

CleanSpray[®] II Spray Gun

Customer Product Manual

Part 331167D

Issued 7/05

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

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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:
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CleanSpray[®] II Spray Gun

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.
- 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.

Fire Safety (contd)

- 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.

Description

See Figure 1.

The CleanSpray II spray gun (1) is used in high-speed container coating applications to clean lacquer spray gun nozzles. The gun sprays solvent or water at high pressure onto the lacquer nozzle tip between lacquer spray cycles.

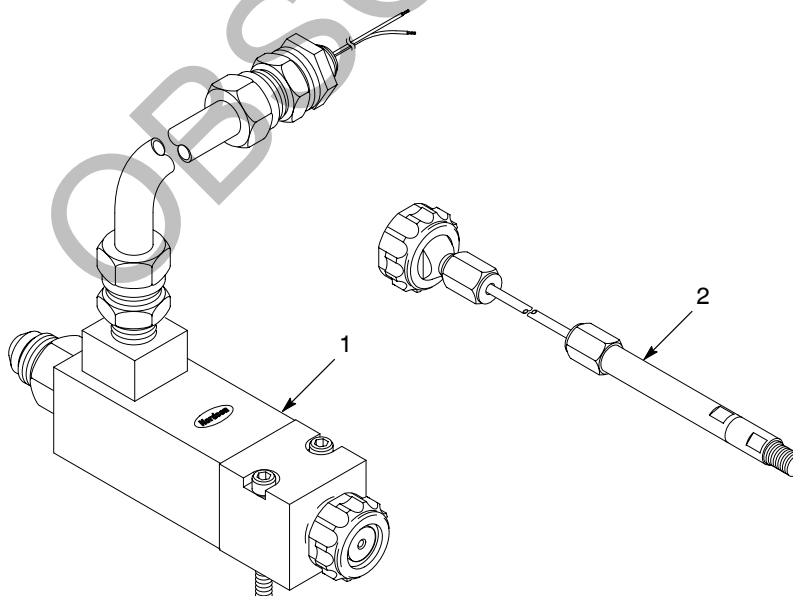
CleanSpray II spray gun features include:

- 1/2-20 37° JIC male fluid connector
- 1/4-in. liquid-tight electrical conduit (4), 142 cm (56 in.) long
- extension assembly for remote gun mounting

The spray gun is installed on a customer-supplied mounting plate attached to the spray machine. The extension assembly, which is always used with this gun, allows it to be mounted up to 457 mm (18 in.) away from the lacquer spray gun. Optional mounting brackets are available to hold the extension and nozzle in position.

Installation instructions and parts information for the extension assembly and optional mounting brackets are included in the *CleanSpray Extension Assembly* instruction sheet shipped with the spray gun. To order a mounting bracket, contact your Nordson representative.

NOTE: Nozzles are not included with the spray gun. Contact your Nordson representative to order the correct nozzle for your application.



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Figure 1 CleanSpray II Spray Gun and Extension Assembly

1. CleanSpray II spray gun

2. Extension assembly

Installation



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



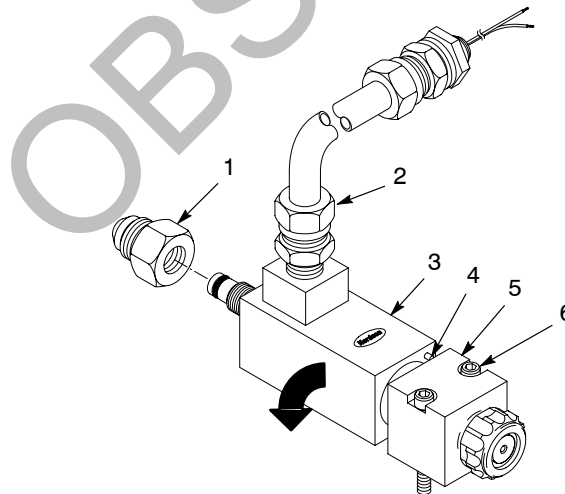
WARNING: Before installing the CleanSpray II gun, make sure system fluid pressure is relieved and electrical power is shut off .

Conduit Orientation

The spray gun coil assembly can be rotated in 90° increments to facilitate conduit routing. This must done before installing the gun on the mounting plate.

See Figure 2.

1. Unscrew the fluid connector (1) from the gun.
2. Pull the coil housing (3) away from the seat body about 1.5 mm (1/16 in.), until the pin (4) in the coil housing is clear of the hole in the seat body (5).
3. Rotate the coil housing until the conduit (2) is at the desired position. Push the coil housing and seat body together, making sure the pin fits into the hole in the seat body.
4. Screw the fluid connector back onto the gun and tighten it securely.



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Figure 2 Conduit Orientation and Gun Mounting

- | | |
|--------------------|------------------------------|
| 1. Fluid connector | 4. Pin |
| 2. Conduit | 5. Seat body |
| 3. Coil housing | 6. Screws (#8-32 x 1.00 in.) |

Gun Mounting

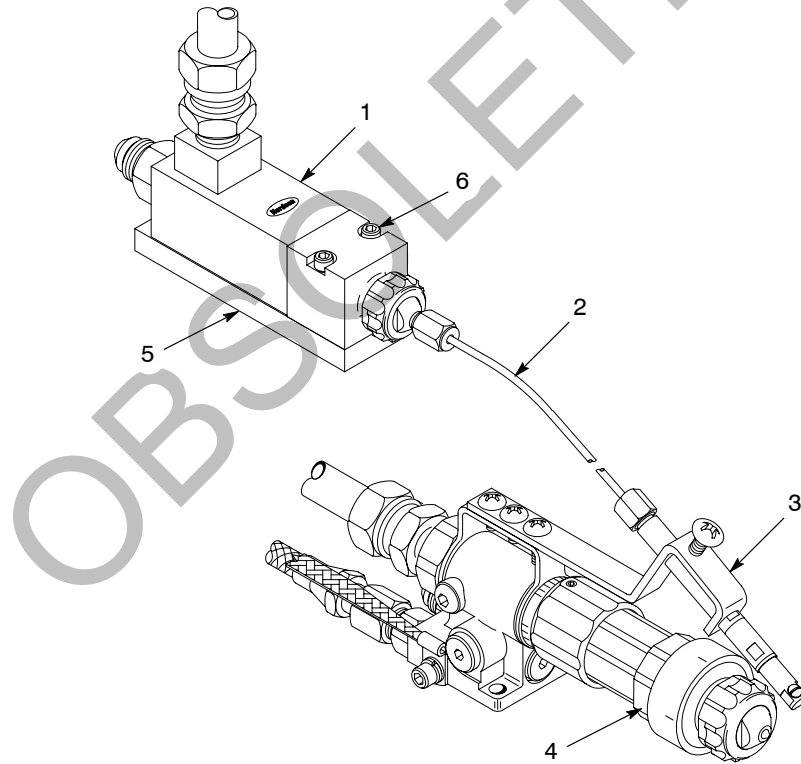
See Figure 3.

Mount the spray gun on a customer-supplied mounting plate (5) with the two #8–32 x 1.00 inch socket head screws (6) provided with the gun. The mounting holes are 20.5 mm (0.81 in.) apart, center-to-center.

Extension Assembly and Mounting Bracket Installation

Refer to the *Clean Spray II Extension Assembly* instruction sheet shipped with the spray gun. This instruction sheet contains extension assembly and mounting bracket installation instructions and parts lists.

Figure 3 shows a typical spray gun and extension assembly installation, with the extension assembly secured in the optional bracket and strap assembly, which mounts on a MEG or MEG II gun.



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Figure 3 CleanSpray II Gun and Extension Assembly Mounting on MEG Gun

- | | |
|-------------------------------|--------------------|
| 1. CleanSpray II gun | 4. MEG gun |
| 2. Extension assembly | 5. Mounting plate |
| 3. Bracket and strap assembly | 6. Mounting screws |

Fluid Connections

NOTE: Install an approved pressure relief device set at 35 bar (500 psi), a fluid filter, and a two-way ball valve in the fluid line to the spray gun. The ball valve will allow the spray gun to be isolated from the fluid supply. The fluid supply hose must have a minimum burst pressure of 35 bar (500 psi).

See Figure 2.

Connect the fluid supply hose to the fluid connector (1). The connector is 1/2"-20 37° JIC.

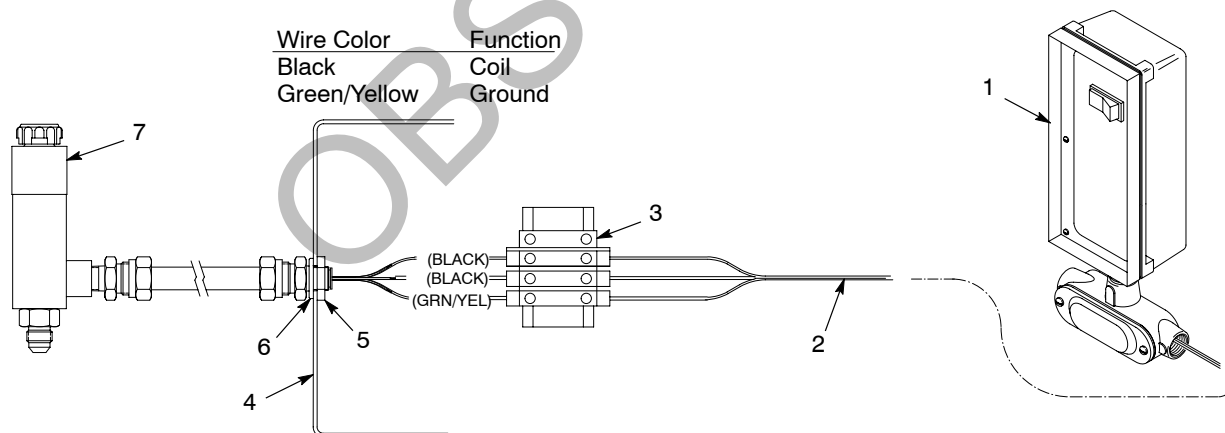
Electrical Connections

See Figure 4. The potted coil assembly is not sensitive to polarity.

NOTE: The gun conduit connectors are 1/4 in. The gun conduit can be connected directly to the CleanSpray controller by installing the 3/4 to 1/4 in. reducer bushing included in the controller installation kit on the conduit tee.

1. Connect the gun's electrical conduit to a customer-supplied junction box (4) with the lock nut (5) and seal ring (6).
2. Connect the gun wires from the electrical conduit to a customer-supplied terminal block (3) as shown.
3. Connect customer supplied wiring (2) and conduit from the terminal block to the CleanSpray controller (1).

Refer to the *CleanSpray Controller* manual to complete the electrical connections.



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Figure 4 Electrical Connections

- | | | |
|--|-----------------------------------|-------------------|
| 1. CleanSpray controller | 4. Customer-supplied junction box | 6. Seal ring |
| 2. Customer supplied wires and conduit | 5. Lock nut | 7. CleanSpray gun |
| 3. Customer supplied terminal block | | |

Operation

Refer to the *CleanSpray System Operation* operator's card for operating procedures. Operation of the gun is controlled by the CleanSpray Controller, using inputs from lacquer spray gun timer and spray machine.

Troubleshooting



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

This section contains troubleshooting procedures. 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 Corporation representative for help.

Problem	Possible Cause	Corrective Action
1. Gun fails to trigger	Poor electrical connection	Check all electrical connections.
	Dirt buildup inside gun	Disassemble and clean the gun.
	Bad coil assembly	Disconnect the coil wires and check the resistance with an ohmmeter. The reading should be approximately 17.5/19.5 ohms. Replace the coil assembly if the resistance check fails. Use the Coil Service Kit listed in <i>Parts</i> .
2. Fluid is spitting or leaking from nozzle	Air trapped in gun	Purge the air from the gun.
	Dirty or worn ball and seat	Clean or replace the ball and seat. Use the Ball and Seat Kit listed in <i>Parts</i> .
3. Fluid is leaking around extension assembly tube nuts	Dirty or damaged metal sealing surfaces	Clean or replace the stainless steel tube and tube nuts.
4. Fluid leaks between gun body and solenoid housing and/or seat	Damaged O-rings	Replace the O-rings. Gun O-rings are available separately or in the Soft Goods Service Kit listed in <i>Parts</i> .

Repair



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



WARNING: To prevent serious injury to personnel and damage to equipment, relieve system fluid pressure and shut off system electrical power before performing the following tasks.

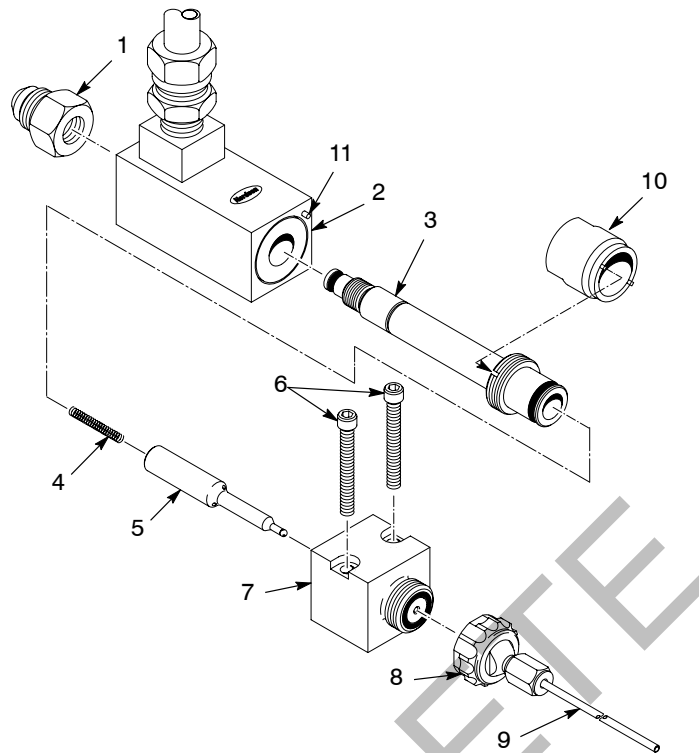
The following kits are available for repairing the CleanSpray II gun. Many parts are also available separately. Refer to *Parts* for kit part numbers and contents.

- Coil service kit: Use to replace the coil if it fails.
- Ball and seat service kit: Use to replace the ball tip armature and seat body if the gun fails to open or fluid leaks or spits from gun.
- Soft goods service kit: Use to replace gun O-rings.

Disassembly

See Figure 5.

1. Turn the CleanSpray controller OFF.
2. Unscrew and remove the nozzle nut (8) and nozzle or extension assembly (9) from the gun.
3. Remove the mounting screws (6) securing the seat body (7) to the mounting plate.
4. Unscrew the fluid connector (1) from the sleeve assembly (3).
5. Pull the seat body straight away from the coil assembly (2). The sleeve assembly will come out of the coil assembly with the seat body.
6. Slide the special tool (10) over the sleeve (3) and insert the tool's teeth into the slots in the threaded shoulder of the sleeve.
7. Place the seat body in a soft-jawed vise. Place a wrench on the special tool flats and turn it counterclockwise to unscrew the sleeve assembly from the seat body.
8. Pull the ball tip armature (5) and spring (4) out of the sleeve assembly.



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Figure 5 Repair Procedures

- | | | |
|--------------------|----------------------|-----------------------|
| 1. Fluid connector | 5. Ball tip armature | 9. Extension assembly |
| 2. Coil assembly | 6. Mounting screws | 10. Special tool |
| 3. Sleeve assembly | 7. Seat body | 11. Coil assembly pin |
| 4. Spring | 8. Nozzle nut | |

Re-Assembly

NOTE: Clean and inspect all parts before re-assembling the gun. Replace any worn or damaged parts. Apply petroleum jelly to all O-rings.

- Slide the new spring (4) inside the ball tip armature (5) and install both into the sleeve assembly (3).
- Thread the sleeve assembly into the seat body (7). Use the special tool (10) to tighten the sleeve assembly securely.
- Slide the sleeve assembly into the coil assembly (2). Rotate the coil assembly until the conduit is at the desired position. Push the coil housing and seat body together, making sure the coil assembly pin (11) fits into the hole in the seat body.
- Thread the fluid connector (1) onto the sleeve assembly. Tighten the connector securely.
- Install the gun on the mounting plate and secure it with the screws (6).
- Install the nozzle or tube extension (9) and nozzle nut (8).

Parts

To order parts, call the Nordson Finishing Customer Support Center at (800) 933-9319 or contact your local Nordson representative. Use the parts lists and the accompanying illustrations to locate and describe parts correctly.

Using the Illustrated Parts List

Numbers in the Item column correspond to numbers that identify parts in illustrations following each parts list. The code NS (not shown) indicates that a listed part is not illustrated. A dash (—) is used when the part number applies to all parts in the illustration.

The number in the Part column is the Nordson Corporation part number. A series of dashes in this column (-----) means the part cannot be ordered separately.

The Description column gives the part name, as well as its dimensions and other characteristics when appropriate. Indentions show the relationships between assemblies, subassemblies, and parts.

Item	Part	Description	Quantity	Note
—	0000000	Assembly	1	
1	000000	• Subassembly	2	A
2	000000	• • Part	1	

- If you order the assembly, items 1 and 2 will be included.
- If you order item 1, item 2 will be included.
- If you order item 2, you will receive item 2 only.

The number in the Quantity column is the quantity required per unit, assembly, or subassembly. The code AR (As Required) is used if the part number is a bulk item ordered in quantities or if the quantity per assembly depends on the product version or model.

Letters in the Note column refer to notes at the end of each parts list. Notes contain important information about usage and ordering. Special attention should be given to notes.

Gun Parts

See Figure 6.

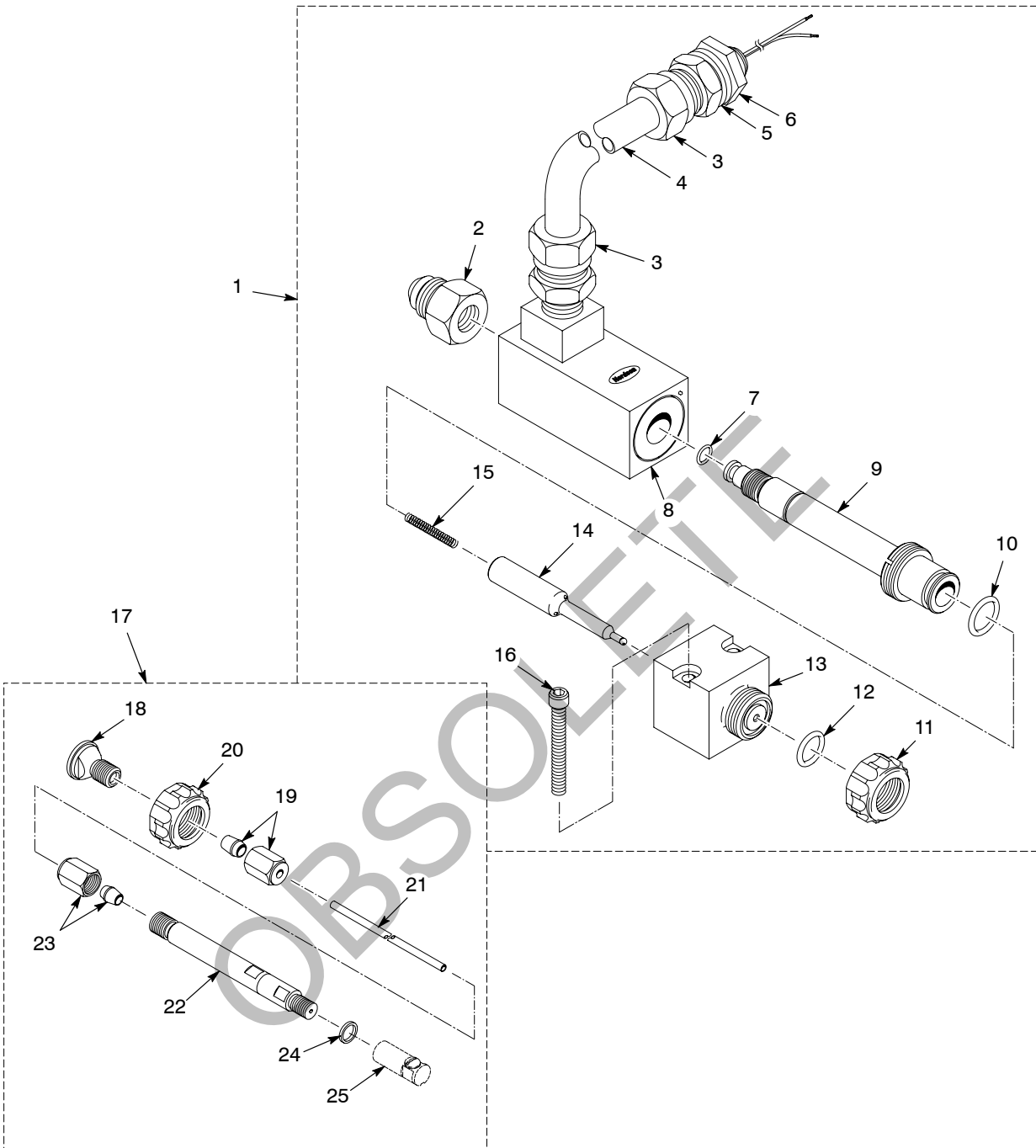
Item	Part	Description	Quantity	Note
—	323399	Gun, CleanSpray II assembly	1	
1	324411	• Gun, CleanSpray II	1	
2	324527	• • Connector	1	
3	972239	• • Connector, 1/4 in. conduit x 1/4 in. NPT	2	
4	179416	• • Conduit, liquidtight, 1/4 x 56 in.	1	
5	955063	• • Ring, sealing, 1/4 in.	1	
6	984200	• • Nut, lock, 1/4 in.	1	
7	940080	• • O-ring, hotpaint, 0.188 x 0.313 x 0.063 in.	1	A, B, C
8	-----	• • Coil, assembly	1	A
9	-----	• • Sleeve, assembly	1	
10	940130	• • O-ring, hotpaint, 0.438 x 0.563 x 0.063 in.	1	B, C
11	237401	• • Nut, nozzle	1	
12	940120	• • O-ring, hotpaint, 0.375 x 0.500 x 0.063 in.	11	B, C
13	-----	• • Body, seat	1	B
14	-----	• • Armature, ball tip	1	B
15	1063622	• • Spring, compression, 1.00 x 0.148 OD x 0.023 in.	1	B
16	981705	• • Screw, socket, #8-32 x 1.000 in., zinc	2	
17	323403	• Extension assembly, CleanSpray II	1	
18	323429	• • Adapter assembly	1	
19	971752	• • • Nut, tube, hydraulic, 1/8 in. tube	1	
20	237401	• • Nut, nozzle	1	
21	323445	• • Tube, stainless steel, 1/8 OD x 18 in. long	1	
22	330239	• • Extension, check valve spray, CleanSpray	1	
23	971752	• • • Nut, tube, hydraulic, 1/8 in. tube	1	
24	983196	• • • Washer, flat, 0.190 x 0.281 x 0.031 in., nylon	1	
NS	325042	• Wrench, CleanSpray II gun	1	
NS	247646	• Card, medical alert, injection	1	
NS	901905	• Brush		

NOTE A: Noted parts are included in Coil Service Kit, part 324523.

B: Noted parts are included in Ball and Seat Service Kit, part 324521.

C: Noted parts are included in Soft Goods Service Kit, part 325060.

NS: Not Shown



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Figure 6 Clean Spray II Gun and Extension Assembly Parts

Service Kits

The following service kits are available for the CleanSpray II gun. Keep these kits on hand to reduce downtime.

See Figure 6 for item numbers.

Coil Kit

Item	Part	Description	Quantity	Note
—	324523	Service kit, coil, CleanSpray	1	
7	940080	• O-ring, hotpaint, 0.188 x 0.313 x 0.063 in.	1	
8	-----	• Coil assembly	1	

Ball and Seat Kit

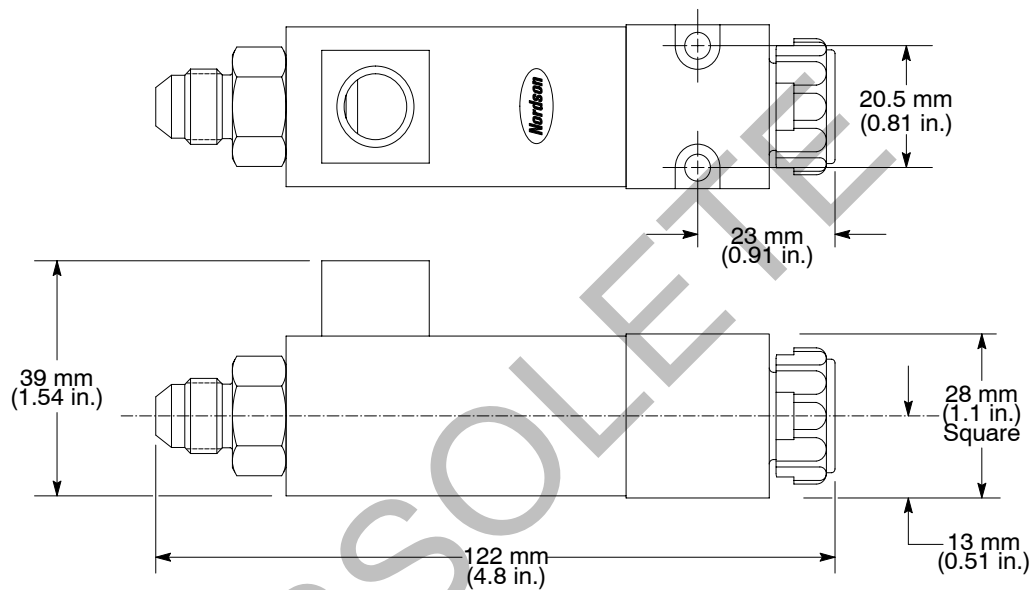
Item	Part	Description	Quantity	Note
—	324521	Kit, ball and seat, CleanSpray	1	
7	940080	• O-ring, hotpaint, 0.188 x 0.313 x 0.063 in.	1	
10	940130	• O-ring, hotpaint, 0.438 x 0.563 x 0.063 in.	1	
12	940120	• O-ring, hotpaint, 0.375 x 0.500 x 0.063 in.	11	
13	-----	• Body, seat	1	
14	-----	• Armature, ball tip	1	
15	1063622	• Spring, compression, 0.990 x 0.157 OD x 0.022 in.	1	

Soft Goods Kit

Item	Part	Description	Quantity	Note
—	325060	Service kit, soft goods	1	
7	940080	• O-ring, hotpaint, 0.188 x 0.313 x 0.063 in.	1	
10	940130	• O-ring, hotpaint, 0.438 x 0.563 x 0.063 in.	1	
12	940120	• O-ring, hotpaint, 0.375 x 0.500 x 0.063 in.	1	

Specifications

Fluid Pressure	35 bar (3500 kPa (500 psi)) maximum
Electrical	24 Vdc maximum; 1.2 amps maximum
Ambient Temperature	60 °C (140 °F) maximum
Weight	0.5 kg (1.1 lb)
Dimensions	See Figure 7.



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Figure 7 Clean Spray II Gun Dimensions

DECLARATION of CONFORMITY

Product: Clean Spray System

Models: Clean Spray, Clean Spray II, or Clean Spray XT Applicators used with Clean Spray Controller

Description: This system consists of a Clean Spray Controller (driver), a supplied timer signal and a Clean Spray Applicator. This system is used to spray water on the nozzle of a can lacquer applicator and unplug it or keep it from plugging by cleaning it.

Applicable Directives:

2006/42/EC (Machinery Directive)

2006/95/EC (Low Voltage Directive)

2004/108/EEC (Electromagnetic Compatibility Directive)

Standards Used for Compliance:

IEC60417 (2002)

EN55011 (2009)

EN12100-1 (2011)

EN61000-6-3 (2007)

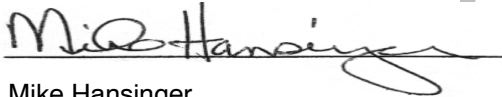
EN60204 (2006)

Principles:

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

Certificates:

DNV – ISO9001:2008 (Houston, Texas, USA)



Date: 21 March 2011

Mike Hansinger
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Nordson Authorized Representative in the EU

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