Hot Melt Applicators
Series EP48-BoD

Manual P/N 7169856_02
- English -

Edition 07/12

NORDSON ENGINEERING GMBH • LÜNEBURG • GERMANY

Note

This document applies to products with the following P/Ns:

7331523							

Order number

P/N = Order number for Nordson articles

Note

- Translation of Original Document -

Trademarks

Table of Contents

Safety Instructions

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

Description

Intended Use

Applicators of the series *EP48-BoD* (***B****ook* ***o****n* ***D****emand*) may be used only to apply PUR and other hot melt adhesives commonly used in the book binding industry to glue the spines of books.

Any other use is considered to be unintended. Nordson will not be liable for personal injury 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:

- In defective condition
- When changes or modifications have been made by the customer
- In a potentially explosive atmosphere
- When hot melt adhesives not suitable for the unit are used
- When the values stated under *Technical Data* are not complied with.

The applicator may not be used to process 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 from hot applicator: from hot adhesive and when adjusting
- Material fumes can be hazardous. Avoid inhalation.

Note on Manual

- Because the unit is continuously being modified and improved, there are several models of the applicator. Thus illustrations in this manual may deviate from the actual design
- Refer to separate document *Parts List* for spare parts.

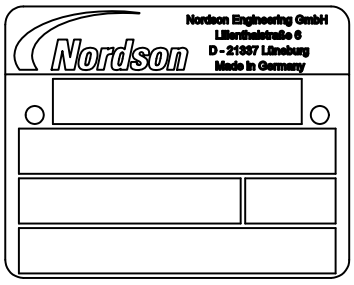
Definition of Term(s)

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.

ID Plate



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

Function

NOTE: The applicator is part of an application system. Also refer to page 5, *Illustration (Examples).*

The adhesive flows from a melter through a heated hose then a filter (3) and into the applicator.

The adhesive is applied to the spine from underneath as soon as the *Application control module* (4) is triggered (opened). The *Retrosuction control module* (5) sucks the adhesive out of the application slot (1) as soon as the application control module closes. This ensures exact adhesive edges.

The application width can be set continuously up to 60 mm.

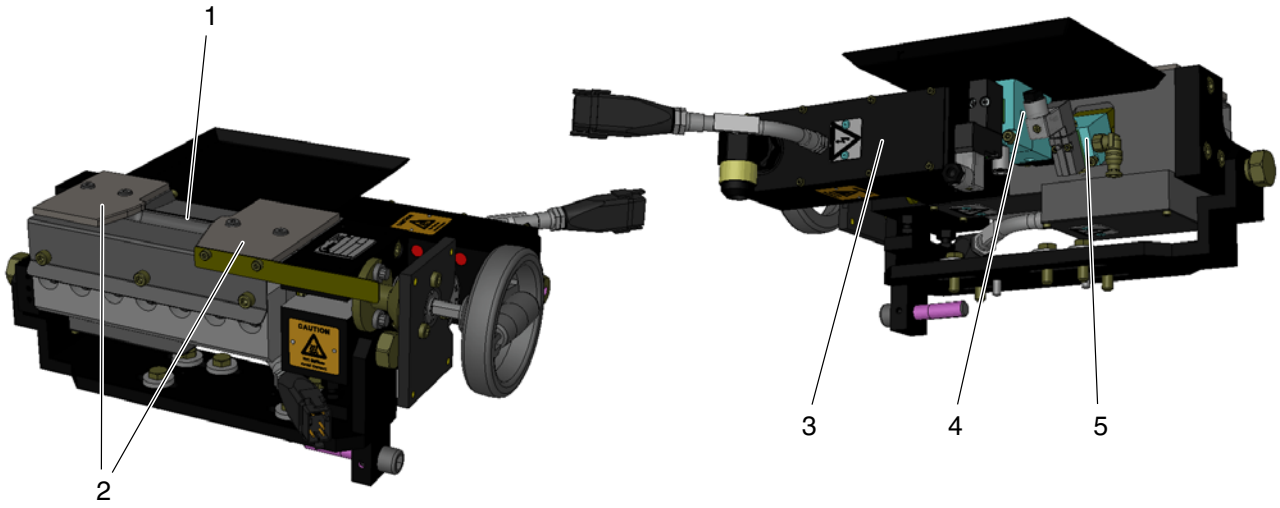
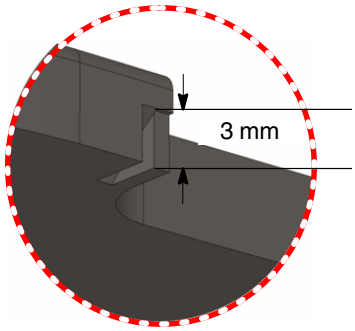


Fig. 1 Applicator P/N 7331523

1 Application slot
2 Guide plates
3 Filter
4 Application control module
5 Retrosuction control module

Side Gluing



Groove (1 mm x 3 mm) for side gluing

Adhesive is also applied laterally (*Side gluing slot*) through the groove in pre-assembled guide plates.

NOTE: Guide plates without and with an only 1 mm high groove are available. Refer to separate document *Parts List*.

CAUTION: When mounting the guide plates, apply high temperature grease to the surface between the guide plate and the body.

Volume Control

The motion of two restricting pistons reduces the volume in the distribution channel when the application width is decreased; it increases to the same degree in a compensating chamber. By equalizing the volume, no adhesive escapes and no air is sucked in when the application width is modified. So material is applied precisely beginning with the first book.

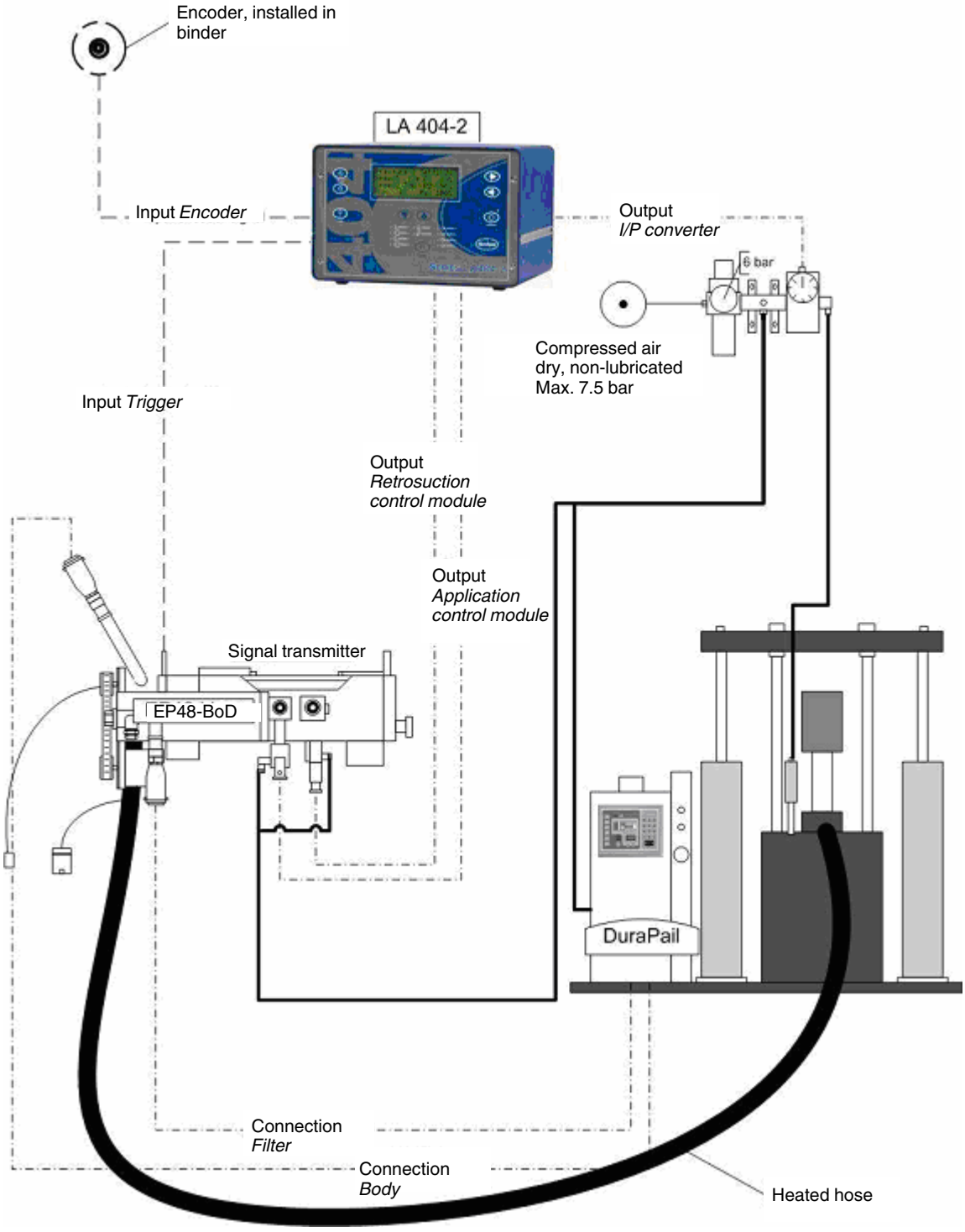
Heating

Electrical heater cartridges are used to heat the unit. The temperature is continuously measured by temperature sensors and regulated by electronic temperature controllers usually located in the electrical cabinet of the melter.

Overtemperature Shutdown by Thermostat

Thermostats in the filter and in the body switch off the heater at approx 200 ° C / 392 ° F.

Illustration (Example)



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.

Storage

Do not store outside! Protect from humidity and dust. Protect the nozzle from damage.

Installing

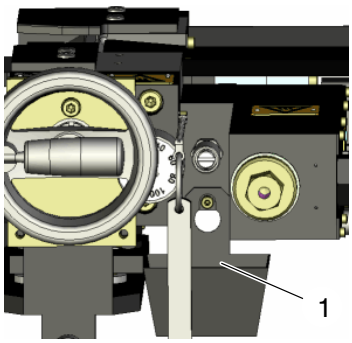
When installing the applicator, the following points should be observed in order to avoid unnecessary effort later.

- Protect from humidity, vibrations, dust and drafts
- Ensure access to parts relevant for maintenance and operation
- When installing the unit, ensure that cables, air hoses and heated adhesive hoses can not be bent, pinched, torn off or otherwise damaged.

Exhausting Adhesive Vapors

Ensure that adhesive vapors do not exceed the prescribed limits. Exhaust adhesive vapors if necessary. Provide sufficient ventilation in the area where the machine is set up.

Installing Parts of Ship-with Kit



NOTE: Refer to separate document *Parts List* for an overview of the parts contained in the *Ship-with kit*.

- Fasten the drip tray (1) to the applicator.
- The purpose of the other parts of the *Ship-with kit* will be described as they are needed.

Attaching to Parent Machine

A separate bracket is needed for attaching to a binder. This bracket is not included in the scope of the applicator delivery; it must be ordered to fit the binder.

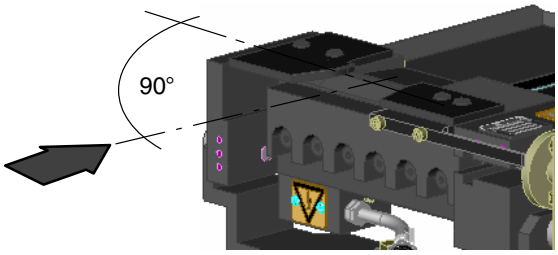
Screw the applicator onto the separate bracket in the parent machine.

Observe when Attaching

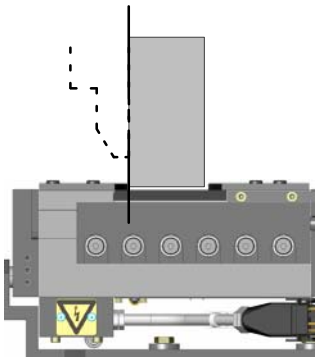
A. The application slot must be at a right angle to the direction of movement of the book spine.

B. The inside edge of the rear book clamp must be aligned to the immobile guide plate of the applicator.

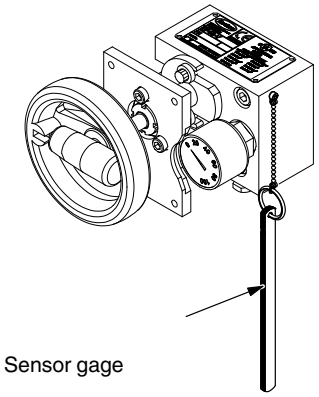
A.



B.



Adjusting



Sensor gage

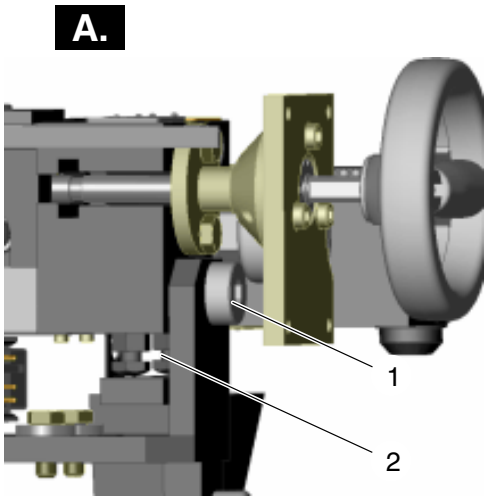
Parallelism and Application Thickness

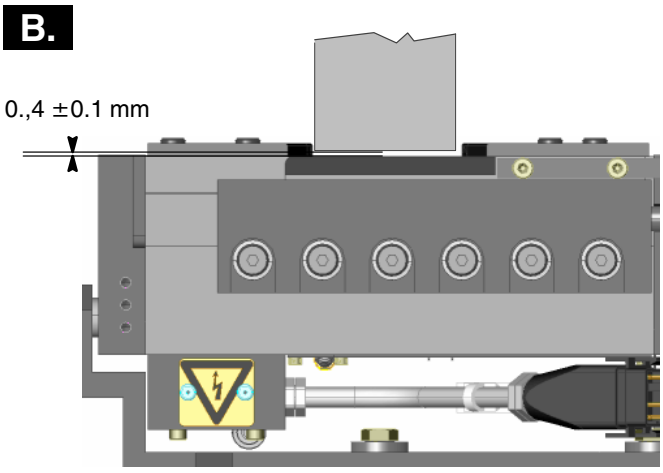
NOTE: A sensor gauge for adjusting the application thickness is contained in the *Ship-with kit* and can be attached to the applicator.

To achieve even application, the applicator must be adjusted such that the application slot is parallel to the book spine.

A. Parallelism:

1. Release the locking screw (1).
2. Release locknuts on setting screws *Radial position* (2).
3. Turn setting screws *Radial position* to align the applicator parallel to the book spine.
4. Tighten locknuts.
5. Tighten locking screw.





B. Set the application thickness (0.4 ± 0.1 mm) by adjusting the height on the separate bracket.

NOTE: The application thickness on a book spine can be measured with the included measuring magnifier.

Electrical Connection

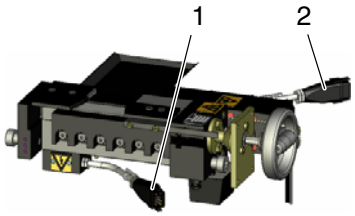
ATTENTION: Observe voltage values found on the ID plate of the applicator and solenoid valves.

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

Laying Cable

ATTENTION: Ensure that cables do not touch rotating and/or hot components. Do not pinch cables and check regularly for damage. Replace damaged cables immediately!

Heating Zones



1. Connect the plugs (1, 2) to the melter electrical cabinet or to an external electrical cabinet.

   NOTE: Normally the *Filter* (2) connection is attached to the receptacle on the heated hose and a separate cable is used for the *Applicator* (1) connection.

2. Use safety clips - when available - to secure the plug connection.

Solenoid Valves

Connect the solenoid valves to a pattern controller (e.g. *LA 404-2*). Also refer to page 5, *Illustration (Examples).*

NOTE: Connecting lines can be part of a special cable harness.

Pneumatic Connection

The applicator may only be connected to pressure-controlled and conditioned compressed air.

Connecting Control Air

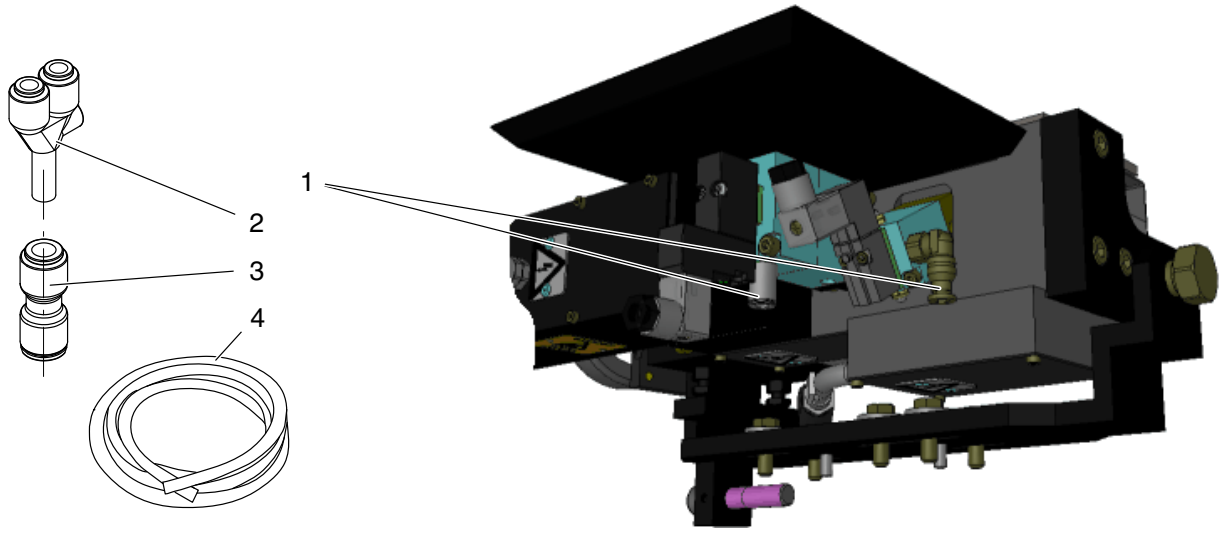
Use dry, regulated, non-lubricated compressed air.

NOTE: Pneumatic lines can be part of a special cable harness.

Also refer to page 5, *Illustration (Examples).*

Control Modules

1. Use the Y-plug (2) and a reducer (3) to link the pneumatic connections (1) to the customer's air conditioning unit.
2. Set air pressure to 6 bar / 0.6 MPa / 87 psi.

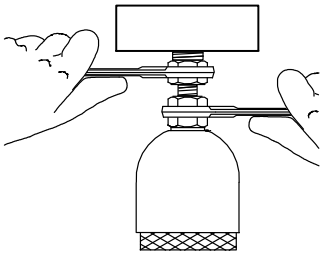


Note: *The Y-plug* (2), the *reducer* (3) and the *compressed air hose* (4) are included in the *Ship-with kit*.

Connecting Heated Hose

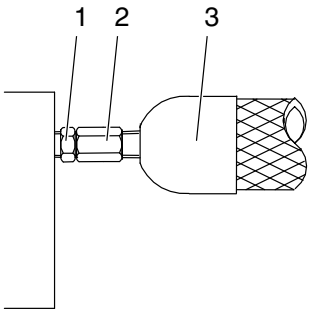
ATTENTION: Hot! Risk of burns. Wear heat-protective gloves.

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.

Connecting



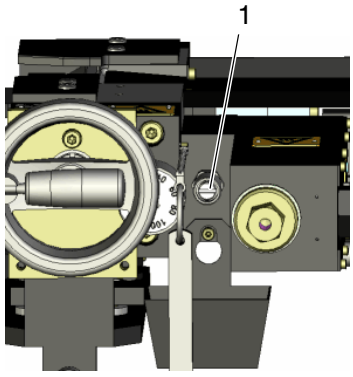
If cold material can be found in the hose connection, these components (1, 2) must be heated until the material softens (approx. 80 °C, 176 °F).

1. First only connect the hose (3) electrically.
2. Heat the system and hose to approx. 80 °C (176°F).
3. Screw on heated hose.

Disconnecting

ATTENTION: System and material pressurized. Relieve system pressure before disconnecting heated hoses. 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 melter to 0 rpm; switch off motor(s).
2. Reduce control air pressure for constant pressure controller (if included) to 0 bar.
3. Open the air relief valve *Filter* (1) by turning with a screwdriver.
4. Close air relief valve *Filter* again.

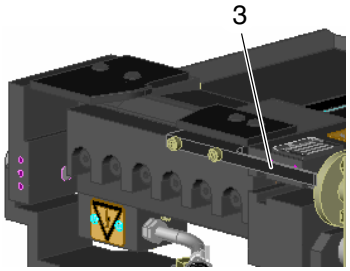
Motorizing Application Width Adjustment

Observe the following when mounting a motor drive for adjusting the application width:

CAUTION: Risk of injury from moving parts! Protect from direct contact.

Comply with these values:

Applicator	Minimum torque [Nm] required	Recommended maximum spindle speed * [min^{-1}]
7331523	2	318
NOTE: * Higher speeds increase wear to seals and bearing surfaces.		



A rod (3) can trigger a binder switch for a certain application width.

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.

Important When Using Polyurethane Application Materials (PUR)

It is imperative that the following guidelines are followed when processing polyurethane application materials (PUR):

- Wear respiratory protection when the maximum permissible concentration of hazardous substances is exceeded.
- Before prolonged standstill of the application system, purge with a suitable cleaning agent. Use only a cleaning agent recommended by the material manufacturer.
- Close open material connections airtight.

When the system is to cease operation for only a short time, it suffices to coat the application slot generously with grease.

CAUTION: Use only special high-temperature grease. Refer to page 30, Processing Materials! Any other grease may cause the PUR material to cross-link.

Triggering Solenoid Valves

CAUTION: Trigger the solenoid valves only when the applicator is heated to operating temperature! Seals in the application control module and the retrosuction control module can become damaged if the material is too cold.

Setting Temperature

The procedure for setting the temperatures is described in the temperature controller manual. Temperature controllers are not part of the applicator. They can be located e.g. in the electrical cabinet of the adhesive feeding unit or in a separate electrical cabinet.

Maximum Operating Temperature

180 ° C / 356 ° F

NOTE: When setting the temperature, the temperature prescribed by the hot melt adhesive manufacturer is decisive. The maximum operating temperature for the product described here and the heated system components may not be exceeded.

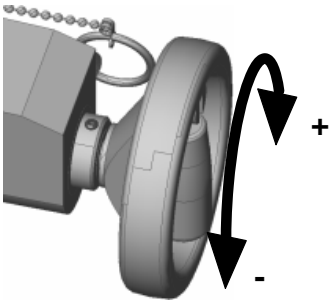
Nordson will grant no warranty and assume no liability for damage resulting from incorrect temperature settings.

Applying Hot Melt Adhesive

Factors that have a significant influence on application quality:

- Viscosity of the adhesive (The heat effect and the duration thereof influence the viscosity)
- Adhesive pressure (application pressure). It has to be determined by trial and error and then set depending on the desired application thickness, the application width, the machine speed and the adhesive viscosity. Medium application widths have proven to require a lower adhesive pressure than small or large application widths
- Book spine condition.

Setting Application Width



CAUTION: Adjust the application width only when the applicator is heated to operating temperature.

1. Set the application width to the width of the book spine + 0.3 mm:
2. Re-adjust application width during operation if required.

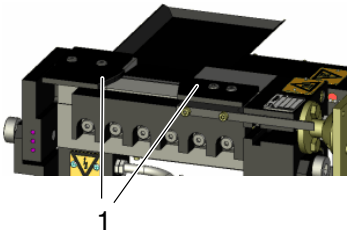
Setting Application Thickness

Refer to page 8, *Adjusting*.

Daily Shutdown

To prevent the PUR material to be processed from hardening, open surfaces must be coated with grease.

CAUTION: Use only special high-temperature grease. Refer to page 30, *Processing Materials*. Any other grease may cause the PUR material to cross-link.



NOTE: Before extended standstill, detach the guide plates (1).

1. If necessary, remove adhesive from nozzle with wooden or plastic spatula, or wipe off with a cloth.
2. Generously cover the application slot and side gluing slot with grease.
3. Set minimum application width.

Settings Record

Production information

Adhesive	Manufacturer	
	Max. processing temperature	
	Viscosity	

Cleaning agent	Manufacturer	
	Flash point	

Temperatures		
Melter	Setpoint	
	Undertemperature	
	Overtemperature	
Heated hose	Setpoint	
	Undertemperature	
	Overtemperature	
Applicator	Setpoint	
	Undertemperature	
	Overtemperature	
Filter block	Setpoint	
	Undertemperature	
	Overtemperature	

Notes	
Form filled out by:	
Name	**Date**

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.

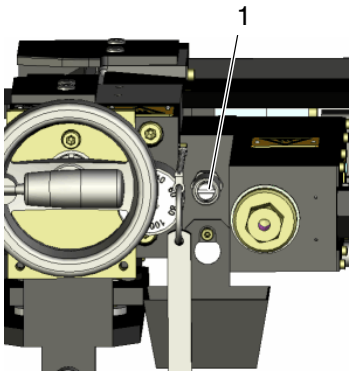
NOTE: Maintenance is an important preventive measure for maintaining operating safety and extending the service life of the unit. It should never be neglected.

Relieving Pressure

ATTENTION: System and adhesive 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 melter to 0 rpm; switch off motor(s).
2. Set control air pressure for constant pressure controller (if included) to 0 bar.
3. Open the air relief valve *Filter* (1) by turning with a screwdriver.
4. Close air relief valve *Filter* again.



Maintenance Table

The maintenance intervals are general guidelines based on experience. Depending on operating environment, production conditions and hours of operation, other maintenance intervals may prove necessary.

Unit part	Activity	Interval	Refer to
Entire application system	Purge with cleaning agent	When changing adhesive, if the adhesives used can not be mixed Before prolonged production interruptions, if PUR adhesive is processed	Page 18 Observe adhesive manufacturer's instructions
Entire applicator	Visual inspection	Daily	Page 18
	External cleaning	Daily	Page 18
Application control module and retrosuction control module	Check performance	When bleeding	-
	Replace	When malfunction occurs	Page 24
Nozzle: Seals. sliding surface between mobile guide plate and body	Lubricate	When reassembling Weekly, when the application width is changed frequently	Page 26
	Replace seals	When adjustable mouthpiece leaks	
Filter cartridge	Clean or replace filter screen if necessary	Approx. every 100 hours of operation	Page 20

Visual Inspection for External Damage

ATTENTION: When damaged parts pose a risk to the operational safety of the unit and/or safety of personnel, switch off the unit and have the damaged parts replaced by qualified personnel. Use only original Nordson spare parts.

External cleaning

External cleaning prevents pollution created by production from causing the unit to malfunction.

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

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

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

Remove adhesive residue only with a cleaning agent recommended by the adhesive supplier. Heat with an air heater if necessary. Remove dust, flakes etc. with a vacuum cleaner or a soft cloth.

1. Remove adhesive residue from the nozzle promptly with a soft cloth, before it chars.
2. Remove severe and hardened residue with a wooden or plastic spatula if necessary.

Purging with Cleaning Agent

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

1. Empty the melter and fill with cleaning agent.
2. Continue as described under *Bleeding*. Refer to page 19, *Bleeding*. Feed cleaning agent until cleaning agent comes out free of adhesive residue.
3. Properly dispose of the cleaning agent according to local regulations.

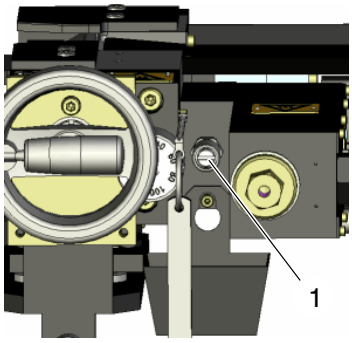
NOTE: Before starting production again, flush out cleaning agent residue using the new adhesive.

Bleeding

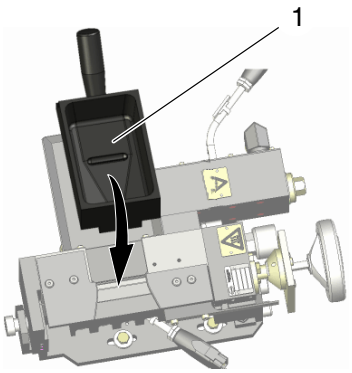
The application system must be bled if air or gas penetrates the system.

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

1. Heat up heated system components.
2. Completely close the application slot.
3. Switch on the melter motor(s).



4. Bleed melter, hose and filter:
   a. Open the air relief valve *Filter* (1) by turning with a screwdriver until material flows out free of bubbles.
   b. Close air relief valve *Filter* again.



5. Bleed applicator
   a. Position bleeding reservoir (1) and clamp in place lightly by adjusting application width.
   b. Electrically or manually trigger the solenoid valve *Application control module* until material flows out free of bubbles.
   c. Remove the bleeding reservoir.
6. If necessary, remove adhesive from nozzle with wooden or plastic spatula, or wipe off with a cloth.
7. Properly dispose of adhesive according to local regulations.

Filter Cartridge

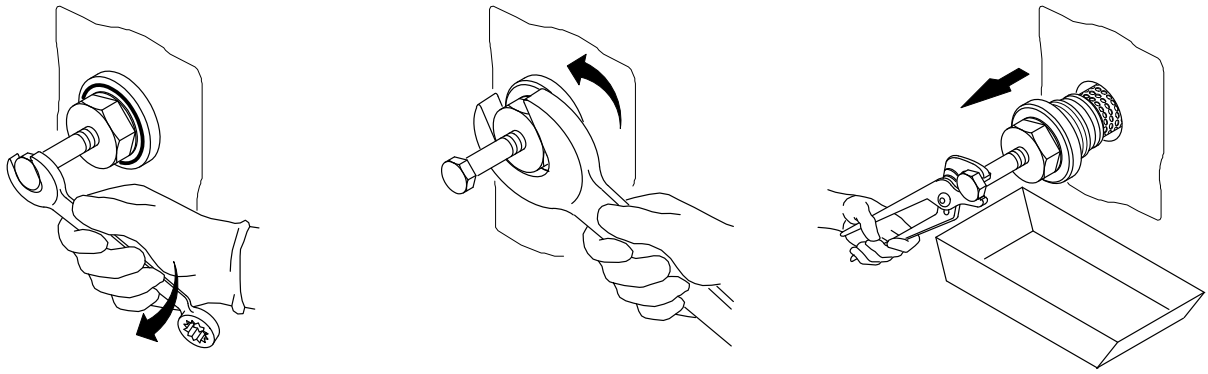
ATTENTION: Hot! Risk of burns. Wear appropriate protective clothing/equipment.

ATTENTION: System and material pressurized. Relieve system pressure. Failure to observe can result in serious burns.

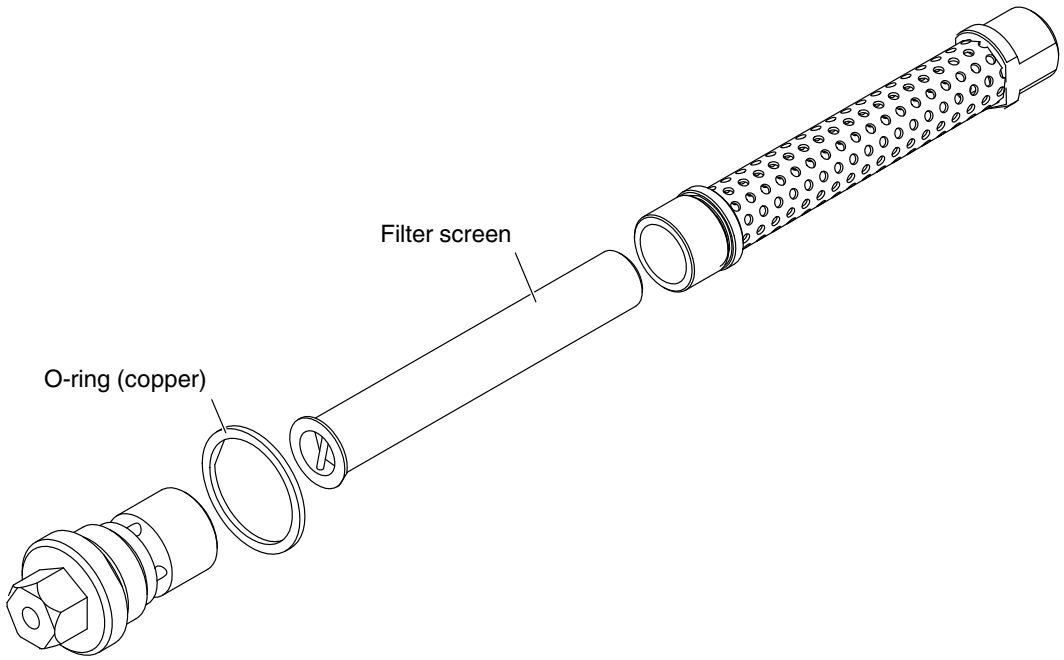
Removing

NOTE: Remove the filter cartridge only when the applicator is heated to operating temperature!

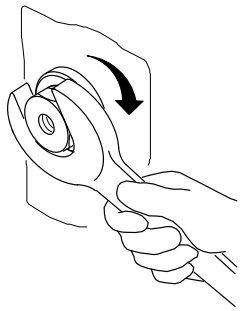
CAUTION: As soon as the thread is disengaged, cease turning. Otherwise part of the filter cartridge may remain in the bore.



Depending on the filter cartridge model, the filter screen can be changed. If possible, always use a new O-ring (copper) when installing. Refer to separate document *Parts List* for order numbers.



Installing



NOTE: Install the filter cartridge only when the applicator is heated to operating temperature!

1. Apply high temperature grease to all threads and O-rings. Refer to page 30, *Processing Materials*.
2. Slide in the filter cartridge and tighten somewhat (approx. 1 Nm / 8.85 lbin).
3. Feed material by allowing the pump to run until the material comes out of the applicator free of bubbles.
4. Properly dispose of material according to local regulations.

Maintenance Record

Unit part	Activity	Date	Name	Date	Name
Complete applicator	Lubricate weekly				
Filter cartridge	Clean or replace filter screen if necessary				

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.

ATTENTION: Troubleshooting activities may sometimes have to be carried out when the unit is energized. Observe all safety instructions and regulations concerning energized unit components (active parts). Failure to observe may result in an electric shock.

Troubleshooting Table

When troubleshooting, other components of the application system may need to be considered.

The troubleshooting table serves as an aid to qualified personnel. It cannot however replace targeted troubleshooting using e.g the wiring diagram and measuring instruments. It also does not include all possible problems, only those which most typically occur.

Problem	Possible cause	Corrective action	Refer to
Applicator or parts thereof do not get hot	Temperature on corresponding temperature controller set incorrectly or not at all	Adjust temperature	Page 13
	Plug has no contact	Secure plug	-
	Fuses in melter or electrical cabinet defective	Disconnect unit from line voltage, check fuses and replace if necessary	Manual for melter, wiring diagram
	Heater cartridge(s) defective	Have heater cartridge(s) checked by qualified personnel; replace if necessary	-
	Thermostat defective	Have thermostats checked by qualified personnel; replace if necessary	-

Continued...

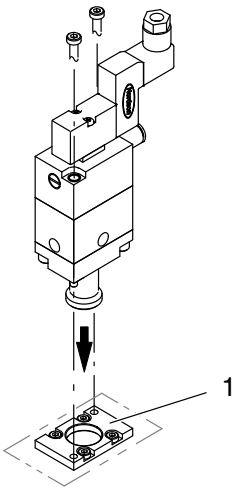
Problem	Possible cause	Corrective action	Refer to
No hot melt adhesive comes out of application slot	Applicator has not yet reached operating temperature	Wait until temperature has been reached, check temperature setting if necessary	Page 13
	Not enough adhesive in melter	Fill	Manual for melter
	Control air not connected	Connect	Page 10
	Melter pump is not working	Check; replace if necessary	Manual for melter
	Application slot blocked	External cleaning	Page 18
	Cross-linked adhesive in the nozzle	Clean	Page 26
	Nozzle stem of application control module stuck	If the nozzle stem does not move when triggered, the application control module must be replaced	Page 24
Adhesive application is not exact	Application slot or Side gluing slot partially blocked	External cleaning	Page 18
	Cross-linked adhesive in the nozzle	Clean	Page 26
	Distance between applicator and book spine not even	Adjust applicator	Page 8
	Application quantity and book spine processing speed not attuned to one another	Attune process variables to one another by trial and error	-
	Filter screen is clogged	Clean or replace filter screen if necessary	Page 20
	Hot melt adhesive unsuitable	Consult adhesive manufacturer	-
	Air within system	Bleed	Page 19

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.

CAUTION: Before beginning any repair work, ensure that the applicator has been relieved of pressure. Refer to page 16, *Relieving Pressure*.

Replacing Control Module



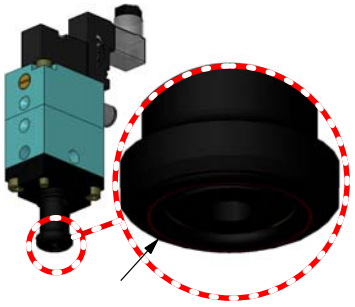
ATTENTION: Hot! Risk of burns. Wear heat-protective gloves.

CAUTION: To prevent damage to seals and nozzle stem, replace control modules only when the applicator is heated.

CAUTION: The application control module is attached to the body with an adapter plate (1). Do not detach the adapter plate. Otherwise the control module may not be positioned correctly.

1. Electrically heat cold applicator until adhesive is liquid.
2. Relieve pressure.
3. Disconnect compressed air hoses.
4. Detach the solenoid valve plug.
5. Release fixing screws and replace control module.

CAUTION: Ensure that the old O-ring is removed and does not remain in the applicator body.



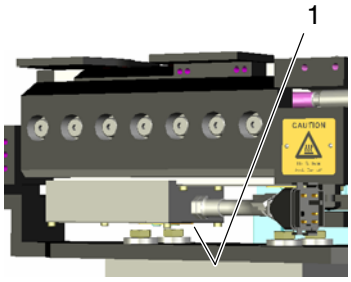
O-ring

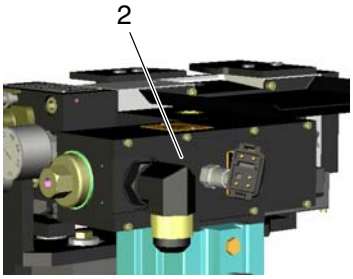
6. Screw new control module into place.
7. Reconnect compressed air.
8. Connect the plug to the solenoid valve.

Heater Cartridges, Temperature Sensor and Thermostat

These parts are located behind the electrical equipment covers on the filter unit and the body.

ATTENTION: Risk of electrical shock. Before removing the electrical equipment covers, ensure that the applicator is deenergized. Failure to observe may result in personal injury, death, or equipment damage. When putting an electrical equipment cover back into place, verify that the PE line is fastened to to the connection (3).





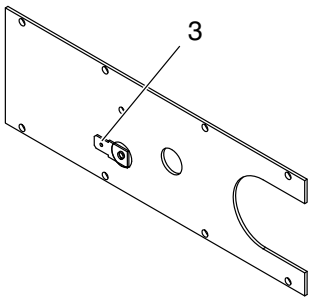


Fig. 2

1 Electrical equipment cover
Body

2 Electrical equipment cover
Filter unit

3 Connection
PE line

Current flow diagram

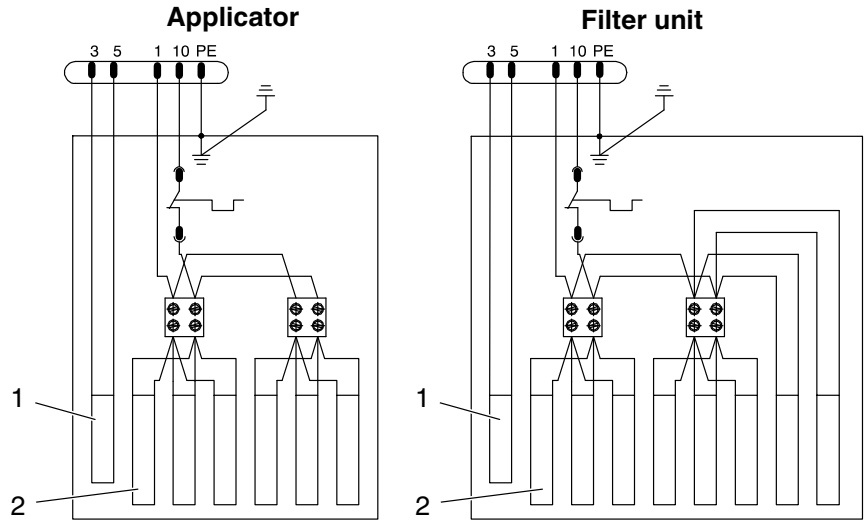


Fig. 3 Current flow diagram

1 Temperature sensor

2 Heater cartridges

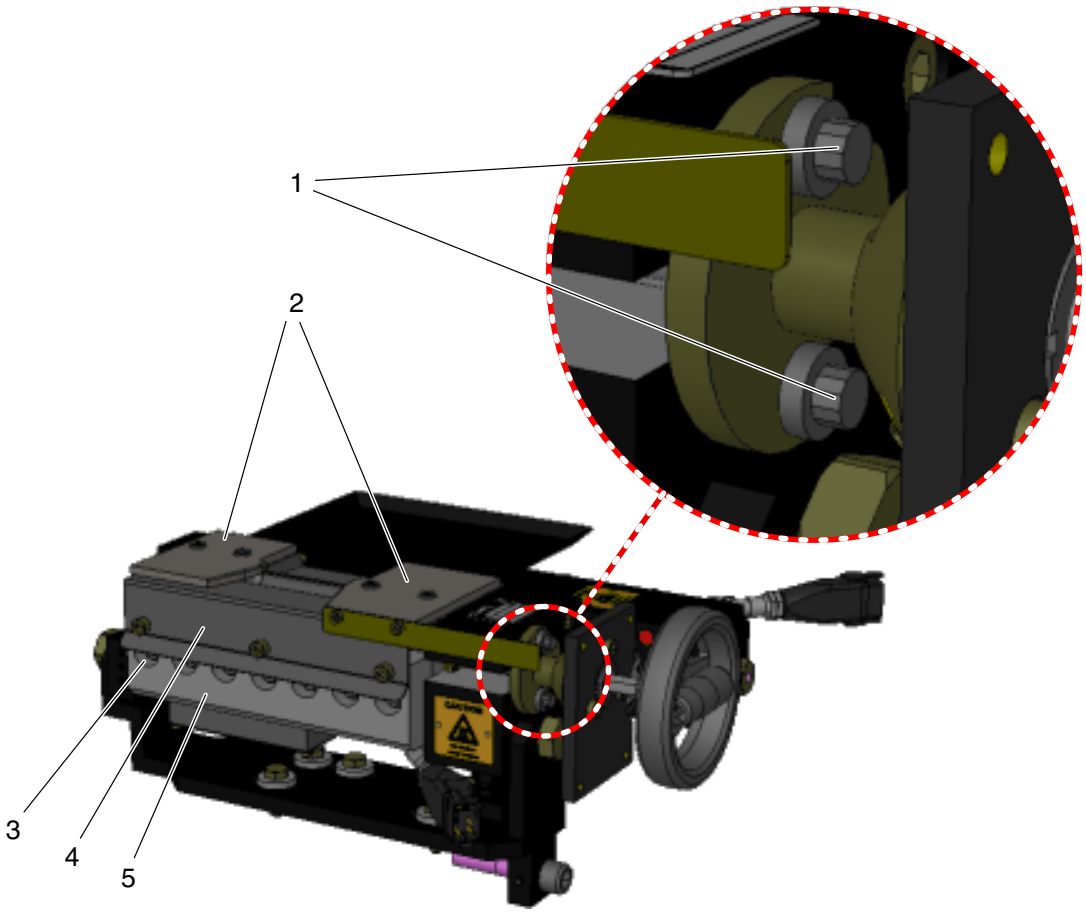
Note: The temperature sensor is part of the cable harness

Nozzle

Disassembling

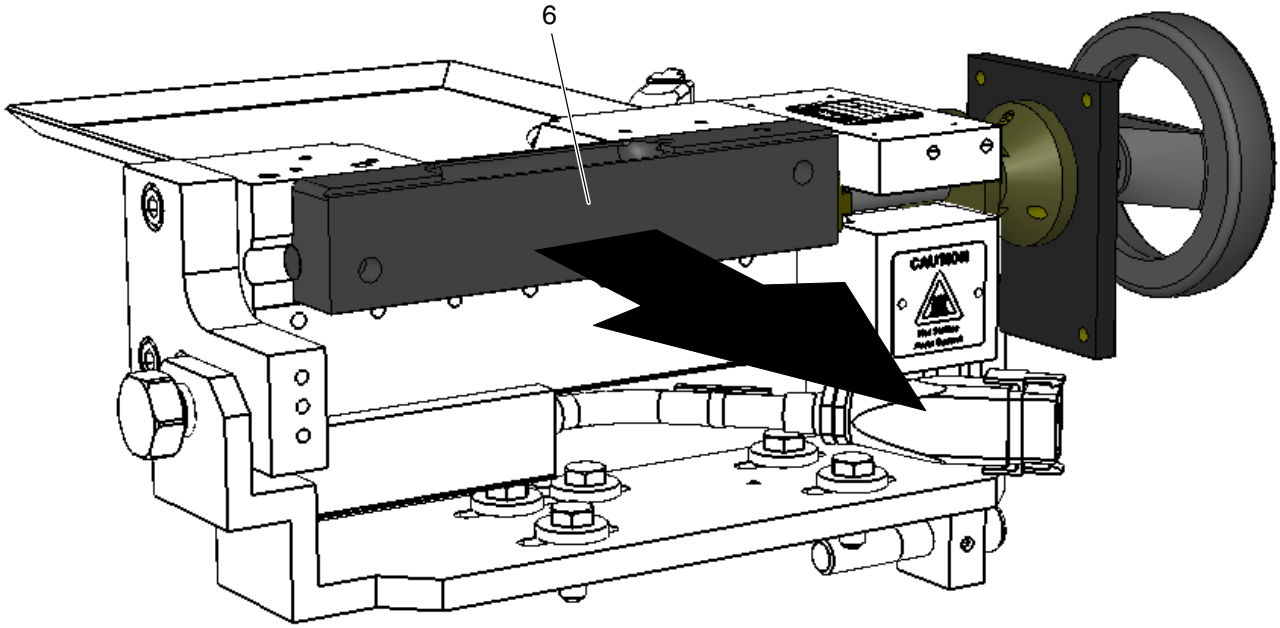
ATTENTION: Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves.

1. Electrically heat cold applicator until adhesive is liquid.
2. Release both screws of the spindle guide (1) approx. 2 mm.
3. Remove the left and right guide plates (2).
4. Release all seven screws (3) and detach the clamp bar (5). Leave the cover plate (4) in place. Then the screws cannot fall out.

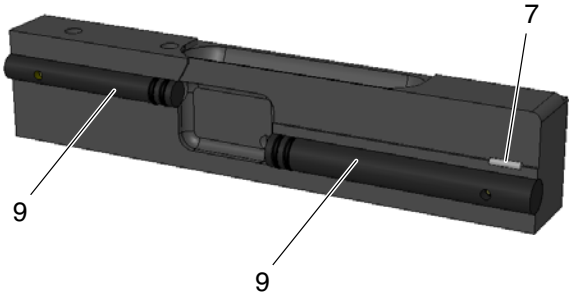


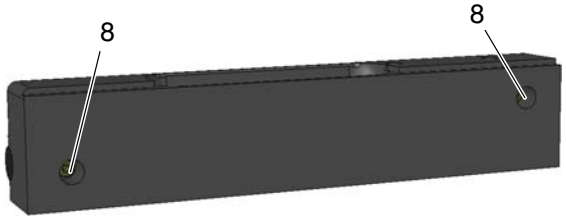
Continued...

5. Extract the mouthpiece (6) out the front along with the spindle and the handwheel.



The seal (7) and piston (8) are not accessible. Release the screws (8) to remove the piston:





NOTE: The seal and O-rings are contained in the spare parts kit P/N 735624. Also refer to separate document *Parts List.*

Cleaning

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

Clean the sliding surfaces on the body and mouthpiece:

- Remove adhesive residue with cleaning agent. Heat with a hot air fan if necessary
- Remove severe and hardened residue with a wooden or plastic spatula if necessary.

Assembling

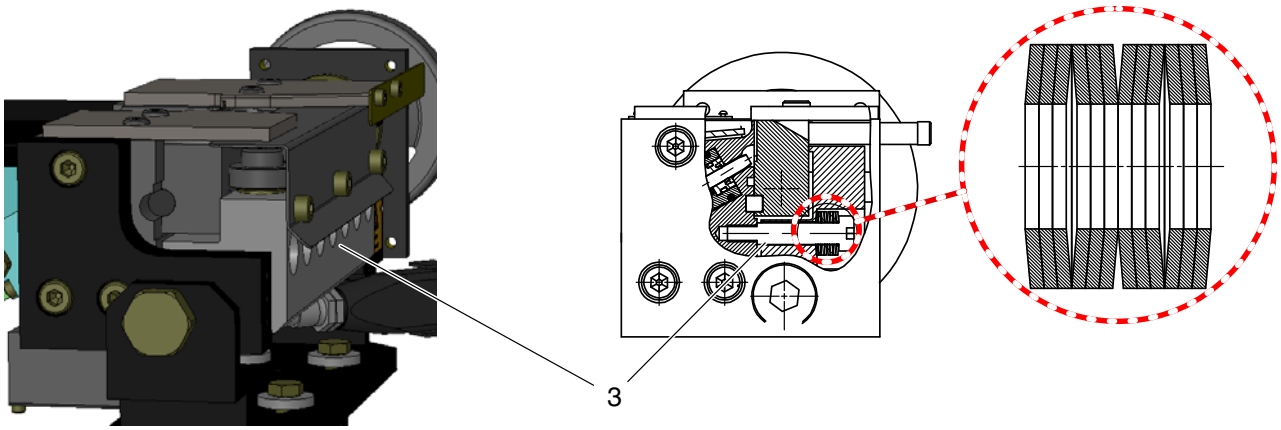
CAUTION: Use only special high-temperature grease! Any other grease may cause the PUR material to cross-link. Refer to page 30, *Processing Materials*.

Re-assemble the parts. Observe particularly:

A. Lubricate seals, sliding and contact surfaces, screw threads

B. Clamp bar fastening:

- If the seven screws (3) were removed: ensure that the spring washers are allocated properly
- Tighten the screws all the way.



Parts

NOTE: Refer to the separate document *Parts List* (available only in English).

How to Use the Illustrated Parts List

The parts lists in the separate document *Parts List* are divided into the following columns:

Item Identifies the parts shown.

Part Nordson spare part number. A series of hyphens (- - - - -) in the Parts column means that the part cannot be ordered separately.

Description This column contains the name of the part and, when appropriate, the dimensions and other properties. The dots in the *Description* column illustrate the relationship between assemblies, subassemblies and individual parts.

Quantity The quantity required per unit, assembly or subassembly. The abbreviation AR (as required) is used to designate that items are stated in drum sizes or that the quantity required per assembly is a factor of the product version or the model. Number in parentheses = additional quantity to keep on hand.

Processing Materials

High temperature grease **Tube 250 g** **Cartridge 400 g**	 P/N 783959 P/N 402238	**Caution:** Do not mix this lubricant with other lubricants! If necessary, first clean grease off of parts.

Technical Data

Operating Data

Maximum operating temperature	180 °C	356 °F	
Overtemperature shutdown by thermostat	200 °C	392 °F	
Maximum operating air pressure	6 bar	0.6 MPa	87 psi
Maximum operating pressure (adhesive)	40 bar	4 MPa	580 psi
Maximum adhesive viscosity that can be processed	30000 mPas	30 Ms/m^2	30000 cP
Maximum application width	60 mm		
Max. deviation of application quantities	< ± 5 %, depending on adhesive		
Heatup time	≤ 30 min		

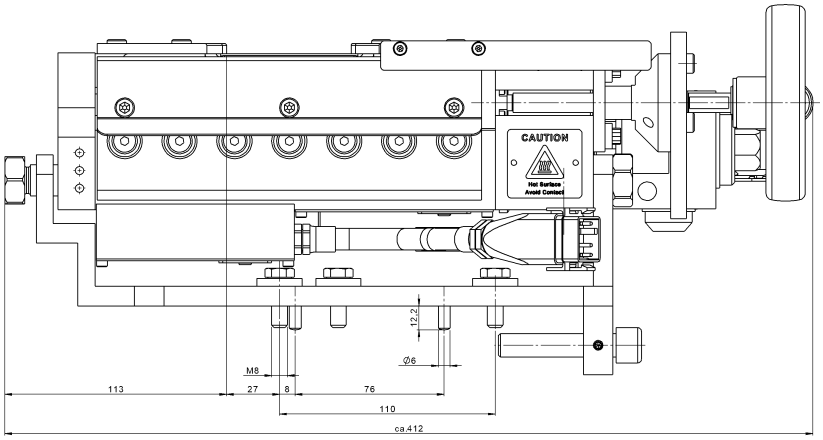
Electrical Data

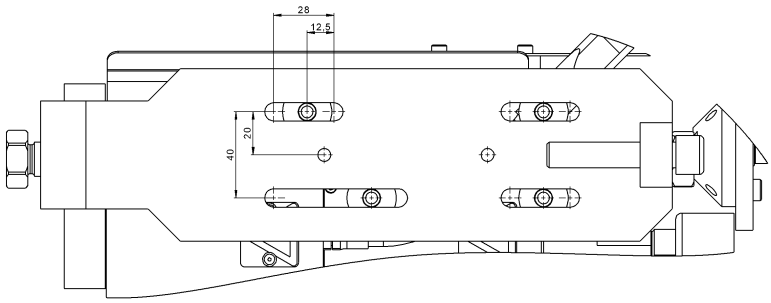
Operating voltage (heater)	230 V_{AC}
Power consumption (heater)	Body: 960 W Filter: 600 W
Operating voltage (solenoid valves)	24V_{DC}
Power consumption (solenoid valves)	Application control module: 2.5 W Retrosuction control module: 1.8 W

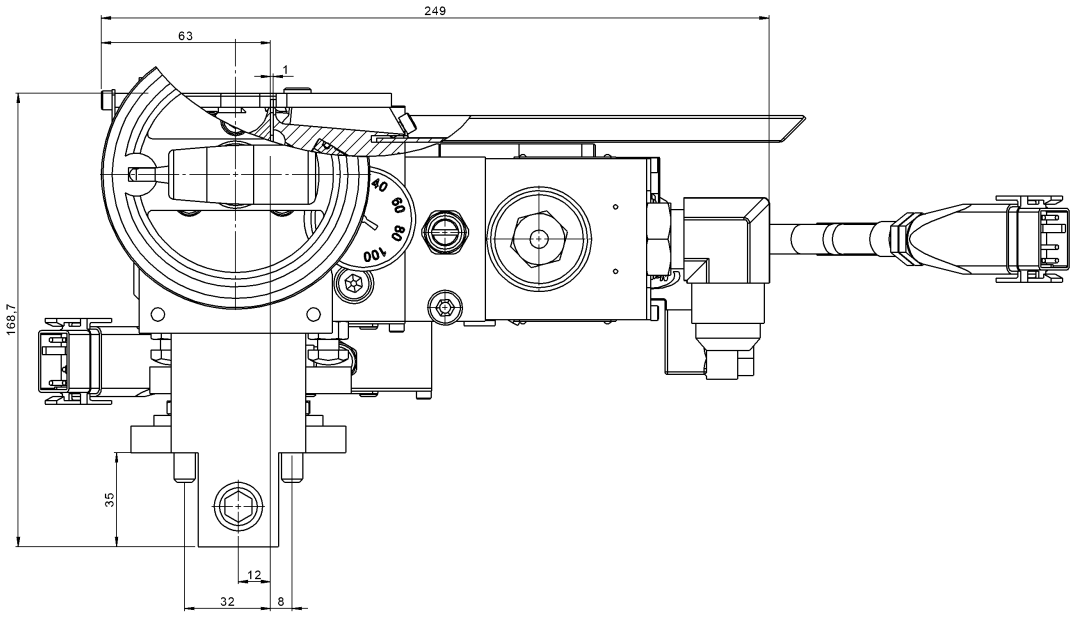
General Data

Weight	Approx. 45 kg
Noise emission	< 70 dB(A)
Degree of protection	IP 44

Dimensions


CAUTION
Hot Surface
Avoid Contact
12,2
Ø6
M8
113
27
8
76
110
ca.412


28
12,5
20
40


249
63
1
40
60
80
100
168,7
35
12
32
8