## Ink-Dot Electric Spray Gun Customer Product Manual

Customer Product Manual Document Number 1103065-06 – English – Issued 12/24

For parts and technical support, call the Industrial Coating Solutions Customer Support Center at (800) 433-9319 or contact your local Nordson representative.

This document is subject to change without notice. Check <u>http://emanuals.nordson.com</u> for the latest version.



NORDSON CORPORATION • 100 NORDSON DRIVE, AMHERST, OHIO 44001• USA

# **Table of Contents**

Safety	1
Qualified Personnel	1
Intended Use	1
Regulations and Approvals	1
Personal Safety	2
High-Pressure Fluids	2
Fire Safety	<u>3</u>
Halogenated Hydrocarbon Solvent Hazards	4
Action in the Event of a Malfunction	4
Disposal	4
Description	5
Installation	5
Spray Gun Mounting	5
Proximity Sensor Mounting	5
Optional Adjustable Spray Gun Bracket	6
Adjustable Spray Gun Bracket Mounting	7
Electrical Connections	8

Operation	9
Dot Size Adjustment	9
Umplugging the Spray Gun Nozzle	<u>11</u>
Maintenance	11
Troubleshooting	12
Repair	12
Replacing the Spray Gun Module	12
Replacing the Ball and Seat	13
Parts	14
Ink-Dot Spray Gun Parts Lists	14
Options	15
Specifications	16
Standard Ink-Dot Spray Gun	16

#### 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: <a href="http://www.nordson.com">http://www.nordson.com</a>

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

#### Notice

This is a Nordson Corporation publication which is protected by copyright. Original copyright date 12/24. No part of this document may be photocopied, reproduced, or translated to another language without the prior written consent of Nordson Corporation. The information contained in this publication is subject to change without notice.

- Original document -

#### Trademarks

Nordson and the Nordson logo are registered trademarks of Nordson Corporation. All other trademarks are the property of their respective owners.

# **Change Record**

Revision	Date	Change
01	7/10	Initial Release
02	11/11	Updated parts list
03	7/21	Added new spray gun cable
04	7/22	Added UKCA certification
05	12/24	Updated manufacturer's address.

## 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 spray 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.
- 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 them this card
- Tell them 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 spray 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	CI	"Chloro-"
Bromine	Br	"Bromo-"
lodine	I	"lodo-"

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.

## **Description**

The Ink-Dot Series of Electric Spray Guns are high speed spray guns used in Ink-Dot Identification and Marking Systems.

- Ink-Dot Identification: These spray guns apply a small dot of ink on the can to identify the line and spray machine where it was coated. The identifying mark saves time in correcting problems and provides a means of producing a better quality product.
- Ink-Dot Marking: These spray guns are typically used to apply thermal-sensitive ink onto the can. Thermal-sensitive ink is used when the can goes through a retort process. This spray gun is similar to the identification version of the Ink-Dot electric spray gun except that the nozzle is not fixed and the ball and seat is threaded so it can use a variety of nozzles.

The Ink-Dot spray guns are available with 0.06 and 0.008 orifices. Contact your Nordson Corporation representative for help in selecting a spray gun for your application.

## Installation



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



**WARNING:** Before installing the spray gun in a system relieve all pressure and disconnect and lock out electrical power.

### **Spray Gun Mounting**

See Figure 1. The spray gun has three  $\frac{1}{4}$ -20 mounting holes on each side and two  $\frac{1}{4}$ -20 mounting holes on the bottom.

Mount the spray gun on a  $15-30^{\circ}$  angle from the can, approximately 4-6 mm (0.16-0.24 in.) above the rim of the can and 5 mm (0.19 in.) away.

### **Proximity Sensor Mounting**

See Figure 1. The distance between the spray gun and the proximity sensor must be adjustable due to variations in line speed. Position the sensor 3-5 mm (0.12-0.20 in.) from the can. The sensor can be up to 25 mm (1 in.) from the center of the spray gun nozzle.



Figure 1 Mounting Dimensions

## **Optional Adjustable Spray Gun Bracket**

See Figure 2. The optional Ink-Dot adjustable spray gun bracket mounts directly on the can track rails and is adjustable for flexible spray gun positioning:

ltem	Position Adjustment
A	moves the spray gun closer to the can
В	moves the spray gun vertically across the back of the can
С	rotates the spray gun on an axis to various angles



Figure 2 Optional Adjustable Spray Gun Bracket

### Adjustable Spray Gun Bracket Mounting

- 1. See Figure 3. Unscrew one locking nut (2) from the end of the proximity sensor (1).
- 2. Insert the proximity sensor through the center slot of the mounting bracket (5). The center slot has a lip that holds the locking nut securely in place.
- 3. Install the locking nut on the opposite side of the mounting bracket as shown, position the sensor, then tighten the locking nut to hold the sensor in place.
- 4. Align the slots on the mounting bracket with the studs (6) on the rail and install the washers (4) and nuts (3). Tighten the nuts to hold the mounting bracket in place.
- 5. Secure the adjusting rod (7) to the mounting bracket (5) with the clamp screws (9) and washers (8).



Figure 3 Adjustable Spray Gun Bracket Mounting

- 1. Proximity sensor
- 2. Sensor locking nut

- 4. Washers
- 5. Mounting bracket
- 6. Studs

8. Washers

7. Adjusting rod

9. Clamp screws

3. Nuts

- 6. See Figure 4. Secure the spray gun (14) to the spray gun mount (13) with three screws (11) and washers (12).
- 7. Loosen the set screw (10), and rotate the spray gun mount until the spray gun is in the desired position in relation to the can. Tighten the set screw.
- 8. See Figure 3. Slide the adjusting rod (7) forward or back to adjust the distance from the spray gun nozzle to the can, then tighten the clamp screws (9).



		_				
Eiguro 1	Inotalling th	an Sprav Ci	in on the	Ontional	Adjustable	Cup Brookat
FIGULE 4	instannu u	le Splav G	лі он ше	Oblional	Aulustable	Guil Diackel
					· · · · · · · · · · · · · · · · · · ·	•

7. Adjusting rod

10. Set screw

11. Screws 12. Washers 13. Spray gun mount14. Spray gun

## **Electrical Connections**

Figure 5 shows the electrical connector pin-outs for the spray gun. Use a 3 conductor (20 AWG) shielded cable, such as Belden P/N 8772, or equivalent, to attach the terminal connector to the Ink-Dot Controller. Refer to the *Ink-Dot Controller* manual.



Figure 5 Spray Gun Connector Pin-outs

## Operation

## **Dot Size Adjustment**

See Figure 6. Follow these steps to adjust the dot size.

- 1. Set the RUN/OFF/TEST switch (2) on the Ink-Dot control unit to OFF.
- 2. Set the air pressure regulator (4) to 0.5 bar (7 psi) at the ink reservoir.
- 3. Loosen the lock nut (13).
- 4. Carefully screw in the armature guide tube (12) until it stops or bottoms out.
- 5. Unscrew the armature guide tube approximately 1/12 of a turn or 30°.
- 6. Hold a piece of paper by the bottom of the can and in line with the nozzle (11).
- 7. Set the RUN/OFF/TEST switch in the Ink-Dot control unit to TEST. Adjust the armature guide tube until the dot is the desired size, typically 0.07–0.11 in. (2–3 mm).

**NOTE:** Do not hold the armature guide tube with the screwdriver while you are tightening the lock nut.

- 8. Use a ½-in. wrench to tighten the lock nut. The dot size will become slightly larger as you tighten the lock nut.
- 9. If desired, change the fluid pressure to make fine adjustments to the dot size:
  - Increase the pressure for a larger dot.
  - Decrease the pressure for a smaller dot.

**NOTE:** Refer to the Ink-Dot Series II Driver manual to make additional adjustments to the dot size using the dip switches.

**NOTE:** The New-Style Reservoir Manifold delivers ink to the spray gun from the bottles that the ink is supplied in. Refer to the *Ink-Dot Half-Liter Reservoir Kit* instruction sheet and the *Ink-Dot Hydraulic System with Reservoir Manifold* for information on installing, filling, and repairing the reservoir manifold.



#### Figure 6 Typical Ink-Dot System with Old and New-Style Reservoirs

- 1. Driver power switch
- 2. RUN/OFF/TEST switch
- 3. Controller power switch
- 4. Air pressure regulator
- 5. Relief valve lanyard

- 6. Cap
- 7. Reservoir or reservoir manifold
- 8. Drain valve
- 9. Bleeder valve
- 10. Ink-Dot spray gun

- 11. Nozzle
- 12. Armature guide tube
- 13. Lock nut
- 14. Air shut-off valve

## **Unplugging the Spray Gun Nozzle**

See Figure 6. Follow these steps to unplug the spray gun nozzle.

- 1. Close the air shut-off valve (14).
- 2. Set the air pressure regulator (4) to 0. Pull on the relief valve lanyard (5) to relieve system air pressure.
- 3. Set the RUN/TEST/OFF switch (2) to OFF.
- 4. Remove the nozzle (11) and clean with flushing thinner and a nozzle brush.
- 5. Loosen the lock nut (13). Back out the armature guide tube (12) one turn.
- 6. Install the nozzle.
- 7. Make sure the relief valve is closed.
- 8. Open the air shut-off valve. Set the air pressure regulator to 0.2 bar (3 psi).
- 9. Open the bleeder valve (9) to bleed air out of the hose. Close the bleeder valve.
- 10. Set the air pressure regulator (4) to 0.4–0.7 bar (5–10 psi).
- 11. Set the RUN/OFF/TEST switch (2) to RUN.
- 12. Adjust the dot size. Refer to "Dot Size Adjustment" on page 9.

## Maintenance



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

Frequency	Task		
Daily	Wipe or brush the nozzle once per shift with a solvent compatible with the ink. A nozzle brush is included with the spray gun.		
	1. Check the spray gun mounting angle.		
	2. Check the distance between the		
Weekly	<ul> <li>proximity sensor and can conveyor</li> </ul>		
	spray gun and can conveyor		
	spray gun nozzle and proximity sensor		
	3. 3. Make sure that the proximity sensor is perpendicular to the side of the can.		
Periodically	Check the ink level in the reservoir.		
3-6 months	Flush the system with a compatible solvent and replace the inline filter element.		
9-12 months	Replace the spray gun ball and seat, seals, O-rings, and the in-line filter element.		

## Troubleshooting



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

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

Problem	Possible Cause	Corrective Action
1. Dot size decreasing	In-line filter is cloaged	Open the bleeder valve between the filter and the spray gun. If no ink flows, replace the filter element.
		Check the air pressure.
		Check the nozzle.
2. Spray gun is on, but no ink comes out	Incorrect air pressure	Check the air pressure level.
	Clogged nozzle	Clean the nozzle. If the nozzle is clean, adjust the stroke length.
3. Spray gun	Broken spring or dirt lodged between ball and seat	Replace the spray gun module.
remains open	Mis-wired spray gun	Check the wiring.

## Repair

### **Replacing the Spray Gun Module**

**NOTE:** Relieve the system pressure and trigger the spray gun before replacing the spray gun module.

- 1. See Figure 7. Remove the spray gun from the manifold by unscrewing the two sockethead cap screws (5) from the valve body (6) and unplugging the coil (2) contact pins (1) from the manifold.
- 2. Remove the lock nut (4) from the guide tube (3), then slide the coil assembly (1) off the guide tube.
- 3. Remove the lock nut from the new module and install it through the coil. Install the lock nut (3) finger tight.
- 4. Lubricate the O-ring (7) shipped with the module with O-ring lubricant and install it into the groove around the fluid inlet port in the bottom of the spray gun body.
- Install the spray gun on the manifold and secure it with the two socket-head screws
   included in the module kit. Tighten the lock nut (3) securely.

Refer to "Dot Size Adjustment" on page 9.



Figure 7 Replacing the Spray Gun Module

- 1. Copper contact pins
- 2. Coil assembly
- 3. Lock nut
- 4. Guide tube

- 5. Socket-head screws
- 6. Valve body
- 7. O-ring

### **Replacing the Ball and Seat**

Use the item 9 kits in the parts list to replace the ball (armature) and seat (nozzle assembly). Always replace both the ball and seat at the same time.

- 1. Shut off the ink supply and relieve the fluid pressure.
- 2. Loosen the lock nut (5), then use a screw driver to back out the guide tube (8) one complete turn, then unscrew the nozzle (13) from the valve body (7).
- 3. Remove the armature and spring (10, 11) from the guide tube and replace them with new parts from the kit.
- 4. Install the new O-ring (12) on the nozzle (13).
- 5. Screw the nozzle into the valve body and tighten it securely.
- 6. Screw the guide tube into the valve body until it bottoms out, then back it out 1/12 turn (30°). Tighten the lock nut (5) to lock the adjustment and coil in place.

Refer to "Dot Size Adjustment" on page 9.

## **Parts**

To order parts, call the Nordson Industrial Coating Systems Customer Solutions Center at (800) 433-9319 or contact your local Nordson representative.

## Ink-Dot Spray Gun Parts Lists

ltem	Part	Part	Description	Quantity	Note
	1102825	—	SPRAY GUN, Ink-Dot, 0.008	1	А
			SPRAY GUN, Ink-Dot, 0.06 orifice	1	A, D
1	159906	159906	• COIL, 120V, 3 pin	1	1
2	1102826	_	• KIT, module, Ink-Dot, 0.008 in.	1	1
2			• KIT, module, Ink-Dot, 0.06 in.	1	1
3	981975	981975	• • SCREW, socket, cap, 10-32 x 1.125 in.	2	
4	940077	940077	•• O-RING, EPR, 0.156 x 0.281 x 0.063	1	
5	1029275	1029275	• • NUT, lock, 3/8-32 x 3/32 in.	1	
6	945067	945067	•• O-RING, EPR, 0.375 x 0.50 x 0.063 in.	1	
7	1033514	1033514	VALVE, body, Ink-Dot	1	
8	1033524	1033524	• • TUBE ASSEMBLY, guide, Ink-Dot	1	
9	1102827	—	<ul> <li>KIT, nozzle assembly, Ink-Dot, 0.008 in., w/ armature</li> </ul>	1	С
9		159931	• • SEAT, with ball, 0.06 orifice	1	С
10	987073	987073	• • SPRING, compression, 0.75 x 0.13 x 0.02 in.	1	
11		—	• • ARMATURE, Ink-Dot, stainless steel	1	
12	945125	945125	• • O-RING, EPR 80, 0.437 x 0.562 x 0.062 in.	1	
13	—		NOZZLE, seat, Ink-Dot	1	
NS	1620633	1620633	CABLE, Ink-Dot, 10 ft., 3 pin, controller	1	

See Figure 8.

NOTE: A. Cable and manifold assemblies are not saleable separately.

B. These kits contain items 5–13 only. Use these kits to replace the wetted parts of the spray gun.

C. These kits contain items 10-13 only. Use these kits to replace the ball and seat.

D. Spray gun with 0.06 orifice is obsolete. Service parts are available.

AR: As Required

NS: Not Shown



Figure 8 Replacing the Spray Gun Module

## Options

Part	Description	Note
1600620	Bracket, adjustable, Ink-Dot, FC	
159908	Filter element, 15 micron	
901905	Brush	

# **Specifications**

## Standard Ink-Dot Spray Gun

Fluid Pressure:	125 psi (8.6 bar)
Electrical:	pulsed Vdc – 140/340 current – 0.2 amp
Ambient Temperature:	140 °F (60 °C) maximum

## **EU DECLARATION of Conformity**

#### Product: Ink-Dot Can Marking System

#### Models: Ink-Dot

**Description:** This system consists of a controller, ink reservoir and a non-atomizing applicator. The system is used in the container industry for can line identification. Different colors of ink are used on each line in a manufacturing facility and a dot of ink is applied to the bottom of a can. This process allows the manufacture to identify which line a can was manufactured on.

#### **Applicable Directives:**

2006/42/EC - Machinery Directive 2014/30/EU - EMC Directive 2014/35/EU - Low Voltage Directive

Standards Used for Compliance:

EN/ISO12100	EN61000-6-3
EN60204	EN61000-6-2
	EN55011

#### **Principles:**

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

Quality System DNV - ISO9001 Certified

1.man

Date: 15Oct24

Jeremy Krone Supervisor Product Development Engineering Industrial Coating Systems Amherst, Ohio, USA

Nordson Authorized Representative in the EU Person authorized to compile the relevant technical documentation. Contact: Operations Manager

Operations Manager Industrial Coating Systems Nordson Deutschland GmbH Heinrich-Hertz-StraBe 42-44

D-40699 Erkrath



Nordson Corporation • 100 Nordson Drive, Amherst, Ohio 44001. USA

## **UK DECLARATION of Conformity**

#### Product: Ink-Dot Can Marking System

#### Models: Ink-Dot

**Description:** This system consists of a controller, ink reservoir and a non-atomizing applicator. The system is used in the container industry for can line identification. Different colors of ink are used on each line in a manufacturing facility and a dot of ink is applied to the bottom of a can. This process allows the manufacture to identify which line a can was manufactured on.

#### **Applicable Directives**

2006/42/EC - Machinery Directive 2014/30/EU - EMU Directive 2014/35/EU - Low Voltage Directive

Standards Used for Compliance:	
EN/ISO12100	EN61000-6-3
EN60204	EN61000-6-2
	EN55011

#### **Principles:**

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

Quality System DNV - ISO9001 Certified

1.eran

Date: 15OCT2024

Jeremy Krone Supervisor Product Development Engineering Industrial Coating Systems Amherst, Ohio, USA

#### Nordson Authorized Representative in the UK

Contact: Technical Support Engineer Nordson UK Ltd.; Unit 10 Longstone Road Heald Green; Manchester, M22 5LB. England



Nordson Corporation • 100 Nordson Drive, Amherst, Ohio 44001. USA