Order number

P/N = Order number for Nordson products

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- Translation of Original Document -

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Nordson International


Europe

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<td>43-1-707 5521</td>
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<td>44-1844-26 4500</td>
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<td>Industrial Coating Systems</td>
<td>44-161-498 1500</td>
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Distributors in Eastern & Southern Europe

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<th>Phone</th>
<th>Fax</th>
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<tr>
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<td>49-211-254 658</td>
</tr>
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</table>
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- For your nearest Nordson office outside Europe, contact the Nordson offices below for detailed information.

<table>
<thead>
<tr>
<th>Contact Nordson</th>
<th>Phone</th>
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#### Africa / Middle East

| DED, Germany    | 49-211-92050   | 49-211-254 658 |

#### Asia / Australia / Latin America

| Pacific South Division, USA | 1-440-685-4797 | -           |

#### China

| China           | 86-21-3866 9166 | 86-21-3866 9199 |

#### Japan

| Japan           | 81-3-5762 2700  | 81-3-5762 2701  |

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<th>1-905-475 6730</th>
<th>1-905-475 8821</th>
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<td>USA</td>
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<td>Hot Melt</td>
<td>1-770-497 3400</td>
<td>1-770-497 3500</td>
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<tr>
<td>Finishing</td>
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<td>1-888-229 4580</td>
</tr>
<tr>
<td>Nordson UV</td>
<td>1-440-985 4592</td>
<td>1-440-985 4593</td>
</tr>
</tbody>
</table>
General Instructions Regarding Working with Application Materials

Definition of Terms

Application materials can be e.g. thermoplastic hot melt materials, adhesives, sealants, liquid adhesives and similar application materials. They are referred to as materials.

NOTE: The materials that may be processed with your Nordson product are described in the manual under Intended Use and Unintended Use. When in doubt, please contact your Nordson representative.

Manufacturer Information

Materials may be processed only when the manufacturer's product descriptions and Safety Data Sheets (MSDS) are observed.

They provide information, amongst other things, on correct processing of the product, transport, storage and disposal. Information regarding reactivity and potentially hazardous decomposition products, toxic properties, flash points, etc. can also be found there.

Liability

Nordson is not be liable for danger or damage resulting from the materials.

Risk of Burns

There is a risk of burns when handling heated materials. Work carefully and wear appropriate protective clothing/equipment.
Vapors and Gases

Ensure that vapors and gases do not exceed the prescribed limits. If necessary, exhaust vapors and gases and/or provide sufficient ventilation of the work space.

Substrate

The substrate should be free of dust, grease and moisture. The suitable material, optimum working conditions, and possible pre-treatment of the substrate must be determined by testing.

Processing Temperature

When materials require heating, adherence to the prescribed processing temperature is imperative to ensure the quality of the application. It may not be exceeded! Overheating can cause material coking or cracking, resulting in malfunctioning or unit failure.

Material should always be melted gently. Extended, unnecessary temperature load should be avoided. The temperature should be reduced during breaks in work. The temperature in the tank should be attuned to the material consumption. Thus it is close to the prescribed processing temperature for high material consumption and lower for lower consumption.

When materials are processed cold, take into consideration the shear heat and the ambient temperature; cool if necessary.
Section 1
Safety

Read this section before using the equipment. This section contains recommendations and practices applicable to the safe installation, operation, and maintenance (hereafter referred to as “use”) of the product described in this document (hereafter referred to as “equipment”). Additional safety information, in the form of task-specific safety alert messages, appears as appropriate throughout this document.

WARNING! Failure to follow the safety messages, recommendations, and hazard avoidance procedures provided in this document can result in personal injury, including death, or damage to equipment or property.

Safety Alert Symbols

The following safety alert symbol and signal words are used throughout this document to alert the reader to personal safety hazards or to identify conditions that may result in damage to equipment or property. Comply with all safety information that follows the signal word.

WARNING! Indicates a potentially hazardous situation that, if not avoided, can result in serious personal injury, including death.

CAUTION! Indicates a potentially hazardous situation that, if not avoided, can result in minor or moderate personal injury.

CAUTION! (Used without the safety alert symbol) Indicates a potentially hazardous situation that, if not avoided, can result in damage to equipment or property.
Responsibilities of the Equipment Owner

Equipment owners are responsible for managing safety information, ensuring that all instructions and regulatory requirements for use of the equipment are met, and for qualifying all potential users.

Safety Information

- Research and evaluate safety information from all applicable sources, including the owner-specific safety policy, best industry practices, governing regulations, material manufacturer's product information, and this document.
- Make safety information available to equipment users in accordance with governing regulations. Contact the authority having jurisdiction for information.
- Maintain safety information, including the safety labels affixed to the equipment, in readable condition.

Instructions, Requirements, and Standards

- Ensure that the equipment is used in accordance with the information provided in this document, governing codes and regulations, and best industry practices.
- If applicable, receive approval from your facility's engineering or safety department, or other similar function within your organization, before installing or operating the equipment for the first time.
- Provide appropriate emergency and first aid equipment.
- Conduct safety inspections to ensure required practices are being followed.
- Re-evaluate safety practices and procedures whenever changes are made to the process or equipment.
User Qualifications

Equipment owners are responsible for ensuring that users:

- receive safety training appropriate to their job function as directed by governing regulations and best industry practices
- are familiar with the equipment owner’s safety and accident prevention policies and procedures
- receive equipment- and task-specific training from another qualified individual

**NOTE:** Nordson can provide equipment-specific installation, operation, and maintenance training. Contact your Nordson representative for information

- possess industry- and trade-specific skills and a level of experience appropriate to their job function
- are physically capable of performing their job function and are not under the influence of any substance that degrades their mental capacity or physical capabilities

Applicable Industry Safety Practices

The following safety practices apply to the use of the equipment in the manner described in this document. The information provided here is not meant to include all possible safety practices, but represents the best safety practices for equipment of similar hazard potential used in similar industries.

**Intended Use of the Equipment**

- Use the equipment only for the purposes described and within the limits specified in this document.
- Do not modify the equipment.
- Do not use incompatible materials or unapproved auxiliary devices. Contact your Nordson representative if you have any questions on material compatibility or the use of non-standard auxiliary devices.
Instructions and Safety Messages

- Read and follow the instructions provided in this document and other referenced documents.
- Familiarize yourself with the location and meaning of the safety warning labels and tags affixed to the equipment. Refer to Safety Labels and Tags at the end of this section.
- If you are unsure of how to use the equipment, contact your Nordson representative for assistance.

Installation Practices

- Install the equipment in accordance with the instructions provided in this document and in the documentation provided with auxiliary devices.
- Ensure that the equipment is rated for the environment in which it will be used. This equipment has not been certified for compliance with the ATEX directive nor as nonincendive and should not be installed in potentially explosive environments.
- Ensure that the processing characteristics of the material will not create a hazardous environment. Refer to the Material Safety Data Sheet (MSDS) for the material.
- If the required installation configuration does not match the installation instructions, contact your Nordson representative for assistance.
- Position the equipment for safe operation. Observe the requirements for clearance between the equipment and other objects.
- Install lockable power disconnects to isolate the equipment and all independently powered auxiliary devices from their power sources.
- Properly ground all equipment. Contact your local building code enforcement agency for specific requirements.
- Ensure that fuses of the correct type and rating are installed in fused equipment.
- Contact the authority having jurisdiction to determine the requirement for installation permits or inspections.

Operating Practices

- Familiarize yourself with the location and operation of all safety devices and indicators.
- Confirm that the equipment, including all safety devices (guards, interlocks, etc.), is in good working order and that the required environmental conditions exist.
- Use the personal protective equipment (PPE) specified for each task. Refer to Equipment Safety Information or the material manufacturer's instructions and MSDS for PPE requirements.
- Do not use equipment that is malfunctioning or shows signs of a potential malfunction.
Maintenance and Repair Practices

- Allow only personnel with appropriate training and experience to operate or service the equipment.
- Perform scheduled maintenance activities at the intervals described in this document.
- Relieve system hydraulic and pneumatic pressure before servicing the equipment.
- De-energize the equipment and all auxiliary devices before servicing the equipment.
- Use only new Nordson-authorized refurbished or replacement parts.
- Read and comply with the manufacturer's instructions and the MSDS supplied with equipment cleaning compounds.

**NOTE:** MSDSs for cleaning compounds that are sold by Nordson are available at www.nordson.com or by calling your Nordson representative.

- Confirm the correct operation of all safety devices before placing the equipment back into operation.
- Dispose of waste cleaning compounds and residual process materials according to governing regulations. Refer to the applicable MSDS or contact the authority having jurisdiction for information.
- Keep equipment safety warning labels clean. Replace worn or damaged labels.

Equipment Safety Information

This equipment safety information is applicable to the following types of Nordson equipment:

- hot melt and cold adhesive application equipment and all related accessories
- pattern controllers, timers, detection and verification systems, and all other optional process control devices
Equipment Shutdown

To safely complete many of the procedures described in this document, the equipment must first be shut down. The level of shut down required varies by the type of equipment in use and the procedure being completed. If required, shut down instructions are specified at the start of the procedure. The levels of shut down are:

Relieving System Hydraulic Pressure

Completely relieve system hydraulic pressure before breaking any hydraulic connection or seal. Refer to the melter-specific product manual for instructions on relieving system hydraulic pressure.

De-energizing the System

Isolate the system (melter, hoses, applicators, and optional devices) from all power sources before accessing any unprotected high-voltage wiring or connection point.

1. Turn off the equipment and all auxiliary devices connected to the equipment (system).
2. To prevent the equipment from being accidentally energized, lock and tag the disconnect switch(es) or circuit breaker(s) that provide input electrical power to the equipment and optional devices.

NOTE: Government regulations and industry standards dictate specific requirements for the isolation of hazardous energy sources. Refer to the appropriate regulation or standard.

Disabling the Applicators

NOTE: Adhesive dispensing applicators are referred to as “guns” in some previous publications.

All electrical or mechanical devices that provide an activation signal to the applicators, applicator solenoid valve(s), or the melter pump must be disabled before work can be performed on or around an applicator that is connected to a pressurized system.

1. Turn off or disconnect the applicator triggering device (pattern controller, timer, PLC, etc.).
2. Disconnect the input signal wiring to the applicator solenoid valve(s).
3. Reduce the air pressure to the applicator solenoid valve(s) to zero; then relieve the residual air pressure between the regulator and the applicator.
General Safety Warnings and Cautions

Table 1-1 contains the general safety warnings and cautions that apply to Nordson hot melt and cold adhesive equipment. Review the table and carefully read all of the warnings or cautions that apply to the type of equipment described in this manual.

Equipment types are designated in Table 1-1 as follows:

- **HM** = Hot melt (melters, hoses, applicators, etc.)
- **PC** = Process control
- **CA** = Cold adhesive (dispensing pumps, pressurized container, and applicators)

Table 1-1 General Safety Warnings and Cautions

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Warning or Caution</th>
</tr>
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<tr>
<td>HM</td>
<td><strong>WARNING!</strong> Hazardous vapors! Before processing any polyurethane reactive (PUR) hot melt or solvent-based material through a compatible Nordson melter, read and comply with the material's MSDS. Ensure that the material's processing temperature and flashpoints will not be exceeded and that all requirements for safe handling, ventilation, first aid, and personal protective equipment are met. Failure to comply with MSDS requirements can cause personal injury, including death.</td>
</tr>
<tr>
<td>HM</td>
<td><strong>WARNING!</strong> Reactive material! Never clean any aluminum component or flush Nordson equipment with halogenated hydrocarbon fluids. Nordson melters and applicators contain aluminum components that may react violently with halogenated hydrocarbons. The use of halogenated hydrocarbon compounds in Nordson equipment can cause personal injury, including death.</td>
</tr>
<tr>
<td>HM, CA</td>
<td><strong>WARNING!</strong> System pressurized! Relieve system hydraulic pressure before breaking any hydraulic connection or seal. Failure to relieve the system hydraulic pressure can result in the uncontrolled release of hot melt or cold adhesive, causing personal injury.</td>
</tr>
</tbody>
</table>

Continued...
### General Safety Warnings and Cautions (contd.)

**Table 1-1 General Safety Warnings and Cautions (contd)**

<table>
<thead>
<tr>
<th>Equipment Type</th>
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<tr>
<td>HM</td>
<td><strong>WARNING!</strong> Molten material! Wear eye or face protection, clothing that protects exposed skin, and heat-protective gloves when servicing equipment that contains molten hot melt. Even when solidified, hot melt can still cause burns. Failure to wear appropriate personal protective equipment can result in personal injury.</td>
</tr>
<tr>
<td>HM, PC</td>
<td><strong>WARNING!</strong> Equipment starts automatically! Remote triggering devices are used to control automatic hot melt applicators. Before working on or near an operating applicator, disable the applicator's triggering device and remove the air supply to the applicator's solenoid valve(s). Failure to disable the applicator's triggering device and remove the supply of air to the solenoid valve(s) can result in personal injury.</td>
</tr>
<tr>
<td>HM, CA, PC</td>
<td><strong>WARNING!</strong> Risk of electrocution! Even when switched off and electrically isolated at the disconnect switch or circuit breaker, the equipment may still be connected to energized auxiliary devices. De-energize and electrically isolate all auxiliary devices before servicing the equipment. Failure to properly isolate electrical power to auxiliary equipment before servicing the equipment can result in personal injury, including death.</td>
</tr>
<tr>
<td>HM, CA, PC</td>
<td><strong>WARNING!</strong> Risk of fire or explosion! Nordson adhesive equipment is not rated for use in explosive environments and has not been certified for the ATEX directive or as nonincendive. In addition, this equipment should not be used with solvent-based adhesives that can create an explosive atmosphere when processed. Refer to the MSDS for the adhesive to determine its processing characteristics and limitations. The use of incompatible solvent-based adhesives or the improper processing of solvent-based adhesives can result in personal injury, including death.</td>
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*Continued...*
<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Warning or Caution</th>
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<tbody>
<tr>
<td>HM, CA, PC</td>
<td><strong>WARNING!</strong> Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others and can damage to the equipment.</td>
</tr>
<tr>
<td>HM</td>
<td><strong>CAUTION!</strong> Hot surfaces! Avoid contact with the hot metal surfaces of applicators, hoses, and certain components of the melter. If contact can not be avoided, wear heat-protective gloves and clothing when working around heated equipment. Failure to avoid contact with hot metal surfaces can result in personal injury.</td>
</tr>
<tr>
<td>HM</td>
<td><strong>CAUTION!</strong> Some Nordson melters are specifically designed to process polyurethane reactive (PUR) hot melt. Attempting to process PUR in equipment not specifically designed for this purpose can damage the equipment and cause premature reaction of the hot melt. If you are unsure of the equipment's ability to process PUR, contact your Nordson representative for assistance.</td>
</tr>
<tr>
<td>HM, CA</td>
<td><strong>CAUTION!</strong> Before using any cleaning or flushing compound on or in the equipment, read and comply with the manufacturer's instructions and the MSDS supplied with the compound. Some cleaning compounds can react unpredictably with hot melt or cold adhesive, resulting in damage to the equipment.</td>
</tr>
<tr>
<td>HM</td>
<td><strong>CAUTION!</strong> Nordson hot melt equipment is factory tested with Nordson Type R fluid that contains polyester adipate plasticizer. Certain hot melt materials can react with Type R fluid and form a solid gum that can clog the equipment. Before using the equipment, confirm that the hot melt is compatible with Type R fluid.</td>
</tr>
</tbody>
</table>
**Other Safety Precautions**

- Do not use an open flame to heat hot melt system components.
- Check high pressure hoses daily for signs of excessive wear, damage, or leaks.
- Never point a dispensing handgun at yourself or others.
- Suspend dispensing handguns by their proper suspension point.

**First Aid**

If molten hot melt comes in contact with your skin:

1. Do NOT attempt to remove the molten hot melt from your skin.
2. Immediately soak the affected area in clean, cold water until the hot melt has cooled.
3. Do NOT attempt to remove the solidified hot melt from your skin.
4. In case of severe burns, treat for shock.
5. Seek expert medical attention immediately. Give the MSDS for the hot melt to the medical personnel providing treatment.
Special Safety Instructions

Safety Labels on Application Head

The following safety labels are affixed to the application head:

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

**CAUTION:** Hot surface. Failure to observe may result in burns.

Safety Instructions in the Manual

The following pictograph and the respective safety instructions are used in the manual:

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

**WARNING:** Hot! Risk of burns. Wear heat-protective gloves.

**WARNING:** Hot! Risk of burns. Wear safety goggles and heat-protective gloves.

**WARNING:** System and material pressurized. Relieve pressure. Failure to observe may result in serious burns.

**CAUTION:** Failure to do so can result in slight to moderately serious injury.

**CAUTION:** Failure to observe may result in equipment damage.
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Section 2

Introduction

Intended Use

Hot melt applicators in the series Control Coat® - hereafter also referred to as applicator - may be used only for surface spray application of hot melt adhesives. The maximum material pressure may not exceed 60 bar (6 MPa / 870 psi).

Any other use is considered to be unintended. Nordson will not be liable for personal injury and/or property damage resulting from unintended use. Intended use includes the observance of Nordson safety instructions. Nordson recommends obtaining detailed information on the materials to be used.

Unintended Use - Examples -

The applicator may not be used under the following conditions:

- When changes or modifications have been made by the customer
- In defective condition
- In a potentially explosive atmosphere
- When values stated under Technical Data are not complied with.

The applicator may not be used to apply the following materials:

- Polyurethane hot melt adhesive (PUR)
- Explosive and flammable materials
- Erosive and corrosive materials
- Food products.
Residual Risks

In the design of the unit, every measure was taken to protect personnel from potential danger. However, some residual risks cannot be avoided. Personnel should be aware of the following:

- Risk of burns! The applicator is hot.
- Risk of burns! The material that comes out of the nozzle is hot.
- Risk of burns when connecting and disconnecting heated hoses.
- Risk of burns when conducting maintenance and repair work for which the applicator must be heated up.
- Material fumes can be hazardous. Avoid inhalation.

Note on Manual

- When the applicator has special features, customer specifications and/or supplements may be added to this manual.
- The position numbers in the illustrations do not correspond to the position numbers in the technical drawings and parts lists.
- The illustrations show only the essential components of the applicator.

Explanation of Type Designation

Example: CC 06I215...

<table>
<thead>
<tr>
<th>CC</th>
<th>Control Coat</th>
</tr>
</thead>
<tbody>
<tr>
<td>06</td>
<td>Number of control modules</td>
</tr>
<tr>
<td>I (or C)</td>
<td>Intermittent or continuous application</td>
</tr>
<tr>
<td>215</td>
<td>Application width in mm</td>
</tr>
<tr>
<td>... X ...</td>
<td>One hydraulic zone for all control modules (max. 2 filter cartridges)</td>
</tr>
<tr>
<td>... O ...</td>
<td>One hydraulic zone (= one filter cartridge each) for each control module</td>
</tr>
</tbody>
</table>
Description of Components / Functioning

Applicator Type CC... - Hydraulic Version X (Standard)

Fig. 2-1
1 Solenoid valve with electrical connection
2 Electrical connection (air heater)
3 Spray air connection
4 Air heater
5 Control air connection (air control module)
6 Spray air control module (blind plate for continuous operation)
7 Centering screw for CC nozzle
8 Tension screw for CC nozzle
9 CC nozzle
10 Body
11 Filter
12 Material control module
13 Material connection
14 Mounting bracket
15 Control air connection (material control module)
16 Electrical connection (body heater)
Description of Components / Functioning (contd.)

Applicator Type CC... - Hydraulic Version O

Fig. 2-2

1 Electrical connection (body heater)  6 Control air connection (spray air control module)
2 Electrical connection (air heater)   7 Tension screw for CC nozzle
3 Air heater                         8 CC nozzle
4 Spray air connection               9 Body
5 Spray air control module (blind plate for continuous operation) 10 Mounting bracket
11 Material control module          12 Filter
12 Control air connection (material control module) 13 Material connection
13 Solenoid valve with electrical connection
**Material Flow**

The melter pumps the material through a heated hose to the applicator. In the applicator the material flows through the filter and the material channels to the nozzle. Control modules open and close the material supply to the nozzle. The material is spread out like a curtain with the aid of heated spray air and applied to the substrate.

The application pattern is essentially determined by the shim plate. The shim plate is located between the nozzle halves. The application pattern also depends on the speed at which the substrate moves, the quantity of material and the material temperature as well as on the spray air quantity and the spray air temperature.

In addition, the quality of the application is influenced by the distance and the angle between the nozzle and the substrate.

**CC nozzle**

The Control Coat (CC) nozzle consists of the two halves of the material nozzle (1), the two halves of the air nozzle (2) and the shim plate (3).

The material flows through the material nozzle. The spray air flows through the air nozzle. The spray air spreads the material out like a curtain before it reaches the substrate.

The shim plate is designed according to the desired application pattern.

Fig. 2-3

**Filter Cartridge**

The material flows from the inside of the filter cartridge to the outside. Thus dirt particles remain in the filter cartridge.

**Heater**

The applicator is heated with electrical heater cartridges. The temperature is continuously measured by temperature sensors and is controlled with electronic temperature controllers.
Description of Components / Functioning (contd.)

**Material Control Module**

Speed-Coat® control modules precisely open and close the material supply to the nozzle by raising or lowering the nozzle stem. The material is suctioned back into the control module by the upward movement. This ensures that the material is cut off properly.

A compression spring ensures that the control module outlet is closed when control air pressure drops, preventing material from being applied.

The number of control modules is a factor of the greatest application width possible.

**Fig. 2-4 Speed-Coat control module**

1. Solenoid valve with voltage plug
2. Manual solenoid valve trigger
3. Muffler
4. Nozzle stem
5. Detection hole
6. Fixing screw
Spray Air Control Module

The spray air is applied with the aid of membrane control modules (Fig. 2-5). The heated spray air spreads the material out like a curtain before it reaches the substrate.

If no control air pressure ($p_1 = 0$) is applied to the membrane, it returns to the rest position and opens the channels for the spray air ($p_2 > 0$).

If control air pressure ($p_1 > 0$) is applied to the spray air control module, the membrane stretches, stopping the spray air flow to the CC application nozzle ($p_2 = 0$).

The control air must be supplied to the applicator through an air conditioning unit with pressure control. The air may not be lubricated; oil in the control air would destroy the silicon membrane in the control module.

Fig. 2-5
Special feature

Nozzle with Three Shim Plates

The nozzle can be equipped with one or three shim plates (Triple-Shim version). The nozzle with three shim plates permits application of two suitable materials to the same substrate surface at the same time.

It is also possible to apply two different material quantities (application weights or grammages).

Another advantage of the triple-shim version is that the pauses between the two different applications can be reduced to 0 (zero) seconds.

Optical Needle Stroke Detection - Option

Optical fibers can be attached to the control modules of the applicator. The movement of the nozzle stems in the control modules is compiled and transmitted to the OptiStroke detection system as an optical signal.

OptiStroke converts the optical signals to digital signals (switching times [ms]). This data can be processed with a control unit belonging to the customer. Also, a PC can be connected, e.g. for diagnostic purposes.

ID Plate

The ID plate displays the following information:

- Applicator type
- Nordson order number
- Serial number
- Operating voltage (V = Volt)
- Total power consumption (W = Watt)

Fig. 2-6
Notes on Solenoid Valves with Temperature Markers

**NOTE:** Temperature markers have *not* been used since the beginning of 2011.

On applicators manufactured before January 1, 2011, solenoid valves type *Booster* were equipped with temperature markers. The markers indicate whether the solenoid valve exceeded a certain temperature at any time.

If the temperature marker is light, the temperature was not exceeded.

If the temperature marker is dark, the temperature was exceeded.

**NOTE:** Unintentional external factors can also cause the color of the temperature marker to darken.

**CAUTION:** The serviceable life of the solenoid valve may be reduced if its temperature exceeds 80 °C.

**NOTE:** A darkened temperature marker does NOT necessarily mean that the solenoid valve can no longer function properly.

If the operating temperature recommended by Nordson for the applicator is complied with and the ambient temperature of the solenoid valve is below 80 °C, the temperature of the solenoid valve will not exceed 80 °C.

**NOTE:** When the color of a temperature marker changes, Nordson recommends immediately checking functioning and, if necessary, immediately replacing the part.
Section 3
Installation

ATTENTION: Allow only qualified personnel to perform the following tasks. Follow the safety instructions here and in the entire documentation.

Unpacking

Unpack carefully. Then check for damage caused during transport. Reuse packaging materials or dispose of properly according to local regulations.

Transport

The applicator is a high precision, valuable part. Handle very carefully! Protect the nozzle from damage, e.g. with the original packaging.

Storage

Do not store outside! Protect from humidity and dust. Do not lay unit on the nozzle. Protect the nozzle from damage, e.g. by placing it in the original packaging.

Disposal

When your Nordson product has exhausted its purpose and/or is no longer needed, dispose of it properly according to local regulations.
Installing

When installing the applicator, the following points should be observed in order to avoid unnecessary effort later.

- Protect from humidity, vibrations, dust and drafts.
- Ensure access to parts relevant for maintenance and operation.
- Install the applicator in the parent machine. To achieve optimum material application, during assembly ensure that the distance and, when appropriate, the angle between the nozzle and the substrate can be varied.
- When installing the unit, ensure that cables, air hoses and heated hoses cannot be bent, pinched, torn off or otherwise damaged.

Exhausting Material Vapors

Ensure that material vapors do not exceed the prescribed limits. Exhaust material fumes when necessary. Provide sufficient ventilation of the location where the unit is installed.
Electrical Connections

**ATTENTION:** Risk of electrical shock. Failure to observe may result in personal injury, death, or equipment damage.

**Laying Cable**

**ATTENTION:** Do not pinch cables and check regularly for damage. Replace damaged cables immediately!

**Connecting Applicator Heater**

The unit is connected electrically by inserting the plugs into the corresponding receptacles on the melter or a terminal box. If the heater lines are integrated into the material hose, the corresponding receptacle is located directly on the material hose. Secure the voltage plug with the clamp if necessary.

**Connecting Solenoid Valves**

Depending on the specific design of the hot melt application system, the solenoid valves on the control modules are controlled either by an external power supply, e.g. control unit, or through the solenoid valve control leads of the heated hose. Secure the voltage plug with the clamp if necessary.

**ATTENTION:** If the applicator is equipped with blue-black solenoid valves, the valves may be connected only to PLCs or control units that supply a stabilized 24 VDC signal **without** overexcitation. Higher voltage will damage the solenoid valves.

**Triggering via Nordson ES 90 Control Unit**

**NOTE:** If the applicator is equipped with blue-black solenoid valves and operated with a control unit type *ES 90*, the so-called 48 volt excitation (*OVERDRIVE*) must be switched off there for each control module. Also refer to the manual *Control Unit*.

1. Select *Off*: Move left or right with ⬅️  ➤️.
2. Select the channel number with ▲ or ▼.
3. Exit the submenu by pressing *ESC*.

![Figure 3-1](image-url)
Pneumatic Connections

Nordson recommends using dry, controlled and nonlubricated compressed air.

**CAUTION:** The spray air must always be non-lubricated, because it comes into direct contact with the material.

**Operation with Nonlubricated Compressed Air**

When an applicator is connected to a compressed air system in which the compressed air has previously been lubricated, simply ceasing to lubricate the air is not sufficient. The oil remaining in the compressed air supply will reach the solenoid valves and the control modules and wash out the original lubricant/oil from these parts, substantially decreasing the service life of the units.

**NOTE:** It must be ensured that the compressed air supply to the applicators has been converted to absolutely nonlubricated operation.

**NOTE:** No oil from a possibly defective compressor may be permitted to penetrate the compressed air supply.

**NOTE:** Nordson will assume no warranty or liability for damage caused by unpermitted, temporary lubrication.

**Conditioning Compressed Air**

The quality of the compressed air must be at least class 2 as stipulated by ISO 8573-1. This means:

- Max. particle size 1 µm
- Max. particle density 1 mg/m³
- Max. pressure dewpoint -40 °C
- Max. oil concentration 0.1 mg/m³.
Connecting Compressed Air

Connecting Control Air

1. Connect customer's air supply to the inlet of an air conditioning unit.

   Maximum air pressure:

   | 10 bar | 1 MPa | 145 psi |

2. Connect SPEED-COAT control modules to the air conditioning unit.

3. Set control air pressure:

   | 5 to 6 bar | 0.5 to 0.6 MPa | 72.5 to 87 psi |

Connecting Spray Air

1. Connect customer's air supply to the inlet of an air conditioning unit.

   Maximum air pressure:

   | 10 bar | 1 MPa | 145 psi |

2. Connect spray air modules (membrane control modules) to the air conditioning unit.

3. Setting spray air pressure:

   | 0.8 to 1.5 bar | 0.08 to 0.15 MPa | 11.6 to 21.75 psi |
Connecting Heated Hose

**ATTENTION:** Hot! Risk of burns. Wear heat-protective gloves.

**Connecting**

If cold material can be found in the hose connection (1, 2), these components must be heated until the material softens (approx. 80 °C / 176 °F).

1. First connect the hose (3) electrically.
2. Heat the unit and hose until the material softens (approx. 80 °C / 176 °F).
3. Screw on heated hose.

**CAUTION:** Always connect the hose to the side of the body where the filter cartridge is. This is the only way to ensure that the material is filtered.

![Fig. 3-2](MXHH001S050B0997)

**Disconnecting**

**Relieving Pressure**

1. Set motor speed(s) to 0 min⁻¹ (rpm); switch off motor(s).
2. Place a container under the nozzle of the applicator.
3. Trigger the solenoid valve(s) electrically or manually. Repeat this procedure until no more material flows out.
4. Properly dispose of material according to local regulations.

**Using Second Open-end Wrench**

Use a second open-end wrench when connecting and disconnecting the hose. This prevents the hose connection on the unit from turning.

![Fig. 3-3](MXHH002S033A029)
ATTENTION: Allow only qualified personnel to perform the following tasks. Follow the safety instructions here and in the entire documentation.

Triggering Solenoid Valve

CAUTION: Trigger the solenoid valves only when the applicator is heated to operating temperature!

Setting Temperatures

NOTE: The basis for temperature setting is the processing temperature stipulated by the material manufacturer (usually 150 to 180 °C / 302 to 356 °F). The maximum operating temperature of the applicator and the air heater may not be exceeded.

The temperatures required are set on the melter.

<table>
<thead>
<tr>
<th>Component</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicator</td>
<td>Max. 200 °C / 392 °F</td>
</tr>
<tr>
<td>Air heater</td>
<td>Max. 220 °C / 428 °F</td>
</tr>
</tbody>
</table>
Setting Spray Air Pressure

**CAUTION:** Operate the applicator only when spray air is switched on! If the spray air is switched off, material can penetrate the air channels of the surface application nozzle. This will cause malfunctioning.

The spray air pressure is set to suit each application on an air conditioning unit. The air conditioning unit with pressure control valve is not part of the applicator.

Setting spray air pressure:

| 0.8 to 1.5 bar | 0.08 to 0.15 MPa | 11.6 to 21.75 psi |

Nordson will assume no warranty or liability for damage caused by an incorrect pressure setting.

Setting Control Air Pressure

The control air pressure is set to suit each application on an air conditioning unit. The air conditioning unit with pressure control valve is not part of the applicator.

Set control air pressure:

| 5 to 6 bar | 0.5 to 0.6 MPa | 72.5 to 87 psi |

Nordson will assume no warranty or liability for damage caused by an incorrect pressure setting.
Setting Material Pressure

The material pressure is generated by the melter pumps. The material pressure can be monitored (optional feature) by a pressure sensor with a connected pressure controller (e.g. ES 80).

To ensure that the material pressure in the applicator remains stable:

<table>
<thead>
<tr>
<th>Material pressure in applicator</th>
<th>Pump speed</th>
<th>Result: Material pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too low</td>
<td>Increase</td>
<td>Increases</td>
</tr>
<tr>
<td>Too high</td>
<td>Decrease</td>
<td>Decreases</td>
</tr>
</tbody>
</table>

**Maximum Material Pressure**

The maximum material pressure may not be exceeded:

| 60 bar | 6 MPa | 870 psi |

**Adjusting Spray Pattern**

Before beginning adjustments, the distance between the application nozzle and the substrate must be set between 10 and 20 mm.

The material is usually applied vertically to the substrate. Sometimes though the application result may be better if the material is applied at a slight angle deviating ±5° to 7° from vertical application.

The optimum spray result must be determined by trial and error.
Calculating Material Quantity

Sample Calculation

Nordson recommends following the sample calculation before starting up the applicator and making a note of the application-specific values for application weight and width, substrate speed and pump output capacity in the table Customer-specific Values. These values can be used to calculate the pump speed and material quantity. Nordson also recommends entering results of the calculations in the table. This ensures that all values can be reproduced at any time.

NOTE: The material quantity for intermittent application is calculated the same as for continuous material application.

Application weight (grammage) \( m = 20 \text{ g/m}^2 \)
Application width of each material track \( b = 10 \text{ mm} = 0.01 \text{ m} \)
Substrate speed \( v = 500 \text{ m/min} \)

Material quantity \( M = \frac{m \times b \times v}{\text{rev}} \)

\[
M = \frac{20 \text{ g/m}^2 \times 0.01 \text{ m} \times 500 \text{ m/min}}{\text{rev}} = 100.0 \text{ g/min}
\]

Output capacity of pump \( D = 2.4 \text{ g/revolution} \)

Pump speed \( n = \frac{M}{D} \)

\[
n = \frac{100.0 \text{ g/min}}{2.4 \text{ g/revolution}} \approx 42 \text{ rev/min}
\]

Customer-specific Values

<table>
<thead>
<tr>
<th>Application weight (grammage)</th>
<th>( m )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application width ( b )</td>
<td></td>
</tr>
<tr>
<td>Substrate speed ( v )</td>
<td></td>
</tr>
<tr>
<td>Material quantity ( M = \frac{m \times b \times v}{\text{rev}} )</td>
<td></td>
</tr>
</tbody>
</table>

| Output capacity of pump \( D \) | |
| Pump speed \( n = \frac{M}{D} \) | |

P/N 397836_03  Control Coat  © 2012 Nordson Corporation
# Settings Record

## Production information

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<thead>
<tr>
<th>Part number</th>
<th>Manufacturer</th>
<th>Material type</th>
<th>Quantity</th>
<th>Weight</th>
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<td>/C0069</td>
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## Material

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<th>Manufacturer</th>
<th>Max. processing temperature</th>
<th>Viscosity</th>
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## Cleaning agent

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<tr>
<th>Manufacturer</th>
<th>Flash point</th>
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</table>

## Basic settings

<table>
<thead>
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<th>Application weight (grammage)</th>
<th>Application width</th>
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<th>Material quantity</th>
<th>Output capacity</th>
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</table>

## Air pressure at applicator

<table>
<thead>
<tr>
<th>Control air</th>
</tr>
</thead>
</table>

## Basic settings temperature (heating zones)

<table>
<thead>
<tr>
<th>Applicator body</th>
<th>Heated hose</th>
</tr>
</thead>
</table>

## Pump speeds

<table>
<thead>
<tr>
<th>Melter</th>
<th>Motor controller (setpoint)</th>
</tr>
</thead>
</table>

## Material pressure

<table>
<thead>
<tr>
<th>Melter</th>
<th>Motor controller (setpoint)</th>
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</thead>
</table>

## Notes

| | |
| | |

## Form filled out by:

<table>
<thead>
<tr>
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<tbody>
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## Settings Record - Spare Copy

### Production information

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<table>
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<tr>
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### Material

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Material</td>
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<tr>
<td>Max. processing temperature</td>
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</tr>
<tr>
<td>Viscosity</td>
<td></td>
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</table>

### Cleaning agent

<table>
<thead>
<tr>
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<th>Manufacturer</th>
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<tbody>
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<td>Cleaning agent</td>
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<tr>
<td>Flash point</td>
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</table>

### Basic settings

<table>
<thead>
<tr>
<th></th>
<th>Application weight (grammage)</th>
</tr>
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<tbody>
<tr>
<td>Basic settings</td>
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<tr>
<td>Application width</td>
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<tr>
<td>Substrate speed</td>
<td></td>
</tr>
<tr>
<td>Material quantity</td>
<td></td>
</tr>
<tr>
<td>Output capacity</td>
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### Air pressure at applicator

<table>
<thead>
<tr>
<th></th>
<th>Control air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air pressure at applicator</td>
<td></td>
</tr>
</tbody>
</table>

### Basic settings temperature (heating zones)

<table>
<thead>
<tr>
<th></th>
<th>Applicator body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic settings temperature (heating zones)</td>
<td></td>
</tr>
<tr>
<td>Heated hose</td>
<td></td>
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</tbody>
</table>

### Pump speeds

<table>
<thead>
<tr>
<th></th>
<th>Melter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump speeds</td>
<td></td>
</tr>
<tr>
<td>Motor controller (setpoint)</td>
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</table>

### Material pressure

<table>
<thead>
<tr>
<th></th>
<th>Melter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material pressure</td>
<td></td>
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<tr>
<td>Motor controller (setpoint)</td>
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### Notes

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</thead>
<tbody>
<tr>
<td>Name</td>
<td>Date</td>
</tr>
</tbody>
</table>
Section 5
Maintenance

**ATTENTION:** Allow only qualified personnel to perform the following tasks. Follow the safety instructions here and in the entire documentation.

**NOTE:** Maintenance is an important preventive measure for maintaining operating safety and extending the service life of the applicator. It should never be neglected.

Relieving Pressure

**ATTENTION:** System and material pressurized. Before removing heated hoses and the hot melt applicators, relieve system pressure. Failure to observe can result in serious burns.

**ATTENTION:** Hot! Risk of burns. Wear safety goggles and heat-protective gloves.

1. Set the motor speed of the unit feeding the material to 0 min⁻¹ (rpm); switch off motor(s).
2. Place a container under the nozzle of the applicator.
3. Relieving pressure:
   a. If the system is still supplied with compressed air: Activate the solenoid valves electrically or manually (Refer to Figure 5-1). Do not use sharp objects! Repeat this procedure until no more material flows out.
   b. If the system is no longer supplied with compressed air: The material pressure in the applicator can be relieved only with the pressure relief screws of all of the filter cartridges. *Refer to page 5-12, Removing Filter Cartridge.*
4. Properly dispose of material according to local regulations.
Regular Maintenance

<table>
<thead>
<tr>
<th>Unit part</th>
<th>Activity</th>
<th>Interval</th>
<th>Removing Filter Cartridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire applicator</td>
<td>Inspect for damage</td>
<td>Daily</td>
<td>Page 5-2</td>
</tr>
<tr>
<td></td>
<td>External cleaning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control modules</td>
<td>Check detection holes</td>
<td></td>
<td>Page 5-11</td>
</tr>
<tr>
<td></td>
<td>Replace</td>
<td>When damaged</td>
<td></td>
</tr>
<tr>
<td>Nozzle</td>
<td>Cleaning</td>
<td>Regularly, or when the application</td>
<td>Page 5-6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pattern deteriorates</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replace shim plate</td>
<td>When damaged</td>
<td>Page 5-10</td>
</tr>
<tr>
<td></td>
<td>Replace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cordset</td>
<td>Inspect for damage</td>
<td>Every time the applicator is serviced</td>
<td></td>
</tr>
<tr>
<td>Air hoses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filter cartridge</td>
<td>Clean filter cartridge and</td>
<td>Depending on degree of material</td>
<td>Page 5-12</td>
</tr>
<tr>
<td></td>
<td>replace filter screen</td>
<td>pollution.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recommendation: Every 100 hours of</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>operation</td>
<td></td>
</tr>
</tbody>
</table>

Visual Inspection for External Damage

**CAUTION:** When damaged parts pose a risk to the operational safety of the applicator and/or safety of personnel, switch off the applicator or application system and have the damaged parts replaced by qualified personnel. Use only original Nordson spare parts.
**External Cleaning**

External cleaning prevents impurities created during production from causing the unit to malfunction.

Always follow the manufacturer’s instructions when using cleaning agents!

1. Electrically heat the cold applicator until the material is liquid.

2. Thoroughly remove the warm material with a cleaning agent and/or a soft cloth.

3. Remove dust, fluffs, etc. with a vacuum cleaner or a soft, lint-free cloth.

**CAUTION:** Do not damage or remove warning labels. Damaged or removed warning labels must be replaced by new ones.

**Changing Type of Material**

**NOTE:** Before changing the type of material, determine whether the old and new material may be mixed.

- May be mixed: Remaining old material can be flushed out using the new material.

- May not be mixed: Thoroughly purge the unit with a cleaning agent recommended by the material supplier.

**NOTE:** Properly dispose of the material and cleaning agent according to local regulations.
Regular Maintenance (contd.)

Removing Nozzle from Applicator


The nozzle must be regularly disassembled (air nozzle, material nozzle and shim plate) and cleaned. Material residue affects the quality of the application. It must be removed.

CAUTION: The application nozzle is a precision part. The following tasks should be performed only by specially trained personnel.

Before beginning work, ensure that all materials needed as stated in the parts list, such as the handle, the Quad-Rings®, screws and the shim plate, are available.

![Diagram of nozzle with labels: 1) Screw thread for handle, 2) Tension screw for CC nozzle, 3) Centering screw for CC nozzle.]

1. Heat applicator until material is soft.
2. Screw the handle into the intended thread (1).
3. Release tension and centering screws (2 and 3, Fig. 5-3), but do not unscrew them all the way out of the nozzle. They will be needed again.

NOTE: Short applicators with one material control module have only one centering screw. Do not lose the centering screw!

4. Use the handle to pull the nozzle out of the side of the body (arrow, Fig 5-2).
Disassembling Nozzle

**NOTE:** Cylinder pins determine the position of the nozzle halves in relation to one another (3 and 4, Fig. 5-5).

1. Carefully clamp only the top part of the application nozzle (material nozzle) in a vice with soft jaws. The air nozzle (bottom part) may not be clamped in the vice! (Fig. 5-3)
2. Remove cylinder pins from the application nozzle with a suitable tool (punch, drift).
3. Remove the fixing screws from the nozzle halves.
4. Knock cylinder pins out of the hole with a punch and hammer.

![Fig. 5-3](image-url)

Separating Nozzle Halves

1. Carefully rotate the CC nozzle halves in opposite directions to separate them. Never slide the nozzle halves apart; this would damage the shim plate between the halves.
2. Remove shim plate.
3. Remove remaining screws.
4. Clamp in one nozzle half near the material nozzle (Fig. 5-4). Briefly knock a wooden tappet against the air nozzle with a hammer. Then the two nozzle parts can easily be separated. Do the same with the second nozzle half.

![Fig. 5-4](image-url)
Regular Maintenance  \textit{(contd.)}

\textit{Cleaning Individual Parts}

\textbf{CAUTION:} Use only a cleaning agent recommended by the hot melt material manufacturer. Observe Manufacturer Safety Data Sheet (MSDS) for the cleaning agent.

1. Inspect nozzle parts for damage.
2. Carefully clean air and material holes. Drills work well. Wooden picks or pipe cleaners are not well suited; they can leave undesired chips or lint.
3. Use suitable tools (drill, reamer) to remove charred material from holes and channels.
4. Use a cleaning agent to dissolve material residue that could not be removed mechanically.
5. If not all of the material residue has dissolved, the surfaces must be carefully cleaned mechanically. Apply cleaning fluid to 1000 to 1200 grain wet emery paper, then carefully and thoroughly polish the nozzle components.
6. Check the nozzle parts, especially the inside channels, for burrs.
7. Remove all old O-rings.

\textbf{NOTE:} Properly dispose of cleaning agent and material residue according to local regulations.
Overview of CC Nozzle

Fig. 5-5

1 QUAD-Ring®
2 Connecting screw (M5 x 16) (material and air nozzle)
3 Pin (D4 x 40)
4 Pin (D4 x 20)
5 Air nozzle
6 Material nozzle
7 Shim plate
8 Screw thread for handle to detach nozzle
9 Connecting screw (M5 x 25) (air nozzle)
10 Connecting screw (M5 x 30) (material nozzle)
Regular Maintenance  *(contd.)*

**Assembling Material Nozzle**

**NOTE:** The position numbers cited in the following text refer to the previous illustration, Figure 5-5.

**NOTE:** Ensure that all components are absolutely clean. The screws may NOT be lubricated!

1. Place the left material nozzle (6), with the application pattern up, on a clean, flat surface (e.g. magnetic plate).

2. Position shim plate (7).

**NOTE:** Ensure that the holes and the application pattern line up!

3. Place the right material nozzle (6) on the shim plate, with the application pattern down.

4. Screw in the connecting screws M5 x 30 (10) by hand.

5. Tap cylinder pins (3) in gently.

6. Check that the shim plate (7) is positioned properly to the outer edge of the nozzle: The shim plate must line up with the nozzle lips.

7. Clamp the nozzle firmly (magnetic plate, vice with soft jaws, or similar device).

8. Check that the shim plate (7) is positioned properly and correct if necessary.

9. Tighten all of the connecting screws M5 x 30 (10) by hand. **Torque:** 6 Nm / 53.4 lb-in.
Assembling Air and Material Nozzle

NOTE: The position numbers cited in the following text refer to the previous illustration, Figure 5-5.

NOTE: Ensure that all components are absolutely clean. The screws may NOT be lubricated!

1. Place the right air nozzle (5) on the right material nozzle (6) and screw the two halves together loosely with the connecting screws M5 x 16 (2).

NOTE: Ensure that the air nozzle and the material nozzle line up evenly.

2. Tap cylinder pins (4) in gently.

3. Place the left air nozzle (5) on the left material nozzle (6) and screw the two halves together loosely with the connecting screws M5 x 16 (2).

NOTE: Ensure that the air nozzle and the material nozzle line up evenly.

4. Tap cylinder pins (4) in gently.

5. Loosely screw in the connecting screws M5 x 25 (9) that hold the air nozzle halves together.

6. Tighten the connecting screws M5 x 16 (2). The air and material nozzle halves that belong together are now fastened to one another.
   Torque: 6 Nm / 53.4 lb-in.

7. Tighten the connecting screws M5 x 25 (9). The air nozzle halves are now fastened together.
   Torque: 5 Nm / 44 lb-in.

Installing Application Nozzle in Applicator

1. When required, insert new Quad-Rings (1) in the material nozzle (Refer to parts list)!

2. Screw the handle back into the nozzle.

3. Slide the application nozzle back into the applicator (Fig. 5-2).

4. Screw in the screws centering screws (middle) by hand.

5. Alternately screw in the tensioning screws to the right and left of the centering screw.

CAUTION: Before the screws can be tightened, the nozzle and the body must be heated to processing temperature. Use a torque wrench!

6. Tighten the centering screw.
   Torque: 15 Nm / 132 lb-in.

7. Alternately tighten the tensioning screws to the right and left of the centering screw.
   Torque: 15Nm / 132 lb-in.
Regular Maintenance  (contd.)

Inserting New Shim Plate

The nozzle must be removed from the applicator and disassembled to replace the shim plate. Refer to page 5-4, Removing Nozzle from Applicator, Disassembling Nozzle and Cleaning Individual Parts.

1. Disassemble application nozzle as described above.
2. Clamp in one nozzle half, then position the shim plate properly on the nozzle half.

CAUTION: Risk of injury from sharp edges!

3. Put second nozzle half in place. Carefully slide the shim plate with your fingertips until it is even with the nozzle lips.
4. Screw nozzle halves together. The shim plate may not slide out of place. If it does, repeat step 3.
5. Install the application nozzle in the applicator again.

NOTE: The instructions from the previous chapters also apply here
- Assembling Material Nozzle
- Assembling Air and Material Nozzle
- Installing Application Nozzle in Applicator.
Inspecting Control Module

If material escapes from the detection hole, the internal O-rings have worn and the control module must be replaced.

Replacing Control Module


Nordson recommends keeping control modules on hand to avoid interruptions in production (Refer to Parts List).

1. Relieve pressure.
2. Release air connection and electrical connection.
3. Release screws (M4) and extract control module from warm applicator.
4. Insert new control module; tighten screws crosswise.
5. Re-connect air and electrical connection.

NOTE: Observe the voltage stated on the ID plate of the solenoid valve.
Regular Maintenance  (contd.)

Cleaning Filter Cartridge

**NOTE:** Remove the filter cartridge only when the applicator is hot and not pressurized. Install only when the applicator is hot.

**ATTENTION:** Hot! Risk of burns. Wear safety goggles and heat-protective gloves.

**ATTENTION:** System and material pressurized. Relieve system of pressure before replacing a filter cartridge. Failure to observe can result in serious burns.

Removing Filter Cartridge

1. Place a container under the filter bore.

**NOTE:** Use a second open-end wrench when screwing in and out the pressure relief screw (1, Fig. 5-4). This prevents the filter cartridge (2, Fig. 5-4) from turning.

2. Screw pressure relief screw out of the filter cartridge until material flows out.

3. At the same time, the filter cartridge should be ...
   a. Pressed in
   b. Turned counterclockwise (bayonet fastener)
   c. Then extracted.

   Use an open-end or ring wrench (size 17) if needed.

   **NOTE:** If the filter cartridge is stuck in the filter bore, grasp the filter cartridge (2, Fig. 5-4) with a pliers and extract.

4. Purge the filter bore by allowing the pump to run briefly with material. This rinses out particles of dirt that may still be in the filter bore.

5. Properly dispose of material according to local regulations.
Replacing Filter Screen


1. Heat the filter cartridge until material is liquid.
2. Turn the unit consisting of pressure relief screw, filter screen and spring counterclockwise out of the filter screw, then replace.

NOTE: Nordson recommends keeping a supply of replacement filter cartridges to avoid interruptions in production.

Installing Filter Cartridge

1. Heat applicator until material is liquid.
2. Apply lubricant to the O-ring, e.g. Never Seez, P/N 263 921.
3. Slide the filter cartridge into the filter bore.

NOTE: Air penetrates the filter bore when the filter cartridge is replaced. The applicator is deaerated with the aid of the pressure relief screw.

4. Unscrew the pressure relief screw somewhat.
5. Allow the pump to run briefly until material flows out. This forces out air.
6. Turn in the pressure relief screw clockwise all the way when the material flows out free of bubbles.
## Maintenance Record

<table>
<thead>
<tr>
<th>Unit part</th>
<th>Activity</th>
<th>Date</th>
<th>Name</th>
<th>Date</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Applicator</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>External inspection and</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cleaning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nozzle</strong></td>
<td>Cleaning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replace nozzle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replace shim plate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Control module</strong></td>
<td>External cleaning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replace control module</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Filter cartridge</strong></td>
<td>Replace filter screen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 6
Troubleshooting

ATTENTION: Allow only qualified personnel to perform the following tasks. Follow the safety instructions here and in the entire documentation.

Introduction

This section contains instructions on troubleshooting. The procedures described here cover only the most commonly occurring problems. If the problem can not be solved with the information stated here, contact Nordson's representative.

Troubleshooting tables are intended as an orientation for qualified personnel. They cannot, however, replace targeted troubleshooting with the aid of wiring diagrams and measuring instruments. They also do not include all possible problems, only those which most typically occur.

The following problems are not included in the troubleshooting tables:

- Faults in installation
- Faults in operation
- Defective cables
- Loose plug and screw connections.

In the column Corrective action, the remark that defective parts should be replaced is generally not included.
## Troubleshooting Table

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Corrective action</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No material</strong></td>
<td>Melter tank is empty</td>
<td>Fill</td>
<td>Separate manual <em>Melter</em></td>
</tr>
<tr>
<td></td>
<td>Melter motor is not switched on</td>
<td>Switch on</td>
<td>Separate manual <em>Melter</em></td>
</tr>
<tr>
<td></td>
<td>Melter pump is not working</td>
<td>Check</td>
<td>Separate manual <em>Pump</em></td>
</tr>
<tr>
<td></td>
<td>Applicator has not yet reached operating temperature</td>
<td>Wait until temperature has been reached; check temperature setting if necessary</td>
<td>Separate manual <em>Temperature controller</em></td>
</tr>
<tr>
<td></td>
<td>Applicator cold or not yet warm enough</td>
<td></td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>Compressed air not connected</td>
<td>Connect</td>
<td>Page 3-5</td>
</tr>
<tr>
<td></td>
<td>Nozzle clogged</td>
<td>Clean nozzle</td>
<td>Page 5-6</td>
</tr>
<tr>
<td></td>
<td>Nozzle stem is stuck</td>
<td>Replace control module</td>
<td>Page 5-11</td>
</tr>
<tr>
<td></td>
<td>Filter cartridge is clogged</td>
<td>Clean or replace filter screen if necessary</td>
<td>Page 5-12</td>
</tr>
<tr>
<td></td>
<td>Solenoid valves do not switch</td>
<td>Refer to <em>Solenoid valves do not switch</em></td>
<td>- -</td>
</tr>
<tr>
<td><strong>Applicator does not heat</strong></td>
<td>Temperature is not set</td>
<td>Set on temperature controller</td>
<td>Separate manual <em>Temperature controller</em></td>
</tr>
<tr>
<td></td>
<td>Plug not connected</td>
<td>Connect</td>
<td>Page 3-3</td>
</tr>
<tr>
<td></td>
<td>Fuses in melter defective</td>
<td>Disconnect unit from line voltage, check fuses and replace if necessary</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>Heater cartridge(s) in applicator defective</td>
<td>Replace</td>
<td>- -</td>
</tr>
<tr>
<td><strong>Applicator does not reach the set temperature</strong></td>
<td>Heater cartridge(s) in applicator defective</td>
<td>Replace</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>Ambient temperature too low</td>
<td>Increase ambient temperature</td>
<td>- -</td>
</tr>
<tr>
<td><strong>Solenoid valves do not switch</strong></td>
<td>Control unit not switched on</td>
<td>Switch on</td>
<td>Separate manual <em>Control Unit</em></td>
</tr>
<tr>
<td>Problem</td>
<td>Possible cause</td>
<td>Corrective action</td>
<td>Refer to</td>
</tr>
<tr>
<td>---------</td>
<td>---------------</td>
<td>------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Application pattern not exact</td>
<td>Temperature not set precisely on melter</td>
<td>Correct setting</td>
<td>Separate manual <em>Melter</em></td>
</tr>
<tr>
<td></td>
<td>Temperature of applicator not set precisely</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Material quantity/pressure not set precisely</td>
<td>Adjusting Spray Pattern</td>
<td>Page 4-1</td>
</tr>
<tr>
<td></td>
<td>Distance between nozzle and substrate incorrect</td>
<td>Correct setting</td>
<td>Page 4-3</td>
</tr>
<tr>
<td></td>
<td>Control unit not programmed correctly</td>
<td>Correct programming</td>
<td>Separate manual <em>Control Unit</em></td>
</tr>
<tr>
<td></td>
<td>External pollution on nozzle</td>
<td>Clean</td>
<td>Page 4-3</td>
</tr>
<tr>
<td></td>
<td>Pollution inside of nozzle</td>
<td>Replace nozzle</td>
<td>Page 5-6</td>
</tr>
<tr>
<td></td>
<td>Nozzle damaged</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Application quantity and substrate processing speed not attuned to one another</td>
<td>Check settings; change so as to be attuned to one another if necessary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Material unsuitable</td>
<td>Ask manufacturer</td>
<td>Data sheet of material manufacturer</td>
</tr>
</tbody>
</table>

**Note:** Material thickening can not be prevented; it can only be reduced.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Corrective action</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickened material at beginning of application pattern</td>
<td>Stem stroke too high</td>
<td>Check stem stroke between piston and socket block (setpoint: $0.3 + 0.1$ mm)</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>Recirculation pressure too high</td>
<td>Check application pressure and adjust recirculation pressure</td>
<td>- -</td>
</tr>
<tr>
<td></td>
<td>Pause time too long</td>
<td>Application must be performed with recirculation</td>
<td>- -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Corrective action</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pause time too long</td>
<td>Muffler in control module clogged</td>
<td>Replace muffler</td>
<td>- -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Corrective action</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>The <em>open time</em> is too long</td>
<td>Application temperature too high</td>
<td>Set temperature lower</td>
<td>Separate manual <em>Temperature controller</em></td>
</tr>
<tr>
<td></td>
<td>Material unsuitable</td>
<td>Ask manufacturer</td>
<td>Data sheet of material manufacturer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Corrective action</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>The <em>open time</em> is too short</td>
<td>Application temperature too low</td>
<td>Set temperature higher</td>
<td>Separate manual <em>Temperature controller</em></td>
</tr>
<tr>
<td></td>
<td>Material unsuitable</td>
<td>Ask manufacturer</td>
<td>Data sheet of material manufacturer</td>
</tr>
</tbody>
</table>

* The *open time* is the time from when the material leaves the nozzle until it hardens on the substrate.
Section 7
Technical Data

General Data

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>FeKo thermal element</th>
<th>Pt 100</th>
<th>Ni 120</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of heating</strong></td>
<td>Electrical resistance heating elements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Possible temperature sensors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. closing pressure without compressed air</td>
<td>15 bar</td>
<td>1.5 MPa</td>
<td>218 psi</td>
<td></td>
</tr>
<tr>
<td>Max. closing pressure with compressed air</td>
<td>60 bar</td>
<td>6 MPa</td>
<td>870 psi</td>
<td></td>
</tr>
<tr>
<td>Max. locking pressure without compressed air</td>
<td>100 bar</td>
<td>10 MPa</td>
<td>1450 psi</td>
<td></td>
</tr>
<tr>
<td>Max. locking pressure with compressed air</td>
<td>100 bar</td>
<td>10 MPa</td>
<td>1450 psi</td>
<td></td>
</tr>
<tr>
<td>Max. processable viscosity</td>
<td>80000 mPas</td>
<td>80000 cP</td>
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<td></td>
</tr>
<tr>
<td>Max. application width</td>
<td>500 mm</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Max. application width per control module</td>
<td>50 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. control module spacing</td>
<td>25 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Air pressure

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Control air (adhesive control module)</td>
<td>5 to 6 bar</td>
<td>0.5 to 0.6 MPa</td>
<td>72.5 to 87 psi</td>
<td></td>
</tr>
<tr>
<td>Control air (spray air control module)</td>
<td>5 to 6 bar</td>
<td>0.5 to 0.6 MPa</td>
<td>72.5 to 87 psi</td>
<td></td>
</tr>
<tr>
<td>Spray air</td>
<td>0.8 to 1.5 bar</td>
<td>0.08 to 0.15 MPa</td>
<td>11 to 22 psi</td>
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Temperatures

<table>
<thead>
<tr>
<th></th>
<th>Max. ambient temperature</th>
<th>Max. operating temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60 °C</td>
<td>140 °F</td>
</tr>
<tr>
<td></td>
<td>200 °C</td>
<td>392 °F</td>
</tr>
</tbody>
</table>

Electrical Data

**WARNING:** The application head is designed for only one operating voltage. Operate only at the operating voltage shown on the ID plate.

<table>
<thead>
<tr>
<th></th>
<th>230 V&lt;sub&gt;DC&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 30</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Power consumption depends on body length Refer to ID plate</td>
</tr>
<tr>
<td>Voltage for solenoid valve</td>
<td>Type blue-black</td>
</tr>
<tr>
<td></td>
<td>Only 24 V&lt;sub&gt;DC&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>Without overexcitation</td>
</tr>
<tr>
<td></td>
<td>Type silver-black</td>
</tr>
<tr>
<td></td>
<td>24 V&lt;sub&gt;DC&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>Use with control unit ES 70</td>
</tr>
</tbody>
</table>

Also refer to page 3-3: Connecting Solenoid Valves

Dimensions and Weights

<table>
<thead>
<tr>
<th></th>
<th>Refer to technical drawing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>See consignment note</td>
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</tbody>
</table>

Processing Materials

<table>
<thead>
<tr>
<th>Designation</th>
<th>Order number</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>High temperature grease</td>
<td></td>
<td>Apply to O-rings and threads</td>
</tr>
<tr>
<td>• Can</td>
<td>P/N 394769</td>
<td>NOTE: The grease should not be mixed with other lubricants. Oily/greasy parts must be cleaned before application.</td>
</tr>
<tr>
<td>• Tube</td>
<td>P/N 783959</td>
<td></td>
</tr>
<tr>
<td>• Cartridge</td>
<td>P/N 402238</td>
<td></td>
</tr>
</tbody>
</table>