Hot Melt Applicators
TrueCoat® HP

Manual P/N 7179962_04
- English -

Edition 06/19

NORDSON ENGINEERING GMBH • LÜNEBURG • GERMANY

Note
This document applies to the entire series.

Order number
P/N = Order number for Nordson articles

☽ http://www.nordson.com/en/global-directory

Table of Contents

Section 1
Safety

Observe and follow all safety instructions, the general safety instructions included as a **separate** document,
as well as the specific safety instructions in all other related documentation.

Section 2
Introduction

Intended Use

Hot melt applicators of the series *TrueCoat® HP* - hereafter also referred to as *Applicator* - may be used only for contact surface application of hot melt adhesives and similar hot melt products (including PUR).

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:

- 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

Definition of Terms

Applicator
The term *Application head* is also used in Nordson literature.

Melter
General term for tank melters and bulk melters.

Control Module
The term *Module* is also used in Nordson literature.

Description of Components / Functioning

TrueCoat® HP with Control Modules

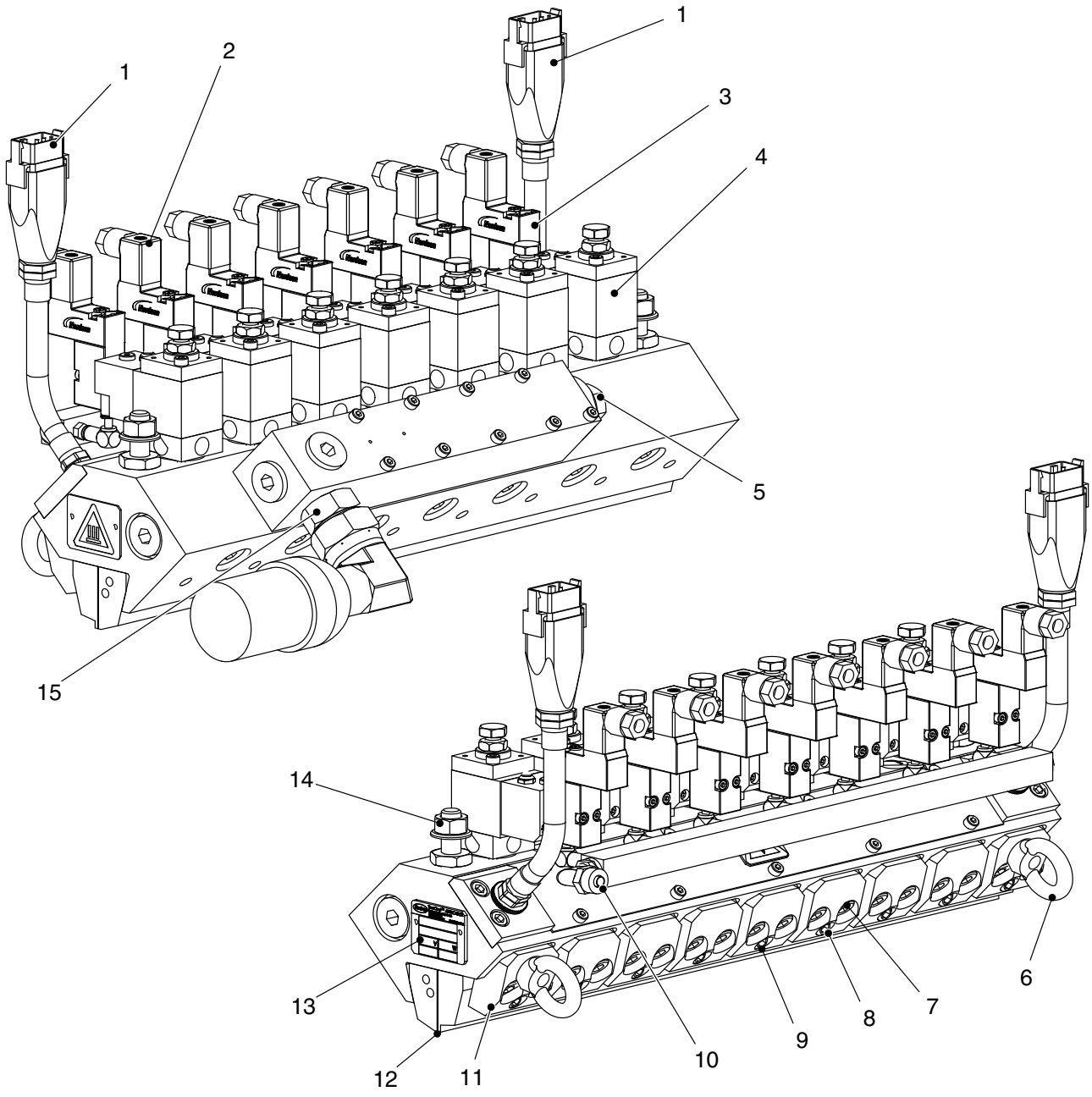

Fig. 2-1

1 Electrical connection (body heater)
2 Solenoid valve plug
3 Solenoid valve
4 Control module
5 Filter cartridge
6 Eye bolt
7 Clamp fixing screw
8 Clamping screw
9 Centering clamping screw
10 Control air connection
11 Clamp
12 Nozzle
13 ID plate
14 Fastening bolts
15 Hose connection (material)

TrueCoat® HP with Throttle Screws

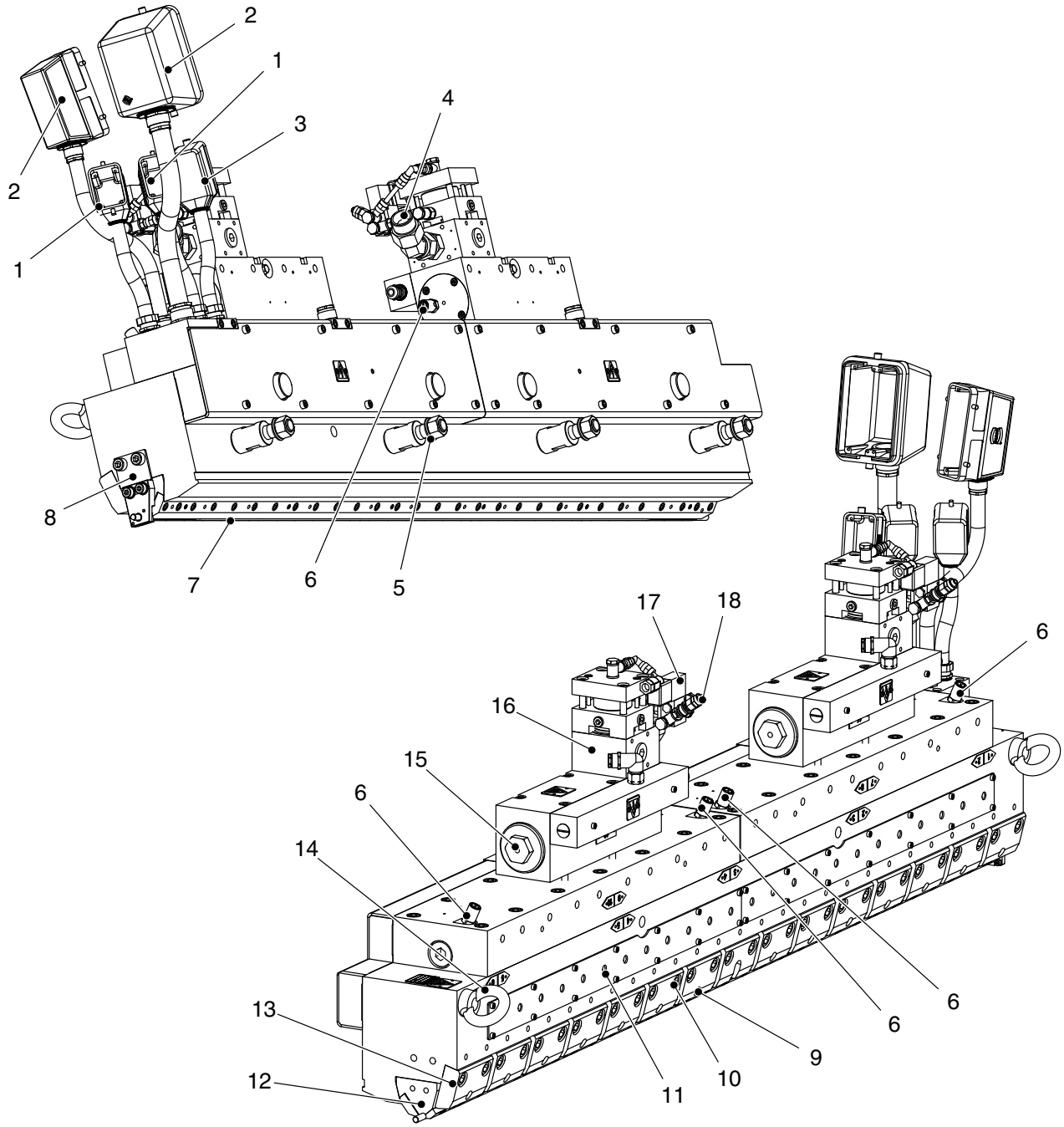

Fig. 2-2 TCHP with rotating bar exchangeable nozzle and throttle screws

1 Cable harness temperature sensors
2 Cable harness heating zones
3 Cable harness solenoid valves
4 Hose connection (material)
5 Fastening bolts
6 Air relief valve
7 Rotating bar
8 Stop plate for exchangeable nozzle
9 Clamping screw
10 Clamp fixing screw
11 Throttle screw
12 Exchangeable nozzle
13 Clamp
14 Eye bolt
15 Filter cartridge
16 Control module
17 Solenoid valve
18 Control air connection

Description of Components / Functioning *(contd.)*

Material Flow

The material is pumped through a heated hose into the applicator. In the applicator the material flows through the filter cartridge(s) and the material channels to the nozzle. The material supply to the nozzle is regulated either by control modules or throttle screws. A slot nozzle or a nozzle with rotating bar applies the material in a contact coating process.

The application pattern is determined by grooves in the mouthpiece or by a shim plate. The shim plate is located between the nozzle mouthpiece and the mouthpiece receptacle. The application pattern also depends on the speed at which the substrate moves, the quantity of material and the material temperature.

In addition, the quality of the application is influenced by the the angle between the nozzle and the substrate. Refer to page 4-2, *Positioning Applicator*.

Material Distribution

The material supply to the nozzle and material distribution across the application width are regulated by control modules or throttle screws.

Control Modules

The control modules open and close the material supply to the nozzle by raising or lowering the nozzle stem. A compression spring in the control module closes the outlet when the control air pressure drops, preventing material from escaping.

Refer to page4-6,*Setting Material Distribution Evenly with Stem Stroke Adjustment.*

Throttle Screws

Refer to page 4-7, *Regulating Material Distribution with the Throttle Screws*.

Heating

The applicator is heated with electrical heater cartridges. The temperature is continuously measured by temperature sensors and is controlled with electronic temperature controllers. Temperature controllers are not part of the applicator.

Slot Nozzle or Nozzle with Rotating Bar

The nozzle or the rotating bar touches the substrate, causing them to naturally wear. The nozzle may need to be refaced, the rotating bar replaced. Refer to page 5-10, *Refacing Nozzle* or page 5-10, *Replacing Rotating Bar*.

Filter Cartridge

The material flows from the inside of the filter cartridge (14, Fig. 2-1) to the outside. Thus dirt particles remain in the filter cartridge. The filter cartridge must be cleaned or replaced regularly (Refer to page 5-11).

NOTE: Nordson recommends keeping a supply of replacement filter cartridges to prevent production stoppage.

ID Plate

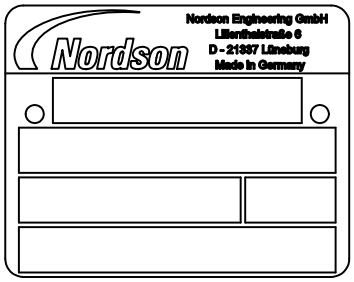

Fig. 2-3

1st field	Type
2nd field	Serial number
3rd field	Nordson order number
4th field	Year of construction
5th field	Operating voltage [V], rated current [A], Operating voltage frequency [Hz]

Section 3
Installation

ATTENTION: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related 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. Do this e.g. by placing it back in 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. Do this e.g. by placing it back 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

Observe the following when installing the applicator:

- Protect from humidity, vibrations, dust and drafts.
- Ensure access to parts relevant for maintenance and operation.
- To achieve optimum material application, install the applicator in the parent machine such that the essential angle between the nozzle and the substrate can be varied.
- The applicator bracket must allow for heat expansion.
- Cables, air hoses and heated hoses may not 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.

ATTENTION: It is imperative that the following additional safety regulations are followed when processing polyurethane hot melt adhesives (PUR) (Refer to *General Hot Melt Material Processing Instructions*).

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 Heater

Insert the voltage plug into the corresponding receptacle on the melter or 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

The solenoid valves on the control modules are controlled either by an external power supply, e.g. control unit, or through the valve control lines of the heated hose. Secure the plug connection with the screw (1, Fig. 3-1).

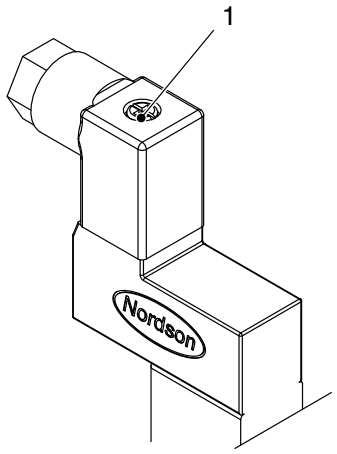

Fig. 3-1

Pneumatic Connections

Nordson recommends using dry, controlled and nonlubricated compressed air.

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/m^3
- Max. pressure dewpoint -40 °C
- Max. oil concentration 0,1 mg/m^3.

Connecting Compressed 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 the control modules to the air conditioning unit.
3. Set control air pressure:

Approx. 5 to 6 bar	Approx. 0.5 to 0.6 MPa	Approx. 72.5 to 87 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.

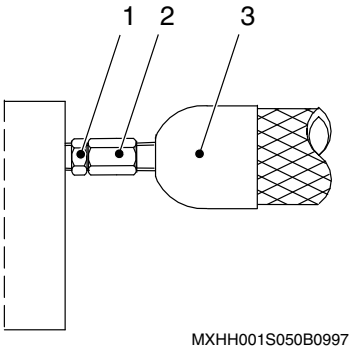

Fig. 3-2

Disconnecting

Relieving Pressure

ATTENTION: System and material pressurized. Before removing heated hoses and 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}; switch off the motor(s).
2. Place a container under the nozzle of the applicator.

Relieving Pressure *(contd.)*

3. Relieving pressure:
   - On an applicator with throttle screws, use the screws to open the material supply to the nozzle.
   - On an applicator with solenoid valves, activate the solenoid valves electrically or manually (Refer to Figure 3-3). Do not use sharp objects! Repeat until no more material flows out.

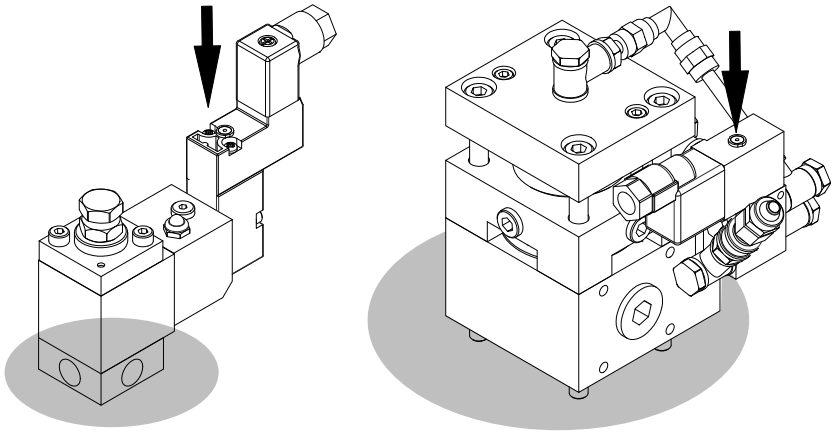

Fig. 3-3

4. Re-use the material or dispose of it properly according to local regulations.

Using Two Open-end Wrenches

Use two open-end wrenches when connecting and disconnecting the heated hose. This prevents the hose connection on the unit from turning.

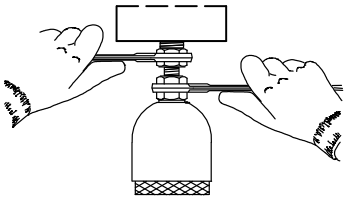

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Fig. 3-4

Section 4
Operation

ATTENTION: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related 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 product described here may not be exceeded.

The applicator temperature required is set on the melter (maximum 200 °C / 392 °F).

Enter Standby

CAUTION: When processing PUR adhesives, enter standby when production is to cease for longer than 30 minutes.

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:

Approx. 5 to 6 bar	Approx. 0.5 to 0.6 MPa	Approx. 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 maximum material pressure may not be exceeded:

60 bar	6 MPa	870 psi

Positioning the Applicator

TrueCoat® HP applicators can be used to coat against a roll.

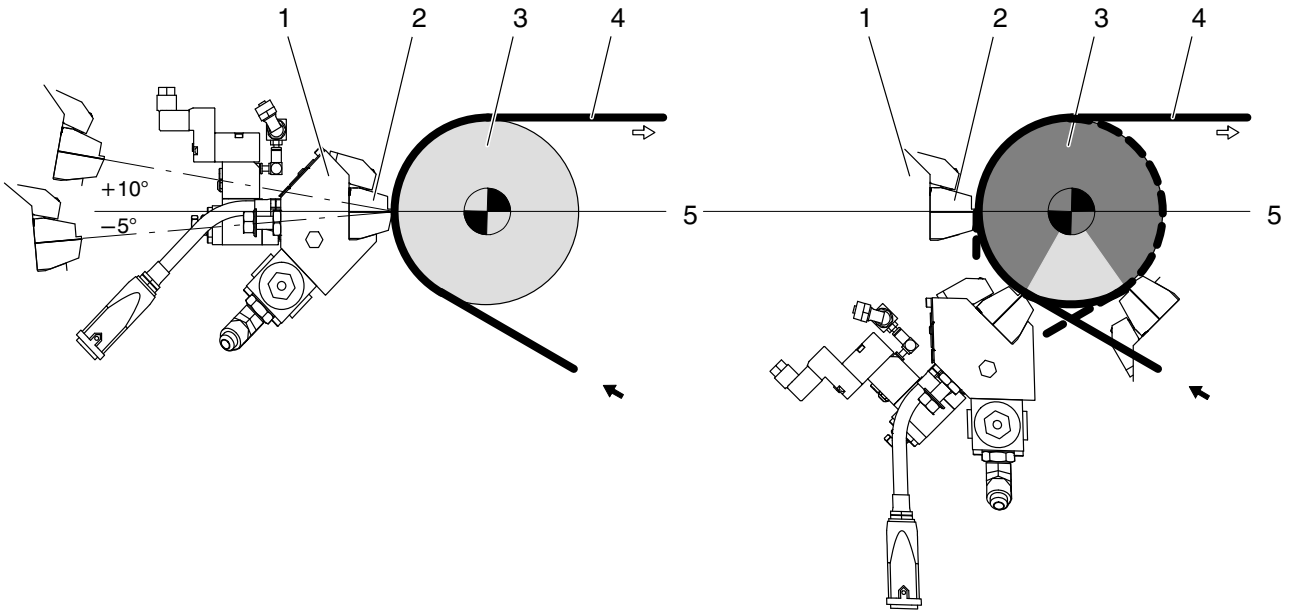

Fig. 4-1

1 Applicator
2 Nozzle
3 Coating roll
4 Substrate
5 Contact line *Nozzle/substrate*

The optimum angle of incidence of the applicator depends on various customer-specific parameters. It is within the range of - 5° to + 10°.

The contact line (5) should be at the line at which the substrate (4) runs onto the roll (3). The nozzle always has contact to the substrate (Refer to Fig. 4-1).

Ensure that contact is only on the dark gray segment of the coating roll (Fig. 4-1, right); otherwise the applied material could drip.

Positioning Applicator *(contd.)*

NOTE: With rotating bar nozzles, the material outlet point is the point around which the applicator turns and on which the angle values are based.

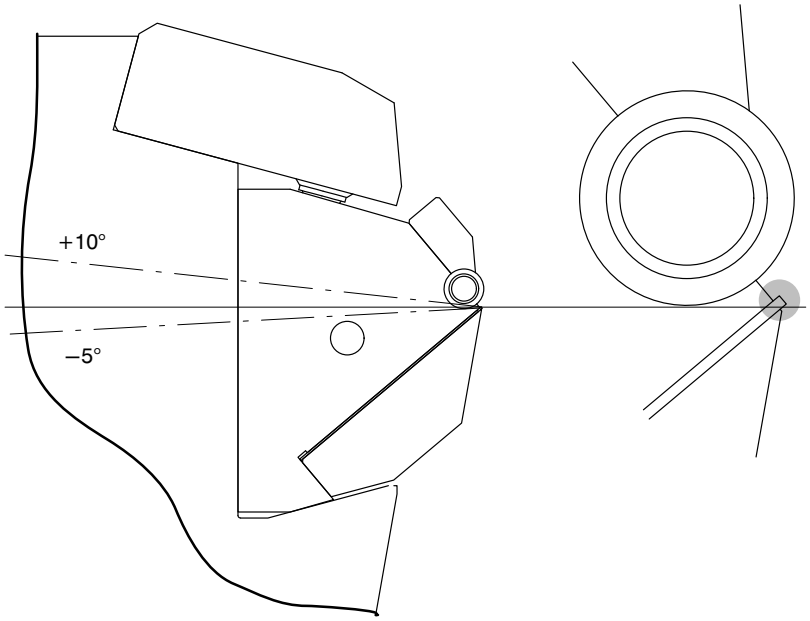

Fig. 4-2

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 g/m^2

Application width of each material track b = 10 mm = 0.01 m

Substrate speed v = 500 m/min

Material quantity M **= m** $\times$ **b** $\times$ **v**
= 20 g/m^2 $\times$ 0.01 m $\times$ 500 m/min = 100.0 g/min

Output capacity of pump D = 2.4 g/revolution

Pump speed n **= M** $\div$ **D**
= 100.0 g/min $\div$ 2.4 g/revolution $\approx$ 42 rev/min

Customer-specific Values

Application weight (grammage) m	
Application width b	
Substrate speed v	
Material quantity M = m $\times$ b $\times$ v	

Output capacity of pump D	
Pump speed n = M $\div$ D	

Correcting Material Quantity and Material Distribution

Adjusting Stem Stroke

NOTE: Only the *Control module DC-D5,* P/N 7106788, offers the stem stroke adjustment feature.

CAUTION: The control module stem stroke adjustment is preset at the factory. It may be modified only when material is distributed unevenly across the application width.

The material flow quantity is regulated with the stem stroke adjustment (1, Fig. 4-3). By setting the nozzle stem stroke differently on the individual control modules, the material distribution can be corrected.

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

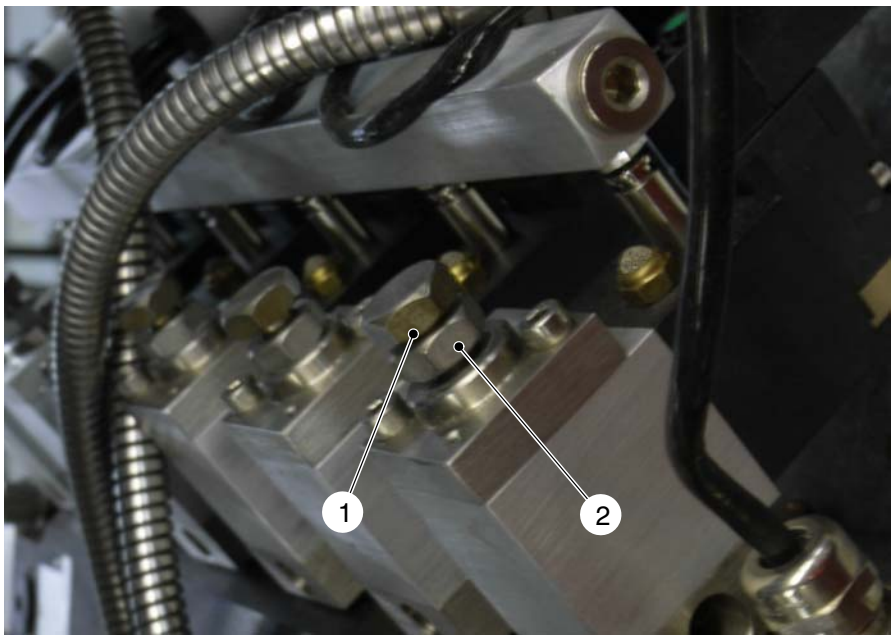

Fig. 4-3

Setting Material Distribution Evenly with Stem Stroke Adjustment

1. Identify the control module through which too much or too little material is flowing.
2. Release the stem stroke adjustment locknut (2, Fig. 4-3) on this control module.
3. Turn the stem stroke adjustment all the way clockwise. The control module is now closed.

CAUTION: The maximum that the stem stroke adjustment can be moved is two revolutions. Turning farther against the stop will destroy the control module.

4. Turn the stem stroke adjustment counterclockwise approx. one quarter of a revolution.
5. Measure the application weight:
6. If the application weight under the control module is too little, turn the stem stroke adjustment another one quarter of a revolution counterclockwise.
7. Repeat steps 5. and 6. until the desired application weight is achieved. If too much material is being applied, turn the stem stroke adjustment back less than a quarter of a revolution.
8. Measure the application weight after every correction to the stem stroke adjustment. Continue to correct the stem stroke adjustment in smaller and smaller steps until the application weight setpoint is achieved with the desired precision.
9. Tighten the stem stroke adjustment locknut (2, Fig. 4-3) again.

Regulating Material Distribution with the Throttle Screws

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

The material supply into the nozzle can be altered using the throttle screws. Individually adjust the throttle screws to achieve uniform material distribution.

- Turn throttle screws clockwise: less material
- Turn throttle screws counterclockwise: more material.

NOTE: The throttle screw thread pitch is 1 mm.

1. Turn all throttle screws all the way clockwise to achieve a defined starting point.
2. Unscrew all throttle screws two complete revolutions.
3. Measure the material distribution across the entire application width.
4. Optimize the setting step by step. Depending on how greatly the measurement result deviates from the desired material distribution, turn single screws or all of the screws farther out or back in. When doing this
   - Turn the screws in or out only a quarter to half revolution with each step
   - Measure material distribution again after each step.
5. Make a note of the optimum setting for all throttle screws.

Throttle screw settings

Note: The number of throttle screws depends on the application width.

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45

Optimizing Material Application with Temperature Setpoints

NOTE: Only possible when applicators have heated manifolds.

If material is properly applied to the outer edges of the application pattern but not in the middle, the applicator nozzle is concave (hollow) to the coating roll.

If the material is applied properly in the middle but not near the edges, the nozzle is convex (spherical).

These deviations from the parallel path can be corrected by setting different temperature setpoints for the manifolds on the back of the applicator than for the remaining heating zones.

Correcting Nozzle Concavity

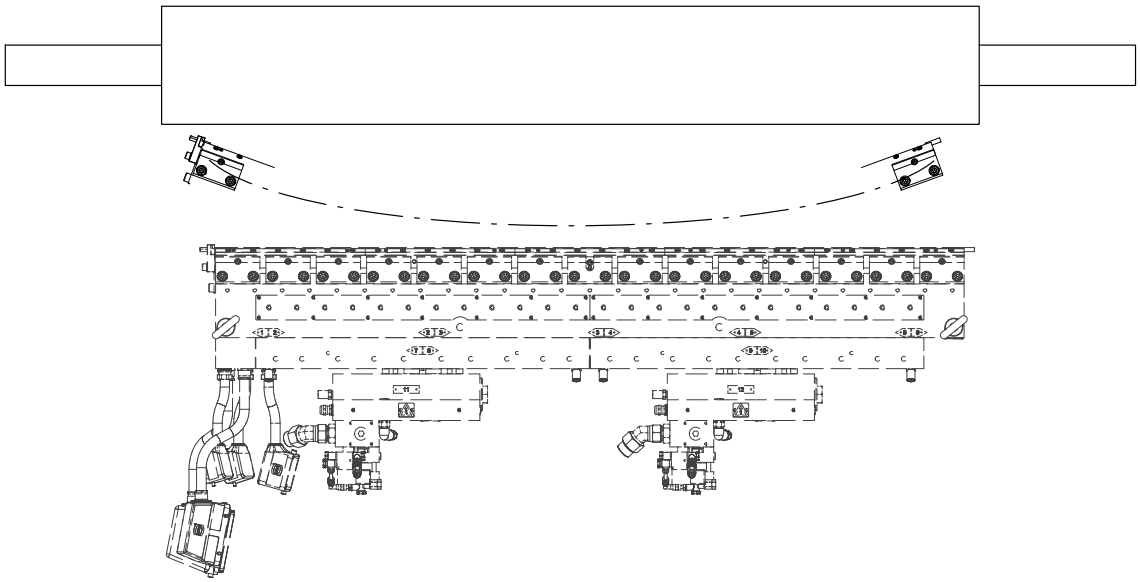

Fig. 4-4 Nozzle is hollow (concave)

1. Set the temperature setpoints for the manifolds one to two degrees lower than the setpoints for the remaining heating zones.

The lesser heat expansion of the heating zones on the back of the applicator compensates for the concavity on the nozzle side.

NOTE: It takes about 15 - 30 minutes until the curvature is complete, depending on the weight and the heating capacity of the applicator.

2. As long as material application is not uniform across the application width, continue to adjust the temperature setpoints in steps. The temperature difference between the heating zones should never exceed 10 °C.

Correcting Nozzle Convexity

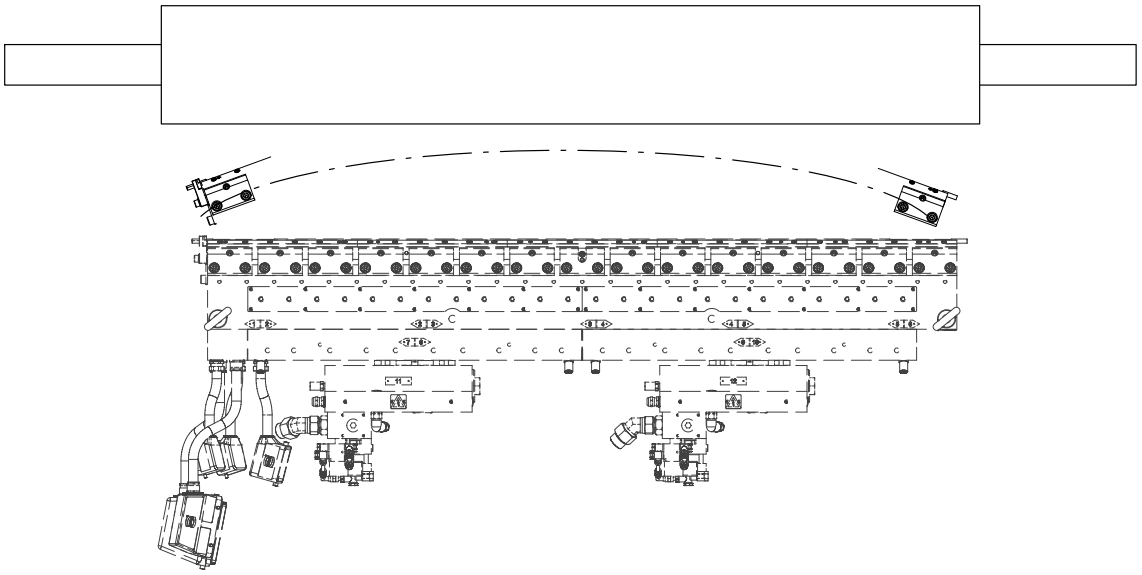

Fig. 4-5 Nozzle is spherical (convex)

1. Set the temperature setpoints for the manifolds one to two degrees higher than the setpoints for the remaining heating zones.

The greater heat expansion of the heating zones on the back of the applicator compensates for the convexity on the nozzle side.

NOTE: It takes about 15 - 30 minutes until the curvature is complete, depending on the dimensions and heating capacity of the applicator.

2. As long as material application is not uniform across the application width, continue to adjust the temperature setpoints in steps.

Setting Rotating Bar Speed

The speed of the rotating bar drive is either set manually or is a factor of the line speed signal (key-to-line).

In an application system with Nordson components, the control element used to set the speed setpoint in manual mode (e.g. potentiometer or control panel) is located either on the melter or on a separate control box.

Speed controlled by the line speed signal can also be adjusted with the same control element.

Set the speed [min^{-1}] to approx. 10% of the web speed [m/min].

Settings Record

Production information

Material	Manufacturer	
	Max. processing temperature	
	Viscosity	

Cleaning agent	Manufacturer	
	Flash point	

Basic settings	Application weight (grammage)	
	Application width	
	Substrate speed	
	Material quantity	
	Output capacity	

Air pressure at applicator	Control air	

Basic settings temperature (heating zones)	Applicator body	
	Heated hose	

Pump speeds	Melter	
	Motor controller (setpoint)	

Material pressure	Melter	
	Motor controller (setpoint)	

Notes

Form filled out by:	
Name	Date

Section 5
Maintenance

ATTENTION: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

Relieving Pressure

ATTENTION: System and material pressurized. Before removing heated hoses and 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}; switch off the motor(s).
2. Place a container under the nozzle of the applicator.
3. Relieving pressure:
   - On an applicator with throttle screws, use the screws to open the material supply to the nozzle.
   - On an applicator with solenoid valves, activate the solenoid valves electrically or manually (Refer to Figure 5-1). Do not use sharp objects! Repeat until no more material flows out.

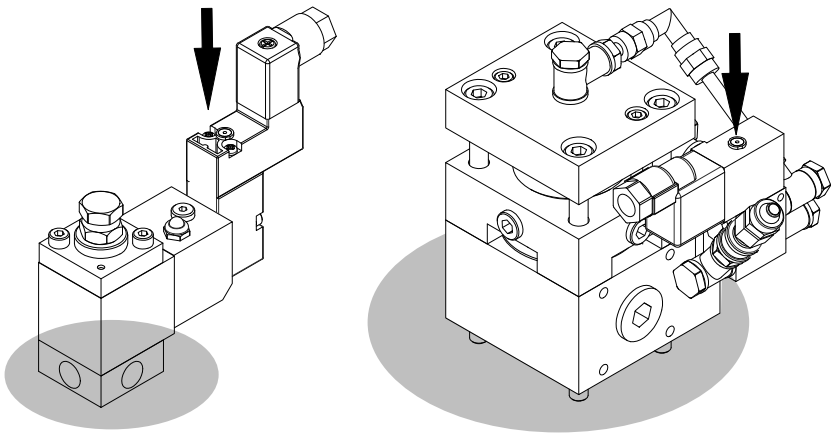

Fig. 5-1

Relieving Pressure *(contd.)*

4. Re-use the material or dispose of it properly according to local regulations.

Regular Maintenance

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

Unit part	Activity	Interval	Refer to
Entire applicator	Inspect for damage	Daily	Page 5-3
	External cleaning	Daily	Page 5-3
	Purge with cleaning agent	Daily when using PUR adhesives	Page 5-4
Control modules	Check for leakage	Daily	-
Nozzle	Cleaning	Regularly, or when the application pattern deteriorates	Page 5-5
	Replace shim plate	When damaged	Page 5-10
	Have it refaced		
	Replace		
Cordset	Inspect for damage	Every time maintenance is performed	-
Air hoses			
Control modules	Check detection holes	Daily	Page 5-3
Filter	Clean filter cartridge and replace filter screen	Depending on degree of material pollution. Recommendation: Every 100 hours of operation	Page 5-11

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.

Inspecting Control Module

If material escapes from the detection hole, the interior seals are worn. Replace the control module when this occurs. Refer to page 7-1, *Replacing Control Module with 4/2 Air Valve* or page 7-2, *Replacing Control Module with 3/2 Air Valve.*.

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 melter with a cleaning agent recommended by the material supplier. Refer to page 5-4.

NOTE: Properly dispose of the material and cleaning agent according to local regulations.

Purging with Cleaning Agent

CAUTION: Use only a cleaning agent recommended by the hot melt material manufacturer. Observe the Material Safety Data Sheet for the cleaning agent.

NOTE: When PUR adhesive is used, it must be prevented from reacting to the thermal load in the applicator. The applicator must be purged every day when work is completed. Rinse out cleaning agent just before beginning production again.

1. Maintain operating temperature.
2. Place a container under the nozzle.
3. Relieve pressure (Refer to page 5-1).
4. Detach heated hose from applicator (Refer to page 3-5).
5. Purge melter and heated hose if necessary (Refer to separate manuals).
6. Connect purging hose to the applicator.
7. Purge the applicator until the material has been flushed out completely.

NOTE: When PUR adhesive is used, do not proceed until right before production is to begin again.

8. Unscrew purging hose.
9. Screw the heated hose onto the applicator again.
10. Purge applicator (and, when appropriate, melter and hose) with the material currently in use to flush out the cleaning agent.

NOTE: Properly dispose of the cleaning agent according to local regulations.

Disassembling and Cleaning Slot Nozzle

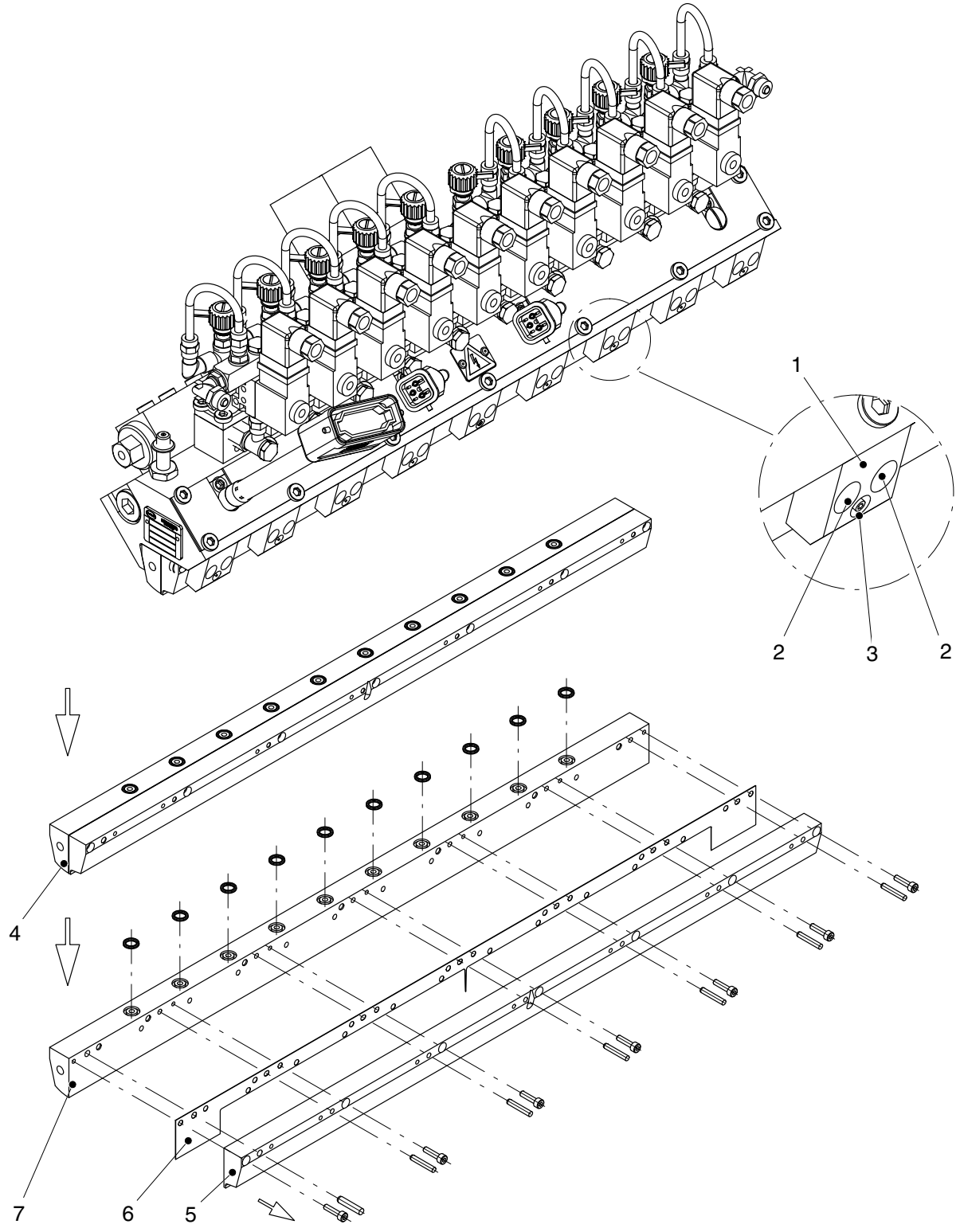

Fig. 5-2

1 Clamp
2 Fixing screw
3 Clamping screw
4 Nozzle
5 Mouthpiece
6 Shim plate
7 Mouthpiece receptacle

Disassembling and Cleaning Slot Nozzle *(contd.)*

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

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

1. Heat the applicator until the material is soft.
2. Before releasing the clamping screws, ensure that the nozzle (4 , Fig. 5-2) can not fall off.
3. Release all clamping screws (3 , Fig. 5-2). Now the nozzle can be extracted out the side. If there is not enough space to the side of the applicator: Unscrew all of the clamps (1 , Fig. 5) and extract the nozzle out the front of the unit.
4. Place the nozzle aside, somewhere out of harm's way.
5. Reduce the nozzle to the individual components: mouthpiece receptacle (7 , Fig. 5-2), mouthpiece (5 , Fig. 5-2) and shim plate (6 , Fig. 5-2).
6. Clean the individual parts. Refer to the data sheet from the material manufacturer for information on cleaning agents.
7. Reassemble the nozzle.
8. Install the nozzle in the applicator again by logically reversing steps 1 to 4. When nozzles have a centering clamping screw, insert it in the center clamp.

Disassembling and Cleaning Nozzle with Rotating Bar

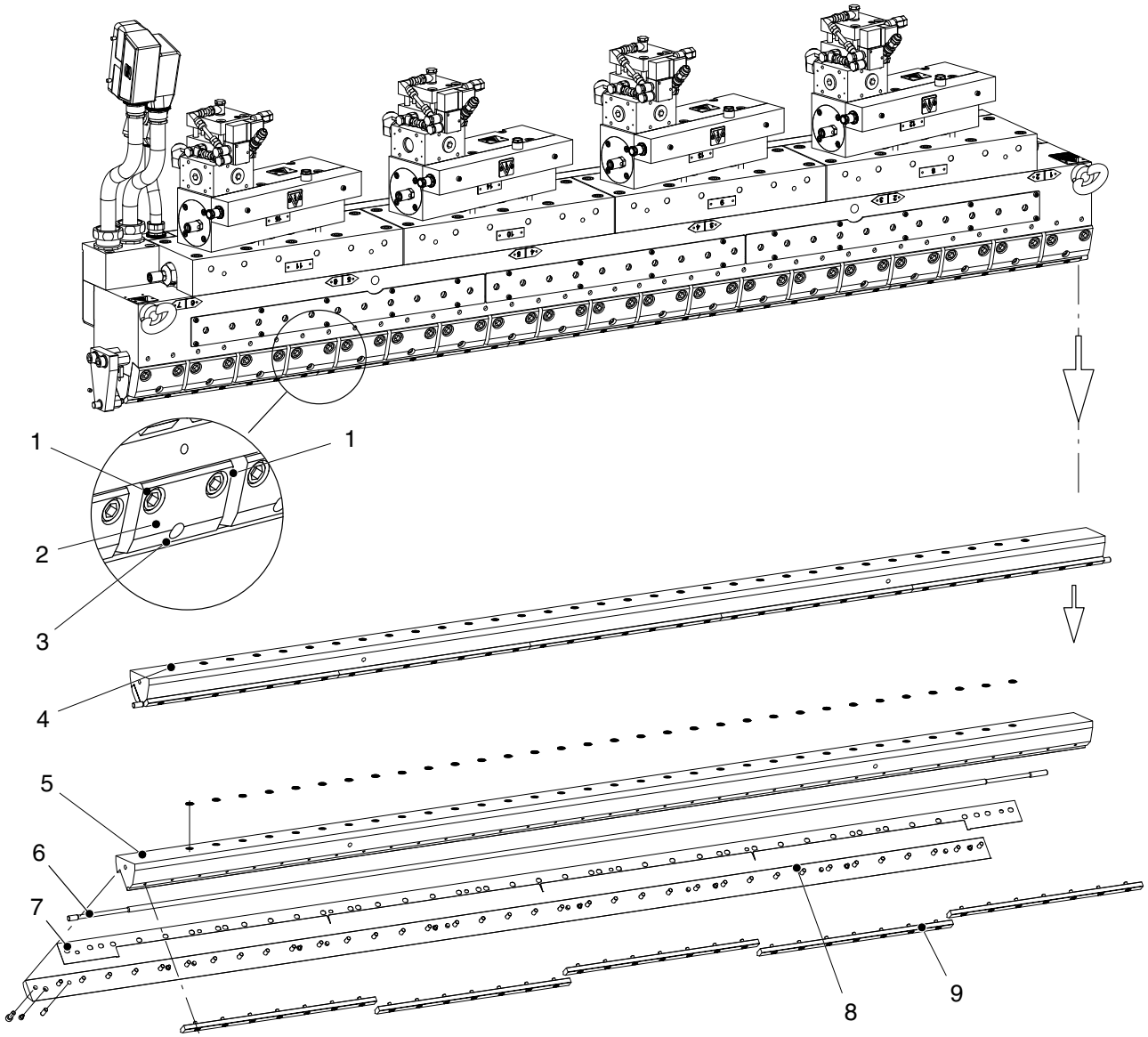

Fig. 5-3 Example of an applicator with rotating bar exchangeable nozzle, shown without rotating bar motor

1 Clamp fixing screw
2 Clamp
3 Clamping screw
4 Nozzle
5 Mouthpiece receptacle
6 Rotating bar
7 Shim plate
8 Mouthpiece
9 Bar

Disassembling and Cleaning Nozzle with Rotating Bar *(contd.)*

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

The nozzle must be regularly disassembled (mouthpiece, shim plate, mouthpiece receptacle and, when applicable, rotating bar) and cleaned. Remove material residue. Material residue affects the quality of the application.

1. Heat the applicator until the material is soft.
2. Switch off the rotating bar motor (6 , Fig. 5-3) and detach the rotating bar from the motor. Refer to page 5-10 *Replacing Rotating Bar.*
3. Remove all clamping screws (3 , Fig. 5-3). Now the nozzle can be extracted out the side. If there is not enough space to the side of the applicator: Unscrew all of the clamps (2 , Fig. 5-3) and extract the nozzle out the front of the unit.
4. Place the nozzle aside, somewhere out of harm's way.
5. Extract the rotating bar sideways out of its track.
6. Unscrew the bars (9 , Fig. 5-3). Ensure that the bars are not mixed up when reinstalling at a later time.
7. Reduce the nozzle to the individual components: mouthpiece receptacle (5 , Fig. 5-3), mouthpiece (8 , Fig. 5-3) and shim plate (6 , Fig. 5-3).
8. Clean all individual parts. Refer to the data sheet from the material manufacturer for information on cleaning agents.

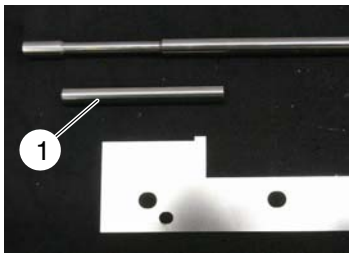

Fig. 5-4

NOTE: Nordson supplies a test pin with every rotating bar (1, Fig. 5-4). It helps to optimally adjust the position of the the rotating bar. The diameter of the test pin is 0.02 mm larger than that of the rotating bar. For information on how to use the test pin, refer to 9. and 12.

NOTE: If necessary, order a new test pin, ⌀ 8 mm, P/N 7171775.

9. Clean the rotating bar seat. If there are stress marks visible on the rotating bar seat, polish them with cutting oil. To do this, emery paper can be wrapped around the test pin and used as a polishing tool.
10. Re-assemble the mouthpiece receptacle, mouthpiece and shim plate.

Disassembling and Cleaning Nozzle with Rotating Bar *(contd.)*

11. Put the bars back into place and secure with screws. Use a torque wrench to tighten the bar fastening screws. Refer to the table for torque:

Thread size	Property class	Torque
M5	8.8	6 Nm
M6	8.8	12 Nm

12. Slide the test pin through the rotating bar seat, with the side that is not beveled leading. If this is not possible, loosen the fastening screws somewhat in the tight places and re-position the bars. If the test pin has too much leeway, tighten the fastening screws somewhat.

13. Extract the test pin and save it for later use.

14. Slide the rotating bar under the doctor blade.

15. Install the nozzle in the applicator again by logically reversing steps 1 to 3.

16. Connect the rotating bar to its motor again.

Replacing Rotating Bar

The way in which the rotating bar drive is connected to the applicator is a factor of the available space in the parent machine and other conditions specific to the customer. Thus the procedure to detach the rotating bar drive cannot be described precisely here. In general:

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

1. Stop the material supply to the applicator and stop the rotating bar motor.
2. Detach the protective covers from moving drive elements if necessary.
3. Disconnect the drive from the rotating bar.
4. Refer to page 5-7, *Disassembling and Cleaning Nozzle with Rotating Bar,* step 3. and the following steps, for instructions on how to proceed.

Inserting New Shim Plate

The nozzle must be removed from the applicator and disassembled to replace the shim plate. Refer to page 5-5, *Disassembling and Cleaning Nozzle*.

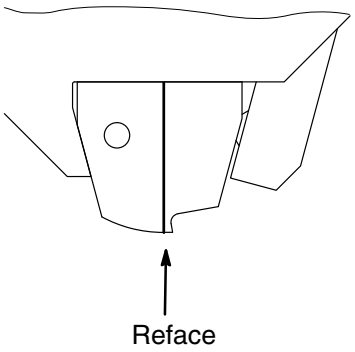

Fig. 5-5

1. Disassemble nozzle.
2. Fit new shim plate between mouthpiece and mouthpiece receptacle. The shim plate is held in place by two or more cylinder pins.
3. Screw nozzle halves together.

NOTE: The shim plate protrudes 0.1 to 0,3 mm out of the nozzle.

4. The shim plate must be ground until it is even with the mouthpiece and the mouthpiece receptacle.
5. Screw the nozzle onto the applicator again.

Refacing Nozzle

The nozzle touches the substrate, causing it to naturally wear.

The nozzle may need to be refaced to compensate for wear.

NOTE: Nordson will assume no warranty or liability for damage resulting from incorrect refacing. The nozzle should be sent to Nordson for refacing.

Replacing Filter Cartridge

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

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

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

Removing Filter Cartridge

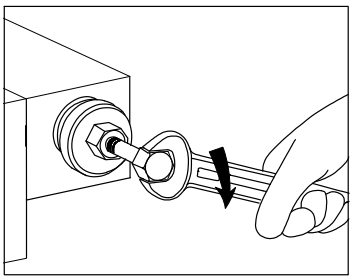

Fig. 5-6

1. Heat applicator until material is soft.
2. Relieve pressure. Refer to page 5-1.
3. Insert a screw with M8 thread into the center tapped hole (Fig. 5-6).

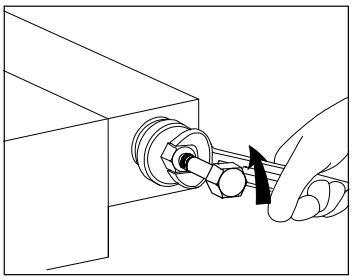

Fig. 5-7

4. Place a container under the filter bore.
5. Unscrew the filter cartridge counterclockwise with an open-end wrench or ring wrench (Fig. 5-7).

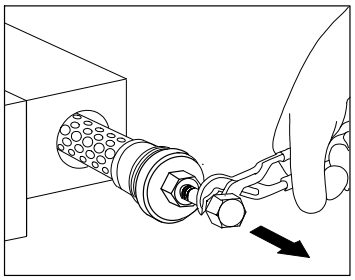

Fig. 5-8

6. Use pliers to remove the filter cartridge (Fig. 5-8).
7. Purge the filter bore with material by allowing the melter pump to run slowly. This rinses out particles of dirt that may still be in the filter bore.
8. Properly dispose of material according to local regulations.

Installing Filter Cartridge

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

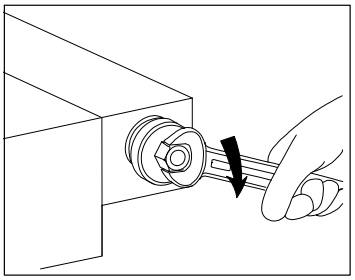

Fig. 5-9

1. Heat applicator until material is soft.
2. Slide the filter cartridge into the filter bore.
3. Screw in the filter cartridge with an open-end wrench or ring wrench. Tighten only hand-tight; do not use excessive force (Fig. 5-9).

Disassembling and Cleaning Filter Cartridge

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

The filter cartridge can be disassembled only when it is warm. If the filter cartridge is not disassembled immediately after removal, it must be heated (e.g. with an air heater).

NOTE: Use only a cleaning agent recommended by the hot melt material manufacturer. Observe the Material Safety Data Sheet for the cleaning agent.

NOTE: Always replace the filter screen (5).

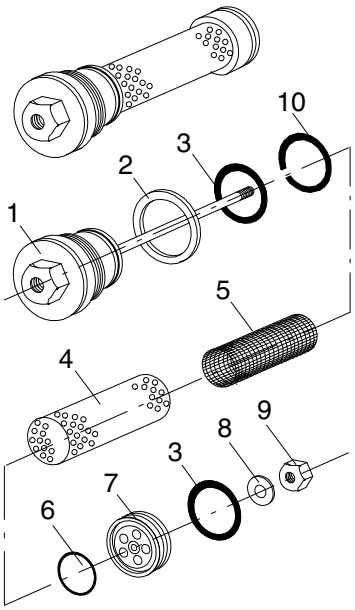

Fig. 5-10

1. Disassemble the filter cartridge.
2. Replace the filter screen (5).
3. Clean all other parts.
4. Check O-rings (3 and 6) and sealing ring (2); replace if necessary.
5. When assembling the filter cartridge, tighten the nut (9) with a torque wrench. Max. torque + 1.5 Nm.
6. Properly dispose of the cleaning agent according to local regulations.

1 Filter screw
2 Sealing ring
3 O-ring 44x3
4 Filter sheath
5 Filter screen
6 O-ring 35x2
7 Perforated disk
8 Serrated lock washer
9 Nut
10 O-ring 38x1.5

Maintenance Record

Unit part	Activity	Date	Name	Date	Name
Applicator	External inspection and cleaning				
Nozzle	Cleaning				
	Replace nozzle				
	Replace shim plate				
Control module	External cleaning				
	Replace control module				
Filter cartridge	Replace filter screen				

Maintenance Record Form - Spare Copy

Unit part	Activity	Date	Name	Date	Name
Applicator	External inspection and cleaning				
Nozzle	Cleaning				
	Replace nozzle				
	Replace shim plate				
Control module	External cleaning				
	Replace control module				
Filter cartridge	Replace filter screen				

Section 6
Troubleshooting

ATTENTION: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

Introduction

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

Problem	Possible cause	Corrective action	Refer to
No material	Melter tank is empty	Fill	Separate manual *Melter*
	Melter motor is not switched on	Switch on	Separate manual *Melter*
	Melter pump is not working	Check	Separate manual *Pump*
	Applicator has not yet reached operating temperature	Wait until temperature has been reached; check temperature setting if necessary	Separate manual *Temperature controller*
	Applicator cold or not yet warm enough	Refer to *Applicator does not heat*	- -
	Compressed air not connected	Connect	Page 3-4
	Nozzle clogged	Clean nozzle	Page 5-5
	Nozzle stem is stuck	Replace control module	Seite 7-1 or 7-2
	Filter cartridge is clogged	Clean or replace filter screen if necessary	Page 5-12
	Solenoid valves do not switch	Refer to *Solenoid valves do not switch*	- -
Applicator does not heat	Temperature is not set	Set on temperature controller	Separate manual *Temperature controller*
	Plug not connected	Connect	Page 3-3
	Fuses in melter defective	Disconnect unit from line voltage, check fuses and replace if necessary	- -
	Heater cartridge(s) in applicator defective	Replace	Page 7-4

Problem	Possible cause	Corrective action	Refer to
Applicator does not reach the set temperature	Heater cartridge(s) in applicator defective	Replace	Page 7-4
	Ambient temperature too low	Increase ambient temperature	- -
Solenoid valves do not switch	Control unit not switched on	Switch on	Separate manual *Control Unit*
	Plug not connected or loose	Secure plug connections with a screw.	Page 3-3

Problem	Possible cause	Corrective action	Refer to
Thickened material at end of application pattern	**Note:** Material thickening can not be prevented; it can only be reduced.		
	Stem stroke too high	Check stem stroke between piston and socket block Setpoint at DC-D3: 0.5 mm Setpoint at DC-D5: 1.0 mm	- -
Application pattern not exact	Temperature not set precisely on melter	Correct setting	Separate manual *Melter*
	Temperature of applicator not set precisely	Correct setting	Page 4-1
	Material quantity/pressure not set precisely	Correct setting	Page 4-2
	Control unit not programmed correctly	Correct programming	Separate manual *Control Unit*
	External pollution on nozzle	Clean	Page 5-5
	Pollution inside of nozzle		
	Nozzle damaged	Replace nozzle	
	Application quantity and substrate processing speed not attuned to one another	Check settings; change so as to be attuned to one another if necessary	Page 4-4
	Material unsuitable	Ask manufacturer	Data sheet of material manufacturer

Troubleshooting Table *(contd.)*

Problem	Possible cause	Corrective action	Refer to
The *open time is too long**	Application temperature too high	Set temperature lower	Separate manual *Temperature controller*
	Material unsuitable	Ask manufacturer	Data sheet of material manufacturer
The *open time is too short**	Application temperature too low	Set temperature higher	Separate manual *Temperature controller*
	Material unsuitable	Ask manufacturer	Data sheet of material manufacturer

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

Section 7
Repair

ATTENTION: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

Replacing Control Module with 4/2 Air Valve

1. Relieve pressure. Refer to page 5-1.
2. Detach the solenoid valve plug, release the control air connection and unscrew the material hose.
3. Extract the four screws M8 (1, Fig. 7-1).
4. Extract the old control module from the warm applicator.
5. Apply high temperature grease (Refer to the page 7-4, *Processing Materials*) to the new control module:

- To the O-rings
- To the screw threads
- Under the screw heads.

6. Insert the new control module, screw it into place and connect it.

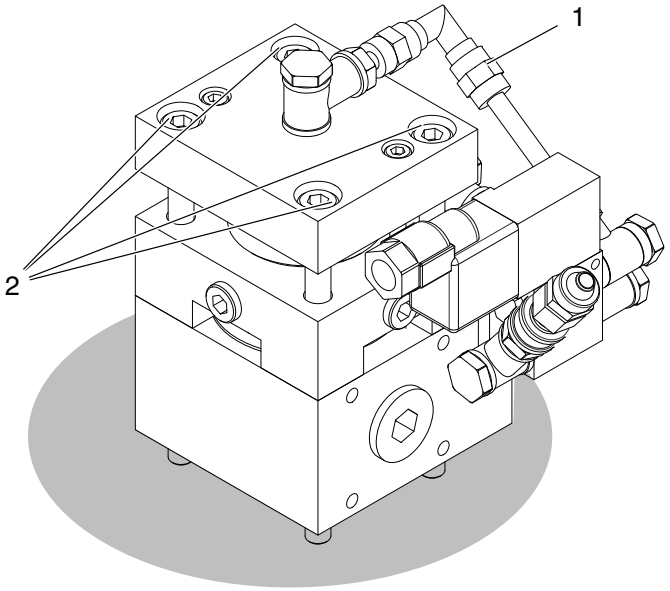

Fig. 7-1

Replacing Control Module with 3/2 Air Valve

Nordson recommends keeping a supply of control modules to prevent production stoppage.

CAUTION: The control module is a high precision, valuable part. Handle very carefully!

Removing Control Module

1. Relieve pressure. Refer to page 5-1.
2. Release screws (M4).

Fig. 7-2

3. Use a suitable tool, e.g. a screwdriver, to detach the control module from the air bar (instant plug connection) (1, Fig. 7-2).
4. Extract the control module from the warm applicator.

Replacing Control Module with 3/2 Air Valve *(contd.)*

Installing Control Module

NOTE: Required tool: Torque wrench.

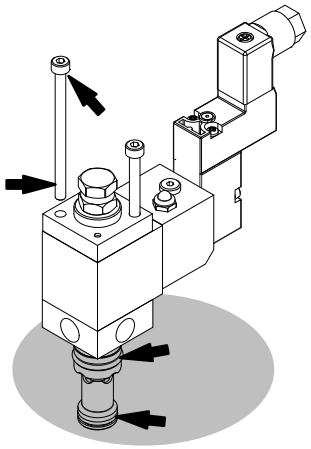

Fig. 7-3

1. Apply high temperature grease (Refer to page 7-4, *Processing Materials*) (Figure 7-3):

- To the O-rings
- To the screw threads
- Under the screw heads.

2. Insert the new control module. Do not tilt! The control module is positioned correctly when the cylindrical part rests evenly on the body, below the detection holes. The gap between the square part and the body is then 2 mm. Also compare to the adjacent control modules or to Figure 7-3.
3. Screw in the screws by hand. Do not tighten yet.
4. Alternately tighten the two screws with a torque wrench.
   a. Tighten both screws to 1.0 Nm.
   b. Tighten both screws to 2,0 Nm.
   c. Tighten both screws to 2,7 Nm.
5. Re-connect air and electrical connections.

NOTE: Observe the voltage stated on the ID plate of the solenoid valve.

Replacing Heater Cartridge or Temperature Sensor

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

1. Heat the applicator to the material processing temperature.
2. Disconnect the applicator from the voltage supply.
3. Unscrew electrical equipment cover of the affected heating zone.
4. Disconnect the heater cartridge or temperature sensor.
5. Extract temperature sensor from the hole. Use a suitable pin to push the heater cartridge out of the hole. If a heater cartridge or temperature sensor firmly sticks, drill open the hole.
6. Connect the new heater cartridge or temperature sensor.
7. Apply PTFE grease to the new heater cartridge or temperature sensor, e.g. *GLS 595/NZ,* order number: *P/N 783959.*
8. Insert the new heater cartridge or temperature sensor.
9. Screw on electrical equipment cover.
10. Reconnect the voltage supply.

Processing Materials

Designation	Order number	Use
High temperature grease		Apply to O-rings and threads
• Can 10 g	P/N 394769	**NOTE:** The grease should not be mixed with other lubricants. Oily/greasy parts must be cleaned before application.
• Tube 250 g	P/N 783959	
• Cartridge 400 g	P/N 402238	

Section 8
Technical Data

General Data

Type of heating	Electrical resistance heating elements		
Possible temperature sensors	FeKo thermal element	Pt 100	Ni 120

Max. closing pressure without compressed air	15 bar	1,5 MPa	218 psi
Max. closing pressure with compressed air	60 bar	6 MPa	870 psi
Max. locking pressure without compressed air	100 bar	10 MPa	1450 psi
Max. locking pressure with compressed air	100 bar	10 MPa	1450 psi

Max. processable viscosity	80000 mPas	80000 cP	

Air Pressure

Control air	Approx. 5 to 6 bar	Approx. 0.5 to 0.6 MPa	Approx. 72.5 to 87 psi

Temperatures

Max. ambient temperature	60 °C	140 °F	
Max. operating temperature	200 °C	392 °F	

Electrical Data

ATTENTION: The applicator is designed for only one operating voltage. Operate only at the operating voltage shown on the ID plate.

Operating voltage	230 V_{AC}
Operating voltage frequency	50/60 Hz
Degree of protection	IP 30

Power consumption	Refer to ID plate

Voltage for solenoid valve	24 V_{DC}

Dimensions and Weights

Dimensions	Refer to technical drawing
Weight	See consignment note

Torques

Control Modules

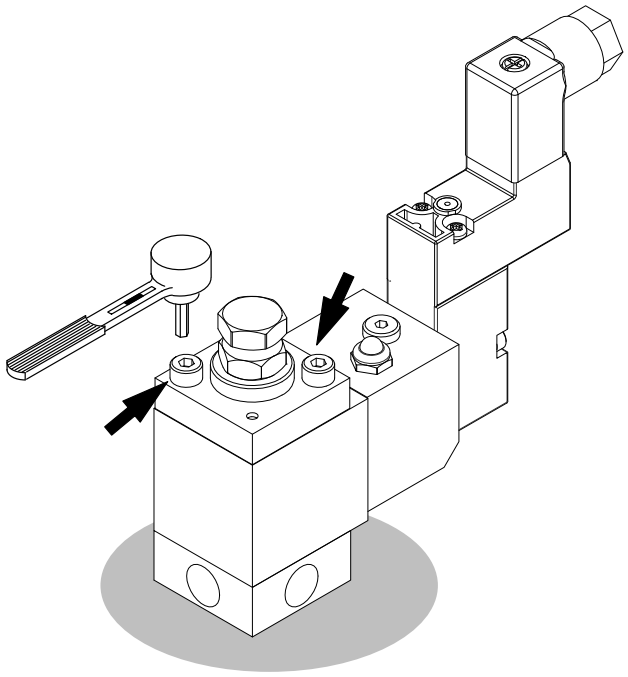

Fig. 8-1

Alternately tighten the two screws with a torque wrench.

1. Tighten both screws to 1.0 Nm.
2. Tighten both screws to 2,0 Nm.
3. Tighten both screws to 2,7 Nm.

Nozzle

Thread size	Property class	Torque
M5	8.8	6 Nm
M6	8.8	12 Nm
M8	8.8	25 Nm
M12	12.9	100 Nm

Clamps

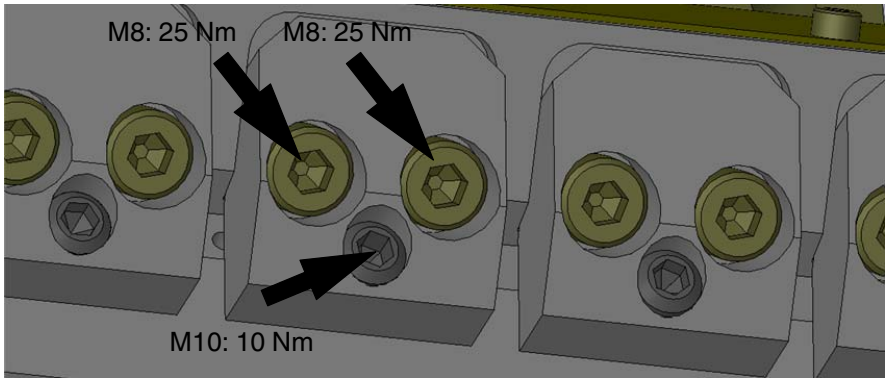

Fig. 8-2

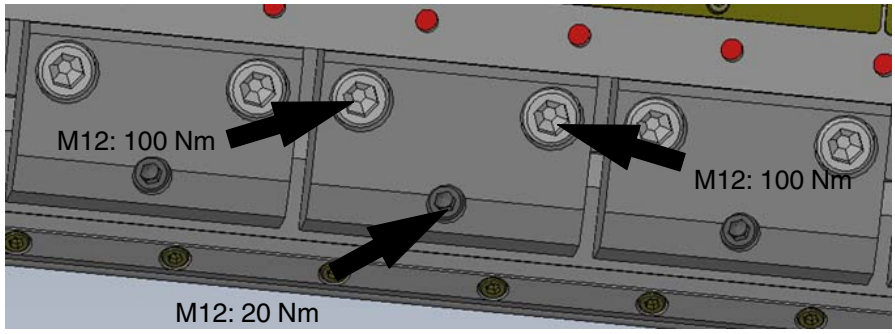

Fig. 8-3