 318	Includes bracket to prevent excessive flexing at hose-to-applicator connection.
Handgun Hose Hanger Kit	271 486	Includes overhead support for suspending hose, thus preventing it from dragging on floor or kinking.
Kits for Special Applications:		
Temperature Setback Interface Kit	276 510	Allows automatic and remote operation of already-installed temperature setback feature.
Remote Fault Condition Interface Kit	276 575	Allows remote indication (light, bell, etc.) of fault condition.
Electric Shifter Kit	121 224	Replaces the mechnical shifter and air valve assemblies on 14:1 Series 2300 pumps.
Unit Extension Kit	276 338	Elevates unit to permit routing of hoses underneath unit.
Single-Phase Jumper Kits:		Required on single-phase installations.
For 200 or 230 VAC units	276 084	
For 380-Y VAC units	276 236	

* Parent Machine Interlock, Low-Level Indicator Kit, Temperature Setback Interface Kit and Digital Readout may also be purchased as factory-installed options. See Section 8 of this manual or your *Adhesives and Sealants Equipment Catalog* for Series 2300 unit part numbers with these options installed.

Equipment	Nordson Part No.	Description
Auxiliary Equipment:		
Timers	See your *Adhesives and Sealants Equipment Catalog*	
Automatic Standby Controller	105 827	Depending on configuration of existing Series 2300 applicator
Melter/Feeder for units using only side-ported hoses	110 663	Stores up to 150 lbs (68 kg) ofsolid adhesive
Melter/Feeder for units for units with bottom-ported hoses	110 772	(Same as above)
Melter/Feeder Conversion Kit	112 133	Converts Melter/Feeders for Nordson Model IV and V applicators for use with Series 2300 applicators.
Automatic Hopper/Feeder	101 906	Stores adhesive in clean, dry state, automatically feeds tank on demand.
Nitrogen Blanket Kit	815 157	Keeps nitrogen gas blanket over tank to reduce oxidation or charring of easily degradable materials.
High-Capacity Tank Screen	111 346	For a higher melt rate, beyond that attained with standard tank screen.
Options Interface Board	276 893	Allows for remote monitoring of power on/off, over/under setpoint indication, low material level indication, temp setback on/off indication (if already installed); also provides PMI capability and remote control of temp setback operation (if already equipped).
Tank Calibration Kit	276 633	For calibrating Series 2300 temp dials.
Hose/Gun Calibration Kit	276 635	As above.
Field Calibration Kit (includes both of the above kits)	276 632	As above.
Hose Connector Cover Kit	276 862	Protects hose electrical connectors at manifold end of applicator from external damage.
Over-Voltage Protection Device Kit	109 703	For protection of the unit where the unit was connected to a higher voltage input than specified.
Electrical Line Noise Filter Kit	809 507	For applications where repeated occurence of abnormally high voltage spikes can cause loss of temperature control or damage to the unit circuit board.
Extension Cordsets:		Has plug connectors at each end.
2 ft (0.61 m) long	115 576	
6 ft (0.1.83 m) long	115 577	
12 ft (3.66 m) long	115 578	
18 ft (5.49 m) long	115 579	
24 ft (7.32 m) long	115 580	
30 ft (9.14 m) long	115 581	
Cordset Assembly, 8 ft (2.44 m) long	810 004	For use in special applications where plug connector required at one end, five wires loose at other end.

Equipment	Nordson Part No.	Description
Optional Filter Screens*		
Screen, Filter	276 139	0.004 in. mesh
Screen, Filter	274 578	0.006 in. mesh**
Screen, Filter	276 138	0.009 in. mesh
Screen, Filter	276 137	0.012 in. mesh
Screen, Filter	276 136	0.015 in. mesh
Screen, Filter	276 135	0.020 in. mesh

* Select the largest screen mesh size that is smaller than the gun nozzle diameter.

** This size shipped with the applicator or filter assembly unless specified otherwise on purchase order.

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