

Stainless Steel 230V, 500W NH-4 Fluid Heater

Customer Product Manual
Part 334610C02
Issued 3/10

**For parts and technical support, call the
Finishing Customer Support Center at (800) 433-9319.**

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Contact Us

Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address:
<http://www.nordson.com>.

Address all correspondence to:

Nordson Corporation
Attn: Customer Service
555 Jackson Street
Amherst, OH 44001

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Stainless Steel 230V 500W NH-4 Fluid Heater

Safety

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to persons operating or servicing equipment.

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- While operating manual spray guns, make sure you are grounded. Wear electrically conductive gloves or a grounding strap connected to the gun handle or other true earth ground. Do not wear or carry metallic objects such as jewelry or tools.
- If you receive even a slight electrical shock, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

Personal Safety (contd)

- Obtain and read Material Safety Data Sheets (MSDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- Make sure the spray area is adequately ventilated.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

High-Pressure Fluids

High-pressure fluids, unless they are safely contained, are extremely hazardous. Always relieve fluid pressure before adjusting or servicing high pressure equipment. A jet of high-pressure fluid can cut like a knife and cause serious bodily injury, amputation, or death. Fluids penetrating the skin can also cause toxic poisoning.

If you suffer a fluid injection injury, seek medical care immediately. If possible, provide a copy of the MSDS for the injected fluid to the health care provider.

The National Spray Equipment Manufacturers Association has created a wallet card that you should carry when you are operating high-pressure spray equipment. These cards are supplied with your equipment. The following is the text of this card:



WARNING: Any injury caused by high pressure liquid can be serious. If you are injured or even suspect an injury:

- Go to an emergency room immediately.
- Tell the doctor that you suspect an injection injury.
- Show him this card
- Tell him what kind of material you were spraying

MEDICAL ALERT—AIRLESS SPRAY WOUNDS: NOTE TO PHYSICIAN

Injection in the skin is a serious traumatic injury. It is important to treat the injury surgically as soon as possible. Do not delay treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the bloodstream.

Consultation with a plastic surgeon or a reconstructive hand surgeon may be advisable.

The seriousness of the wound depends on where the injury is on the body, whether the substance hit something on its way in and deflected causing more damage, and many other variables including skin microflora residing in the paint or gun which are blasted into the wound. If the injected paint contains acrylic latex and titanium dioxide that damage the tissue's resistance to infection, bacterial growth will flourish. The treatment that doctors recommend for an injection injury to the hand includes immediate decompression of the closed vascular compartments of the hand to release the underlying tissue distended by the injected paint, judicious wound debridement, and immediate antibiotic treatment.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment. Use only grounded air and fluid hoses. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored.
- Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.

- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material MSDS for guidance.
- Do not disconnect live electrical circuits when working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Halogenated Hydrocarbon Solvent Hazards

Do not use halogenated hydrocarbon solvents in a pressurized system that contains aluminum components. Under pressure, these solvents can react with aluminum and explode, causing injury, death, or property damage. Halogenated hydrocarbon solvents contain one or more of the following elements:

<u>Element</u>	<u>Symbol</u>	<u>Prefix</u>
Fluorine	F	“Fluoro-”
Chlorine	Cl	“Chloro-”
Bromine	Br	“Bromo-”
Iodine	I	“Iodo-”

Check your material MSDS or contact your material supplier for more information. If you must use halogenated hydrocarbon solvents, contact your Nordson representative for information about compatible Nordson components.

Action in the Event of a Malfunction

If a system or any equipment in a system malfunctions, shut off the system immediately and perform the following steps:

- Disconnect and lock out system electrical power. Close hydraulic and pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the system.

Disposal

Dispose of equipment and materials used in operation and servicing according to local codes.

Safety Labels

Cover Label

CAUTION! To prevent ignition of hazardous atmospheres and to avoid personal injury, disconnect the power source before removing cover. Do not open while energized. Cover should be properly secured before operation. Do not install this heater in any area where vapors or gasses having an ignition temperature of less than 160 °C (320 °F) are present. Circulation must be maintained when heater circuit is energized—heating trapped fluid can cause extreme internal pressure, rupturing heater.

Conduit Fitting Label

CAUTION! Temperature at cable entry point may exceed 70 °C (150 °F).

Description

This manual covers P/N 7202883 NH-4 Fluid Heater. It is a 230 volt, 500 watt, Baseefa-approved, explosion-proof heater.

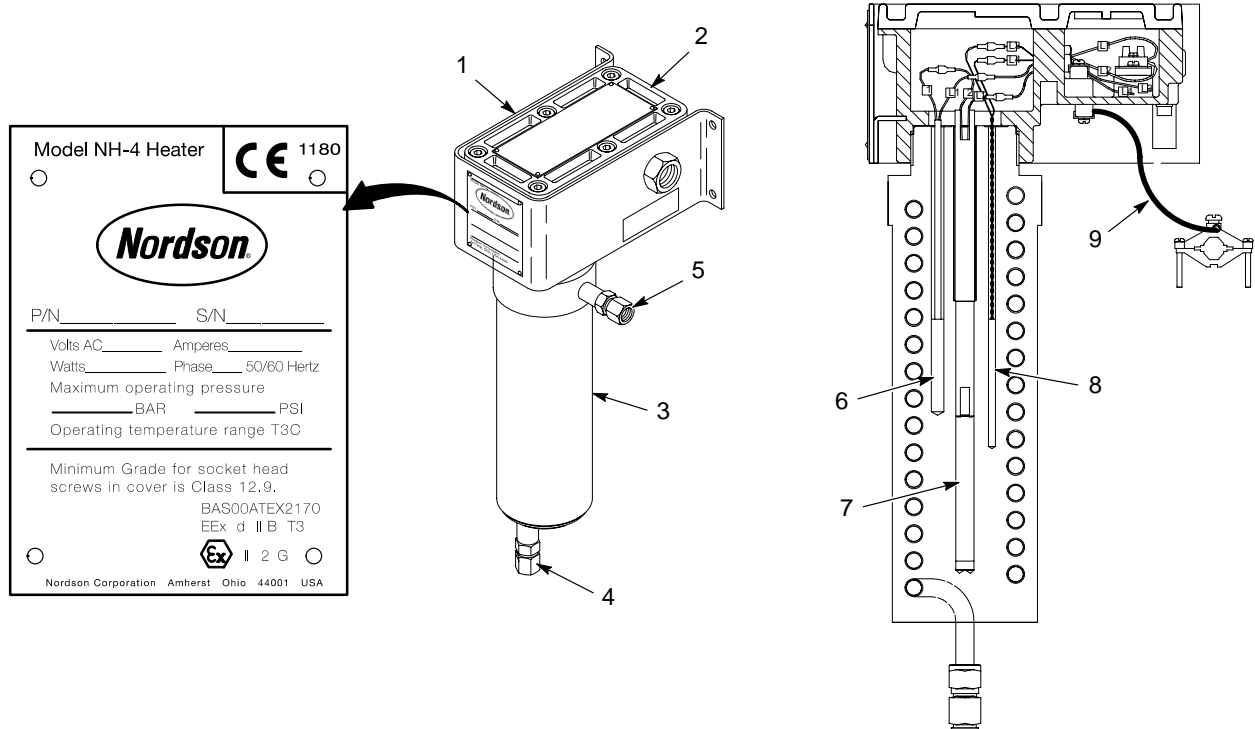


Figure 1 NH-4 Heater

- | | | |
|-------------------------|-------------------|---------------------------|
| 1. Electrical enclosure | 4. Inlet fitting | 7. Heater cartridge |
| 2. Enclosure cover | 5. Outlet fitting | 8. RTD |
| 3. Fluid body | 6. Heat limiter | 9. Ground strap and clamp |

Specifications

Voltage: 230 Vac, 1 phase, 50/60 Hz

Watts: 500

Amperes: 2.4

Maximum Fluid Pressure: 140 bar (2000 psi)

Temperature Range: 18-83 °C (65 - 190 °F)

Capacity: 45 lph at 56 °C Temp Rise (12 gph at 100 °F Temp Rise)

Fluid Fittings: 1/2 tube x 3/8-in. NPT

Dimensions: Refer to Figure 2.

Installation



WARNING: Installation must be performed by a qualified electrician and conform to all federal, state and local codes.

Mounting

Mount the NH-4 heater vertically, on a wall or panel, allowing adequate surrounding space to perform periodic maintenance. Always locate the heater as close to the spray operation as possible.

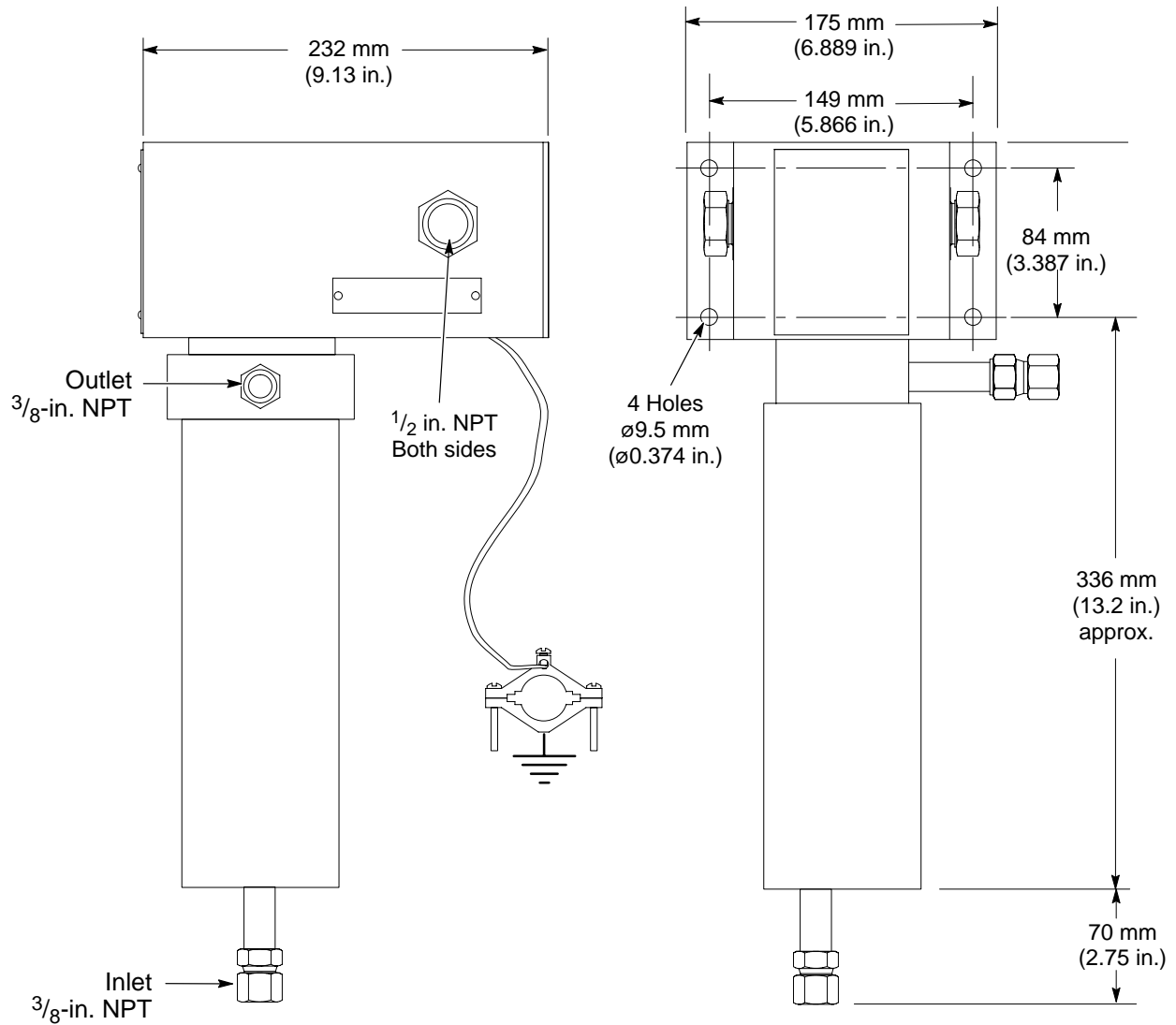


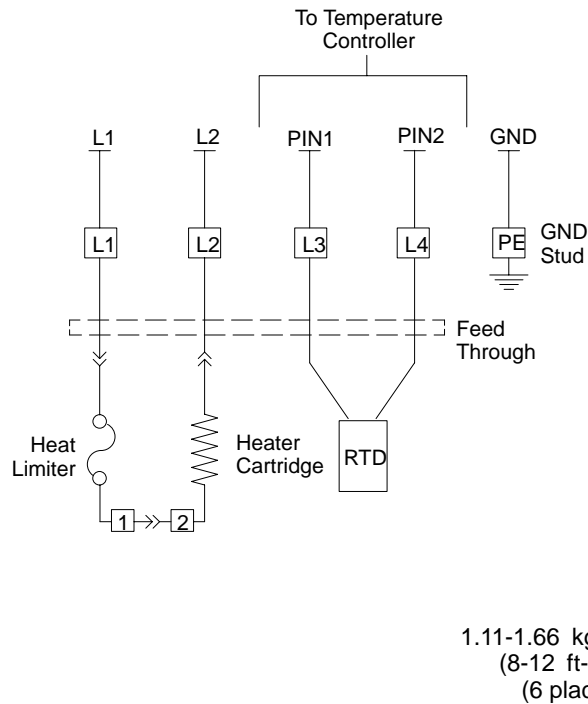
Figure 2 NH-4 Heater Installation

Electrical Connections



WARNING: Install a power isolation device or disconnect with lockout capabilities in the service line ahead of the heater to prevent electrical shock during installation or servicing.

Remove the cover and connect the power supply and temperature controller as shown in Figure 3. Recommended power supply wiring is 12 AWG, 90 °C (195 °F).



Install $\frac{1}{2}$ -in. liquid-tight conduit connectors or cord grips in the pipe bushings to bring wiring in and out of the heater electrical enclosure.

NOTE: Before re-installing the enclosure cover, make sure the cover and the top of the enclosure are clean and free of dirt and debris. Torque the cover screws to 1.11-1.66 kg•m (8-12 ft-lbs).

See Figure 2. Connect the ground clamp to a true earth ground.

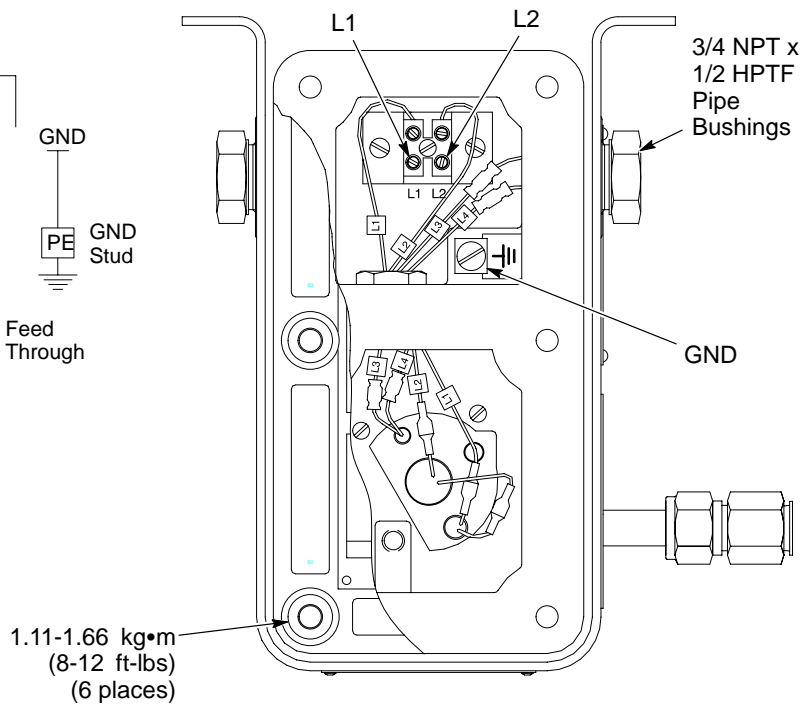


Figure 3 Electrical Connections

Fluid Connections

Connect fluid hoses to the $\frac{3}{8}$ -in. NPT inlet and outlet fittings.

Operation



WARNING: Do not operate the heater until the fluid system is fully pressurized and fluid is circulating through the heater. Failure to observe this warning can cause damage to the heat limiter or heater.

Start the fluid pump and start circulating fluid through the heater before turning the heater on.

When shutting down the system, shut down the heater first. Circulate fluid through the heater until it cools before shutting down the pump.

Maintenance

Check the fluid connections regularly to make sure they are tight. Check the ground connection.

Flush the heater periodically with a solvent compatible with the production material. If shutting down the heater for an extended period of time, leave the heater full of solvent.

Troubleshooting



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

These procedures cover only the most common problems that you may encounter. If you cannot solve the problem with the information given here, contact your local Nordson representative for help.

Problem	Possible Cause	Corrective Action
1. Insufficient heat	Demand is exceeding the capacity of the heater	Make sure the heating capacity is not being exceeded. A single heater has the capacity to raise the temperature of most organic solvent type coating materials 56 °C (100 °F) at a flow rate of 45 l/hr (12 gph). A temperature rise greater than 56 °C (100 °F) would proportionately decrease the capacity of the heater.
	Coating material is baked on the inside of the fluid passage body	Flush the heater with a compatible solvent. If the heat output is not sufficient after flushing it out, replace the high pressure housing.
2. No heat output	Heat limiter failed open	Disconnect power from the heater. Remove the enclosure cover and check the heat limiter for continuity. Replace the heat limiter if failed open. Refer to the <i>Repair</i> section for more information.
	Heater cartridge failed	Disconnect power from the heater. Remove the enclosure cover and check the heater cartridge for continuity. Replace the heater cartridge if failed open. Refer to the <i>Repair</i> section for more information.

Repair



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



WARNING: Disconnect and lockout power to the heater before removing the enclosure cover and making repairs to the heater.

Repair is limited to replacing the heat limiter, heater cartridge, RTD, and fluid body. See Figure 3 for electrical connections.

NOTE: Before re-installing the enclosure cover, make sure the cover and the top of the enclosure are clean. Torque the cover screws to 1.11-1.66 kg•m (8-12 ft-lbs).

Replacing Heat Limiter, Heater Cartridge, or RTD

1. Disconnect and lockout power to the heater, then remove the enclosure cover.
2. Disconnect the wiring to the component you are replacing, and pull it out of the fluid body.

Replacing the Fluid Body

3. Disconnect the fluid hoses, then remove the two set screws (1) from the body. Unscrew the fluid body from the enclosure.
4. Coat the threads of the new fluid body with flamepath compound (5), then screw the body into the enclosure until it bottoms out. Back out the body until the two set screw holes in the enclosure line up with the tapped holes in the body.
5. Install the set screws into the body and tighten them securely.

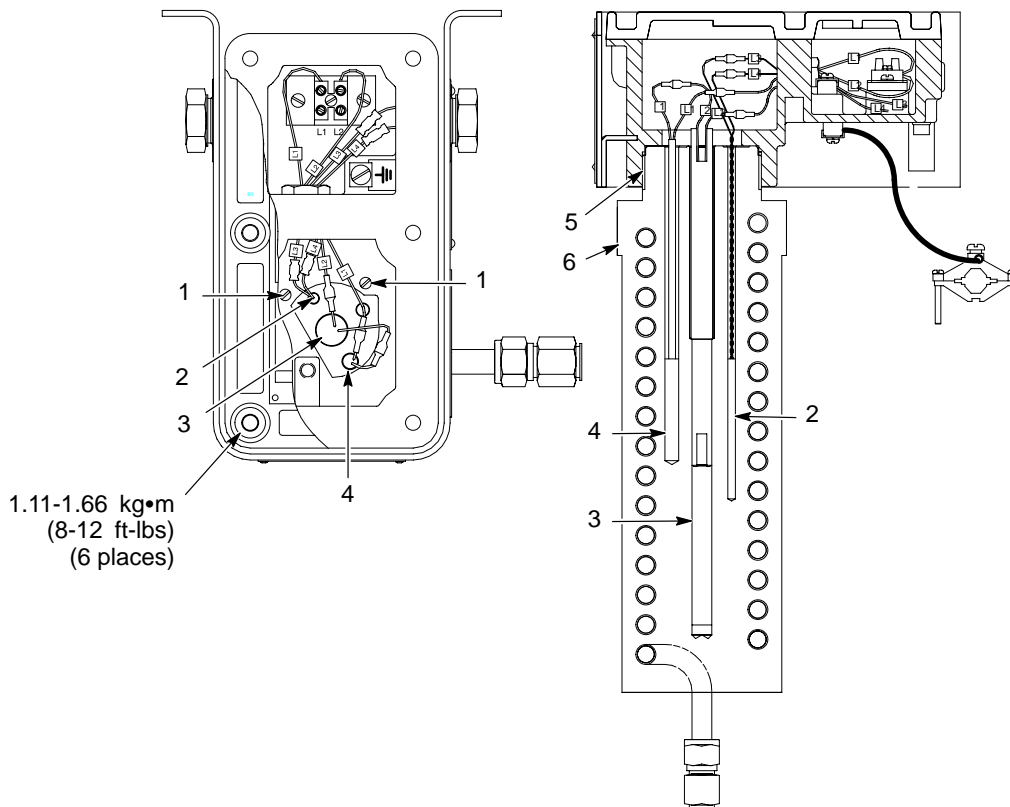


Figure 4 Repair

- | | | |
|---------------|---------------------|-----------------------|
| 1. Set screws | 3. Heater cartridge | 5. Flamepath compound |
| 2. RTD | 4. Heat limiter | 6. Fluid body |

Parts

To order parts, call the Nordson Industrial Coating Systems Customer Support Center at (800) 433-9319 or your local Nordson representative. Use the parts lists and illustrations to locate and describe parts correctly.

See Figure 5.

Item	Part	Description	Quantity	Note
—	7202883	HEATER, NH-4, 230V, 500W, stainless steel, BASEEFA	1	
1	982006	• SCREW, socket, head, M8 x 20, zinc	8	
2	983150	• LOCK WASHER, English, split, $\frac{5}{16}$ in., steel, nickel	6	
3	-----	• COVER, enclosure, NH-4	1	A
4	7203918	• HEATER ASSEMBLY, cartridge, 230V, 500W, NH-4	1	
5	1101023	• KIT, heat limiter, NH-4	1	
6	1101043	• KIT, RTD, sensor, 100 ohm, platinum	1	
7	982004	• SCREW, set, knurl cup, M6 x 16, zinc	2	
8	982005	• SCREW, chez head, slotted, M4 x 10, zinc	2	
9	983111	• LOCK WASHER, split, #8, steel, zinc	4	
10	245574	• RETAINER, wire	2	
11	-----	• STUD, ground	2	A
12	982327	• SCREW, chez head, slotted, M4 x 12, zinc	2	
13	982169	• SCREW, pan head, slotted, M3 x 16, zinc	1	
14	983400	• WASHER, lock, split, M3, steel, zinc	1	
15	933747	• BLOCK, terminal, 2 station	1	
16	235609	• PLATE, terminal block	1	
17	973399	• BUSHING, pipe, hyd, $\frac{3}{4}$ in. NPT x $\frac{1}{2}$ in. HPTF	2	
18	-----	• BRACKET, mounting	1	A
19	-----	• ENCLOSURE, electrical, NH-4	1	A
20	1061116	• PLUG, pipe, socket head, $\frac{3}{4}$ in. NPT, zinc	1	
21	983152	• WASHER, lock, internal, $\frac{5}{16}$ in., steel, zinc	2	
22	240976	• CLAMP, ground, w/wire	1	
23	132579	• FEED THRU, 4 wire	1	
24	338702	• BODY, fluid, stainless steel, w/fittings, BASEEFA	1	
25	971771	• • CONNECTOR, female, hydraulic, comp, $\frac{1}{2}$ in. tube x $\frac{3}{8}$ in. NPT	2	
NS	901933	• KEY, hexagon, 6 mm	1	
NOTE A: Not serviced separately.				
NS: Not Shown				

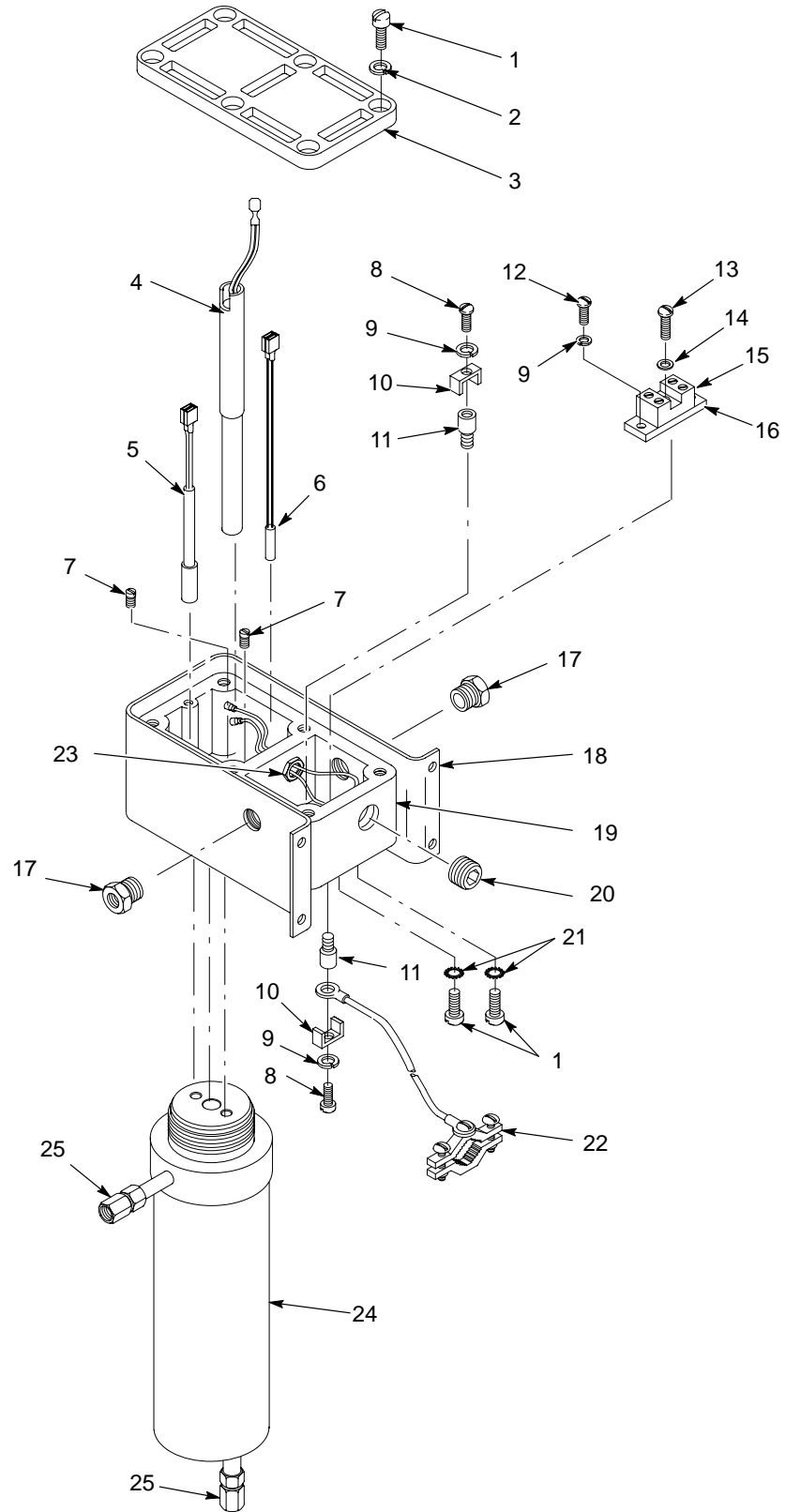


Figure 5 Parts

DECLARATION of CONFORMITY

PRODUCT: NH-4 Liquid Heaters

Models: NH-4

Description: This is a heater used for heating liquids before they are sprayed or dispensed from an applicator. These liquids could be flammable or non-flammable.

Applicable Directives:

2006/42/EC - Machinery Directive
2006/95/EC - Low Voltage Directive
94/9/EC - ATEX Directive

Standards Used for Compliance:

EN12100-1 (2009) EN60079-0 (2009)
EN61204 (2006) EN60079-1 (2007)

Principles:

This product has been manufactured according to good engineering practice.
The product specified conforms to the directive and standards described above.

Type of Protection:

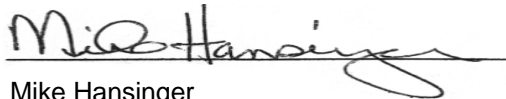
- Ex II 2 G
- EEx de IIB T3

Certificates :

- Baseefa (Buxton, Derbyshire, UK) - BAS00ATEX2016X
- ISO9001:2008 DNV (Houston, Texas, USA)

ATEX Surveillance:

- 1180 Baseefa (Buxton, Derbyshire, UK)



Mike Hansinger
Manager Engineering Development
Industrial Coating Systems

Date: 16 March 2010

Nordson Authorized Representative in the EU

Contact: Operations Manager
 Industrial Coating Systems
 Nordson Deutschland GmbH
 Heinrich-Hertz-Strasse 42-44
 D-40699 Erkrath

