Model AN-10 Automatic Electrostatic Air Spray Gun

Customer Product Manual
Part 104 313D

NORDSON CORPORATION • AMHERST, OHIO • USA

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Notice

Trademarks

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Model AN-10 Automatic Electrostatic Air Spray Gun

1. Safety

This section contains general safety instructions for using your Nordson equipment. Task- and equipment-specific warnings are included in other sections of this manual where appropriate. Note all warnings and follow all instructions carefully. Failure to do so may result in personal injury, death, or property damage.

To use this equipment safely,

- read and become familiar with the general safety instructions provided in this section of the manual before installing, operating, maintaining, or repairing this equipment.
- read and carefully follow the instructions given throughout this manual for performing specific tasks and working with specific equipment.
- store this manual within easy reach of personnel installing, operating, maintaining, or repairing this equipment.
- follow all applicable safety procedures required by your company, industry standards, and government or other regulatory agencies. Refer to the National Fire Protection Association (NFPA) standard 33 and to federal, state, regulatory agency, and local codes for rules and regulations covering installation and operation of spray systems.
- obtain and read Material Safety Data Sheets (MSDS) for all materials used.

Safety Symbols

Become familiar with the safety symbols presented in this section. These symbols will alert you to safety hazards and conditions that may result in personal injury, death, or property and equipment damage.

WARNING: Failure to observe this warning may result in personal injury, death, or equipment damage.

***Safety Symbols** (contd.)*

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

WARNING: Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage.

WARNING: Risk of explosion or fire. Fire, open flames, and smoking prohibited.

WARNING: Wear protective clothing, safety goggles, and approved respiratory protection. Failure to observe may result in serious injury.

WARNING: Hot! Risk of burns. Wear heat-protective clothing, safety goggles with side shields and/or heat-protective gloves depending on the symbol shown.

WARNING: System or material pressurized. Relieve pressure. Failure to observe this warning may result in serious injury or death.

WARNING: Injection. Do not point this device at yourself or other personnel. Failure to observe this warning may result in serious injury or death.

Safety Symbols (contd.)

CAUTION: Failure to observe may result in equipment damage.

CAUTION: Hot surface. Failure to observe may result in burns.

Qualified Personnel

"Qualified personnel" is defined here as individuals who thoroughly understand the equipment and its safe operation, maintenance, and repair. Qualified personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations, and have been trained to safely install, operate, maintain, and repair the equipment. It is the responsibility of the company operating this equipment to see that its personnel meet these requirements.

Intended Use

WARNING: Use of this equipment in ways other than described in this manual may result in personal injury, death, or property and equipment damage. Use this equipment only as described in this manual.

Nordson Corporation cannot be responsible for injuries or damages resulting from nonstandard, unintended applications of its equipment. This equipment is designed and intended only for the purpose described in this manual. Uses not described in this manual are considered unintended uses and may result in serious personal injury, death, or property damage. Unintended uses may result from taking the following actions:

- making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine Nordson replacement parts
- failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards
- using materials or auxiliary equipment that are inappropriate or incompatible with your Nordson equipment
- allowing unqualified personnel to perform any task

Installation

Read the installation section of all system component manuals before installing your Nordson equipment. A thorough understanding of system components and their requirements will help you to install this equipment safely and efficiently.

WARNING: Failure to follow these safety procedures can result in personal injury or death.

- Allow only qualified personnel to install Nordson equipment.
- Use only approved equipment. Using unapproved equipment in an approved system may void agency approvals.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Follow all instructions for installing components and accessories.
- Install all electrical, pneumatic, gas, and hydraulic connections to local code.
- Install locking, manual, shutoff valves in the air supply lines to the system. This allows you to relieve air pressure and lock out the pneumatic system before undertaking maintenance and repairs.
- Install a locking disconnect switch or breaker in the service line ahead of any electrical equipment.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.
- Ground all electrically conductive equipment. Ungrounded conductive equipment can store a static charge which could ignite a fire or cause an explosion if a hot spark is discharged.
- Route electrical wiring, electrostatic cables, and air hoses and tubing along a protected path. Make sure they will not be damaged. Do not bend electrostatic cables around a radius of less than 6 in. (152 mm).
- Install safety interlocks and approved, fast-acting fire detection systems. These shut down the spray system and any flammable liquid supply if a ventilation or electrical problem occurs, a fire is detected, or other emergency situation develops.

***Installation** (contd.)*

- Make sure the spray area floor is conductive to ground and that the operator's platform is grounded.
- Use only designated lifting points or lugs to lift and move heavy equipment. Always balance and block loads when lifting to prevent shifting. Lifting devices must be inspected, certified, and rated for a greater weight than the equipment being lifted.
- Do not use unapproved fluid hoses. Solvents may cause them to deteriorate rapidly which may allow flammable or pressurized material to escape.
- Protect components from damage, wear, and harsh environmental conditions.
- Allow ample room for maintenance, material supply container drop-off and loading, panel accessibility, and cover removal.
- Protect equipment with safety devices as specified by applicable safety regulations.
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning.

Operation

Only qualified personnel, physically capable of operating the equipment and with no impairments to their judgement or reaction times, should operate this equipment.

Read all component manuals before operating this equipment. A thorough understanding of system components and their operation will help you operate the system safely and efficiently.

- Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.
- Before starting this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks, locked-out electrical disconnects, or pneumatic valves.

***Operation** (contd.)*

- Know where *EMERGENCY STOP* buttons, shutoff valves, and fire extinguishers are located. Make sure they work. If a component malfunctions, shut down and lock out the equipment immediately.
- Before operating, make sure all conductive equipment, objects being sprayed, and fluid containers are connected to a true earth ground.
- Never operate equipment with a known malfunction or leak.
- Never point handguns or applicator nozzles at yourself or other persons.
- Never touch exposed electrical connections on equipment while the power is ON.
- Do not operate the equipment at pressures higher than the rated maximum working pressure of any component in the system.
- Shut off moving equipment before taking measurements or inspecting workpieces.
- Know the pinch points, temperatures, pressures, and material composition for all equipment that you are working with. Recognize potential hazards associated with these and exercise appropriate caution.
- Wear shoes with conductive soles, such as leather, or use grounding straps to maintain a connection to ground when working with or around electrostatic equipment.
- Do not wear or carry metallic objects (jewelry or tools) while working with or around electrostatic equipment. Ungrounded metal can store a static charge and cause harmful shocks.
- Maintain skin-to-metal contact between your hand and the gun handle to prevent shocks while operating manual electrostatic spray guns. If wearing gloves, cut away the palm or fingers.
- Shut off electrostatic power supplies and ground gun electrodes before making adjustments to powder spray guns.
- If you notice electrical arcing in a spray area, shut down the system immediately. An arc can cause a fire or explosion.
- Keep parts of the body or loose clothing away from rotating parts. Remove personal jewelry and cover or tie back long hair.

***Operation** (contd.)*

- Wear National Institute of Occupational Safety and Health (NIOSH) approved respirators while operating spray equipment and when performing maintenance and cleaning tasks.
- Wear eye protection when operating spray equipment.
- Wear gloves and protective clothing to protect your skin from materials.
- Keep paint pumps, pressure pots, and containers of flammable coating materials or solvents far enough away from spray booths to prevent their inclusion in a booth fire.
- Do not smoke in the spray area. A lit cigarette could ignite a fire or cause an explosion.
- Treat all high-pressure fittings and hoses as if they could leak. High-pressure compressed air can be injected under the skin and cause serious injury or death.
- Do not use materials that will corrode the equipment.
- Do not attempt to operate electrical equipment if standing water is present.
- Wash exposed skin frequently with soap and water, especially before eating or drinking. Do not use solvents to remove coating materials from your skin.

Less-Obvious Dangers

Operators should also be aware of less-obvious dangers in the workplace that often cannot be completely eliminated:

- exposed surfaces on the equipment which may be hot or have sharp edges and cannot be practically safeguarded
- electrical equipment which may remain energized after the equipment has been shut off
- vapors and materials which may cause allergic reactions or other health problems
- automatic hydraulic, pneumatic equipment, or mechanical parts that may move without warning
- unguarded, moving mechanical assemblies

Action in the Event of a System or Component Malfunction

Do not operate a system that contains malfunctioning components. If a component malfunctions, turn the system OFF immediately.

- Disconnect and lock out electrical power. Close and lock out hydraulic and pneumatic shutoff valves and relieve pressures.
- Allow only qualified personnel to make repairs. Repair or replace the malfunctioning component according to instructions provided in its manual.

Maintenance and Repair

Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks. Only persons who are properly trained and familiar with Nordson equipment are permitted to service this equipment.

- Always wear appropriate protective clothing and use safety devices when working on this equipment.
- Follow the recommended maintenance procedures in your equipment manuals.
- Do not service or adjust any equipment unless another person trained in first aid and CPR is present.
- Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.
- Relieve air and fluid pressures before servicing equipment. Follow the specific instructions in this manual.
- Use only genuine Nordson replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.

WARNING: Note the flash point of the cleaning solvent used. Only use controlled methods and equipment, such as temperature-controlled or explosion-protected heaters, to heat cleaning solvent. Observe explosion-prevention regulations and follow applicable safety instructions.

- Refer to the MSDS before using solvents to clean this equipment. The MSDS will provide use, storage, and disposal information about the solvent. Read this information carefully and follow instructions.

Maintenance and Repair *(contd.)*

- Never use an open flame to clean the unit or components of the unit.
- Do not store flammable materials in the spray area or room. Keep paint pumps, pressure pots, and containers of flammable coating materials or solvents far enough away from spray booths to prevent their inclusion in a booth fire. If a fire or explosion occurs, flammable materials in the area will increase the chances and the extent of personal injuries and property damage.
- Make sure that the room where you are working is sufficiently ventilated. Avoid breathing vapors over prolonged periods of time.
- Check interlock systems periodically to ensure their effectiveness.

WARNING: Operating faulty or electrostatic equipment is hazardous and can cause electrocution, fire, or explosion. Make resistance checks part of your periodic maintenance program.

- Check all ground connections periodically with a megohm meter. Resistance to ground must not exceed one megohm. If sparks or arcing occur, shut down the system immediately.
- Connect all disconnected equipment ground cables and wires after servicing the equipment. Ground all conductive equipment.

WARNING: Service lines connected to panel disconnect switches will still be energized unless power is shut off at another disconnect ahead of the panel. Make sure the power is off before servicing. Wait 5 minutes for capacitors to discharge after shutting off the electrical power.

- Turn off the electrostatic power supply and ground the gun electrode before adjusting or cleaning the nozzles, fluid tips, or air caps.
- If a “power on” test is required, perform the test carefully and then shut off and lock out power as soon as the test is over.
- Never troubleshoot the power supply without first disconnecting all external power supplies and discharging the high-voltage capacitors with an insulated screwdriver.
- Ground electrodes and electrostatic cable ends before touching them.

Maintenance and Repair *(contd.)*

- Do not attempt to service electrical equipment if there is standing water present. Do not service electrical equipment in a high-humidity environment.
- Use tools with insulated handles when working with electrical equipment.
- Keep high-voltage connection points clean and insulated with dielectric grease or oil.
- Do not attempt to service a moving piece of equipment. Shut off the equipment and lock out power. Secure equipment to prevent uncontrolled movement.

Material and Solvent Precautions

WARNING: Hot! Risk of burns. Wear heat-protective clothing, eye protection with side shields and/or heat-protective gloves.

Heated materials may cause severe burns on contact. Remember that some materials, even solid materials, may retain heat for some time. If you are burned by a heated material, immediately cool the affected skin with lots of cool, clean water. Do not try to remove hot, melted material from the skin. Seek immediate medical attention.

High-pressure fluids, unless they are safely contained, are extremely hazardous. A jet of high-pressure fluid can act like a knife or needle, penetrate skin and muscle, and inject itself into your body. Injected fluids can cause toxic poisoning.

Do not treat an injection injury as minor. Seek medical care immediately. Inform the medical staff at the hospital that you have an injection injury and identify the fluid that was injected. If possible, give the doctor copies of the MSDS for the injected fluid and for any additives, such as solvents, that are in the injected fluid.

Also, Nordson recommends that you carry a National Safety Equipment Manufacturers Association (NSEMA) wallet card to give to emergency medical staff in the event of an injection injury. These cards are supplied with the equipment. Additional cards are available free from Nordson Corporation.

Material and Solvent Precautions (contd.)

WARNING: Injection hazard. Do not go near a known leak in a hose or fitting, and stay clear of all spray nozzles or orifices. Do not point an applicator at yourself or other personnel. The high-pressure fluid stream can penetrate skin and inject fluid into the body causing serious injury or death.

To prevent an injection injury, take some basic safety precautions when operating your equipment.

- Always handle spray applicators carefully. Do not point a pressurized gun at yourself or other personnel.
- Never place hands, fingers, or other parts of your body directly over a spray nozzle or in front of a leak in a high-pressure system.
- Never "back-flush" the nozzles. Blocking a nozzle causes the high-pressure fluid to reverse direction and can lead to an injection injury.
- Always relieve system pressure before servicing equipment. Trigger all applicators and bleed off system pressure.

Halogenated hydrocarbon solvents can cause an explosion when used with aluminum components in a pressurized fluid pumping system (pumps, heaters, filters, valves, spray guns, and tanks). The explosion could cause serious bodily injury, death, or substantial property damage. No available stabilizers will prevent this violent reaction from happening.

WARNING: Never use halogenated hydrocarbon solvents to clean aluminum parts or to flush any system. Cleaning agents, coatings and paints, or adhesives may contain halogenated hydrocarbon solvents. Obtain and read the MSDS for each material and solvent being used.

- Use non-halogenated solvents.
- Contact your solvent supplier to determine whether your existing materials and solvents contain halogenated hydrocarbons or to obtain a suitable, non-halogenated hydrocarbon solvent for cleaning and flushing your system.

***Material and Solvent Precautions** (contd.)*

- See Table 1. Check the labels on your solvent containers. Halogenated hydrocarbon solvents can be recognized if any of the following elements are listed in the name of the product or as an ingredient:

Element	Symbol	Prefix
Fluorine	F	“Flouro-”
Chlorine	Cl	“Chloro-”
Bromine	Br	“Bromo-”
Iodine	I	“Iodo-”

If you are now using halogenated hydrocarbon solvents in pressurized systems with aluminum components, perform the following steps:

- Pump the system empty, shut off the pumps, and relieve the system pressure.
- Disassemble and inspect the system components. Replace any damaged or corroded parts.
- Thoroughly clean all non-corroded parts with non-halogenated hydrocarbon.
- Contact your coatings, solvent, or adhesive supplier for a non-halogenated solvent to thoroughly flush the entire system before operating it.
- If you must continue to use halogenated hydrocarbon solvents, consult your Nordson representative about compatible Nordson components.

Material and Solvent Precautions (contd.)

Table 1 Solvents Containing Halogenated Fluids

Chlorinated Solvents	Iodinated Solvents	Brominated Solvents	Fluorocarbon Solvents
Carbon Tetrachloride	Ethyl Iodide	Ethylene Dibromide	Dichlorofluoromethane
Chloroform	Methyl Iodide	Methyl Bromide	Trichlorofluoromethane
Ethylene Dichloride	N-butyl Iodide	Methylene Chlorobromide	Freon
Methylene Chloride	Propyl Iodide		
1-1-1 Trichloroethane			
Monochlorobenzene			
Orthodichlorobenzene			
Perchloroethylene			
Trichloroethylene			

Disposal

Dispose of equipment and materials used in operation and cleaning according to your local regulations.

Safety Labels

Table 2 contains the text of the safety labels on, or shipped with, the AN-10 gun. Figure 1 shows the location of the AN-10 gun label that is described in the table as item 1. Familiarize yourself with the safety labels; they will help you safely operate and maintain your equipment.

Table 2 Safety Labels

Item	Part	Description
1.	241 162	**WARNING:** High voltage. Read manual before using. All conductive objects in area must be grounded.
—	600 001	**WARNING:** The following procedures MUST be followed when working with this electrostatic spray equipment. Failure to follow these instructions may result in a fire and/or serious personal injury. Display this warning on the spray booth. 1. NO SMOKING. Keep open flames, hot surfaces, and sparks from torches or grinding away from booth. 2. Turn the electrostatic power unit OFF when the spray gun is not in use. 3. Appropriate control interlocks and fire suppression apparatus must be installed and operative. 4. Ground the power unit, the spray booth, work hangers, conveyor rollers, channels, and all other conductive objects within approximately 3 m (10 ft) of the electrostatic spay gun. THE FLOOR MUST BE CONDUCTIVE AND GROUNDED. 5. Examine all equipment at the beginning of each work period and repair or replace any damaged, loose, or missing parts. 6. Maintain grounding of all work pieces. Work hangers, conveyor rollers, channels, etc. MUST BE CLEAN. Electrical sparks from discharge of static accumulation are capable of igniting fires. If any sparking is seen around the workpiece, conveyors, or other metal objects in the area, immediately shut down the process and correct grounding before continuing process. 7. Operator must be grounded to prevent shocks from static electricity. Floor surface must be conductive. Footwear and gloves must be static dissipative in accordance with ANSI Z41-1991. 8. Before cleaning the nozzle or performing any work on the electrostatic spray gun, turn off the power unit and ground the nozzle. The nozzle MUST BE REMOVED for cleaning. Use a non-flammable solvent in a non-conductive container, i.e., glass container.

Continued on next page

Safety Labels (contd.)

Item	Part	Description
—	600 001	9. NEVER use or store flammable solvents in the spray area. 10. Make no modification to this electrostatic equipment or its fluid feed system without written permission from Nordson Corporation, 555 Jackson Street, Amherst, OH, 44001, U.S.A. 11. When providing an air supply to an electrostatic waterborne hand spray gun, the air hose must be electrically conductive in nature. Continuity between end fittings must be 1 megohm or less. 12. Refer to: Instruction manuals; appropriate federal, state, and local regulations; and to ANSI/NFPA 33 for further guidance and requirements for safe operations. If you have questions concerning this electrostatic spray equipment, call (216) 988-9411, and ask to speak with the Liquid Systems Group Technical Service Department. Nordson Corporation, Amherst, OH, 44001, U.S.A.

Safety Label Location

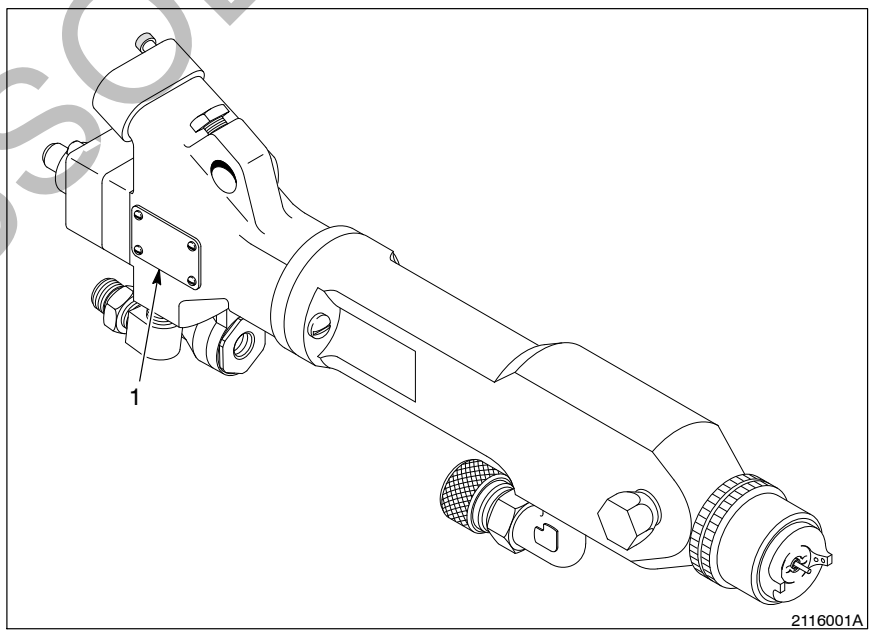

Fig. 1 AN-10 gun safety label location

1. Safety label

2. Description

See Figure 2. The Nordson model AN-10 Automatic Electrostatic Air Spray Gun is an air-operated, air-atomizing electrostatic spray gun that is Factory Mutual (FM) approved. The AN-10 gun can operate over a wide range of delivery rates and air pressures. The gun transmits up to 115 kV of charging voltage; however, the AN-10 gun does not store enough electrical energy to harm an operator or to ignite common solvents.

The AN-10 is available in two models; one for applying solvent-based coating materials, and one for applying waterborne coatings. The waterborne model uses an increased amount of dielectric grease in the electrostatic cable port.

When used with a standard fluid hose, the AN-10 gun can apply a wide range of common coating materials. The flow rates of the AN-10 gun will depend upon the viscosity of the coating material and the size of the fluid tip used. The gun can use a variety of fluid tips and air caps, which provide optimum performance within the range of the gun. Consult your Nordson Corporation representative for assistance in selecting the fluid tip and air cap best suited to your application needs.

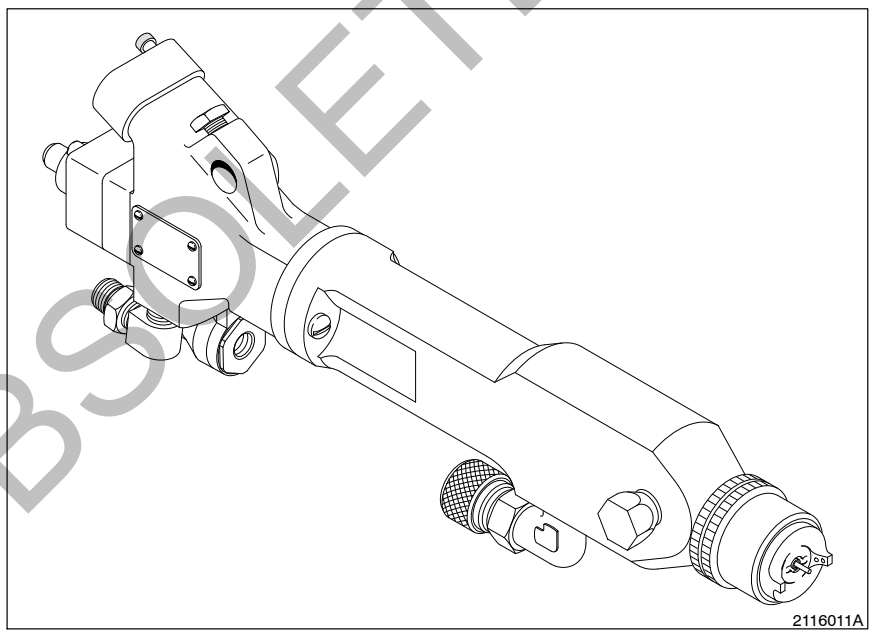

Fig. 2 AN-10 Automatic Electrostatic Air Spray Gun

2. Description *(contd.)*

See Figure 3. When you actuate the AN-10 gun, it simultaneously releases air and fluid. Trigger air (7) acting against the piston (6) compacts the compression spring (5) in the rear of the gun. The piston pulls back the connecting rod (3), opens the fluid valve, and allows fluid (9) to pass through the fluid tip (11). The fluid passes around the antenna (10) that extends through the fluid tip and is charged, atomized, and shaped outside the gun at the air cap (1). You adjust the air pressure to the air cap using the air valve needle (4) at the rear of the gun.

When you turn off the gun, the trigger air is exhausted through the quick-release valve at the trigger air port, allowing a precise fluid cut-off.

For some spray applications, horn air (2) and atomizing air (8) can be split. Splitting the air pressure allows for more precise control of shaping and atomizing air pressures with remote or computer-controlled adjustments. Split air also allows the use of minimum air pressures.

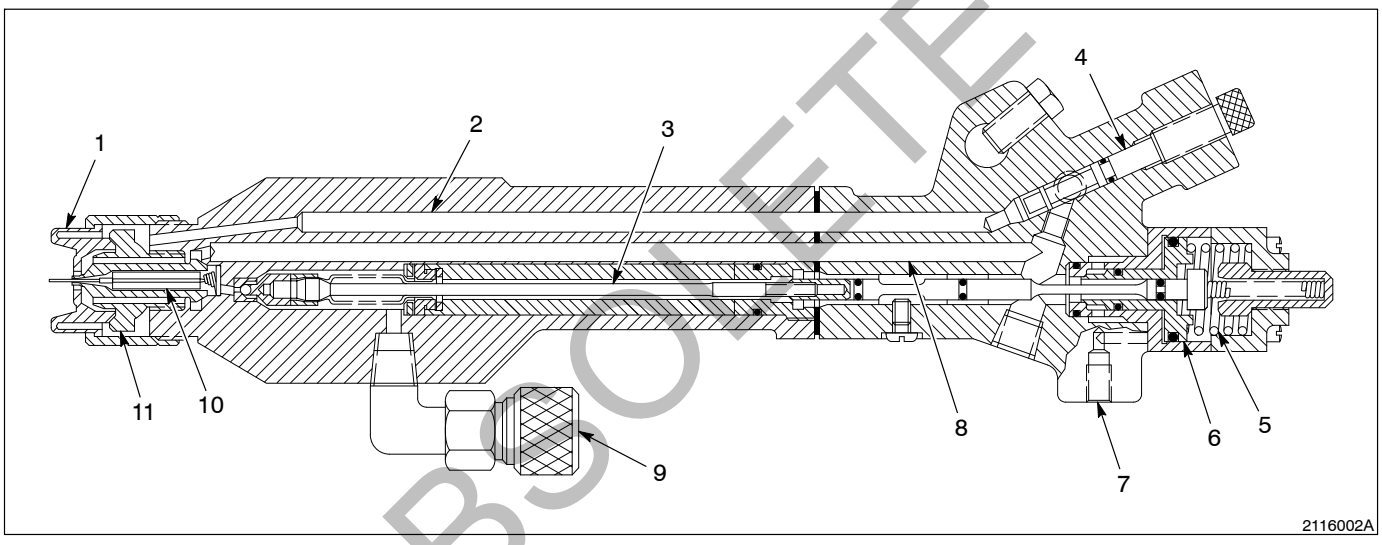

Fig. 3 AN-10 gun air and fluid paths

1. Air cap
2. Horn air
3. Connecting rod
4. Air valve needle
5. Compression spring
6. Piston
7. Trigger air port
8. Atomizing air
9. Fluid
10. Antenna
11. Fluid tip

For information about hoses and connectors, refer to the *Low Pressure Hoses and Connectors* manual.

3. Installation

WARNING: This equipment can be dangerous unless it is used in accordance with the rules laid down in the manual. Allow only qualified personnel to perform the installation tasks. Observe and follow the safety instructions in this manual and all other related documents.

WARNING: Before installing the AN-10 gun, relieve all pressure and turn off the electrical power to the system. Failure to observe this warning can result in serious personal injury or death.

WARNING: Before you start the electrostatic system, ground all electrically conductive objects near the spray area to a true earth ground. If objects are not grounded, an electrical charge can accumulate and discharge a spark, creating a fire hazard.

NOTE: Inadequately grounded work pieces lose efficiency for electrostatic attraction when sprayed.

A properly maintained AN-10 gun will not discharge sparks capable of igniting any common solventborne coating material. The AN-10 gun operates at any working distance. The average gun-to-work distance of the AN-10 gun is 20.32 cm–25.2 cm (8–10 in.) for solventborne coatings, and 25.42–30.50 cm (10–12 in.) for waterborne coatings.

Mounting the AN-10 Gun

CAUTION: Do not spray waterborne coatings with an AN-10 gun mounted in an upward, vertical orientation. The overspray will accumulate on the gun and can cause the system to ground out. Failure to observe this caution can result in equipment damage.

NOTE: Always mount the AN-10 gun with the electrostatic cable on the top or the side of the gun. If you disassemble the gun while it is still mounted, this position lessens the possibility of coating material leaking into the high-voltage area of the gun.

NOTE: An upward, vertical mounting can reduce transfer efficiency when using solventborne coating materials.

You can mount the AN-10 gun in nearly any orientation, including horizontal and vertical mountings. If you mount a gun vertically, use a downward orientation.

Mounting the AN-10 Gun (contd.)

To mount the AN-10 gun, see Figure 4 and use the following steps:

1. Mount the AN-10 gun to a grounded, metal mounting bar with an outside diameter (OD) of 1.27 cm (0.5 in.).

2. Use the mounting hole (2) and set screw (1) at the top of the gun to mount the gun to the mounting bar.

NOTE: If you mount multiple AN-10 guns, contact your Nordson Corporation representative for correct mounting configurations and approved parts.

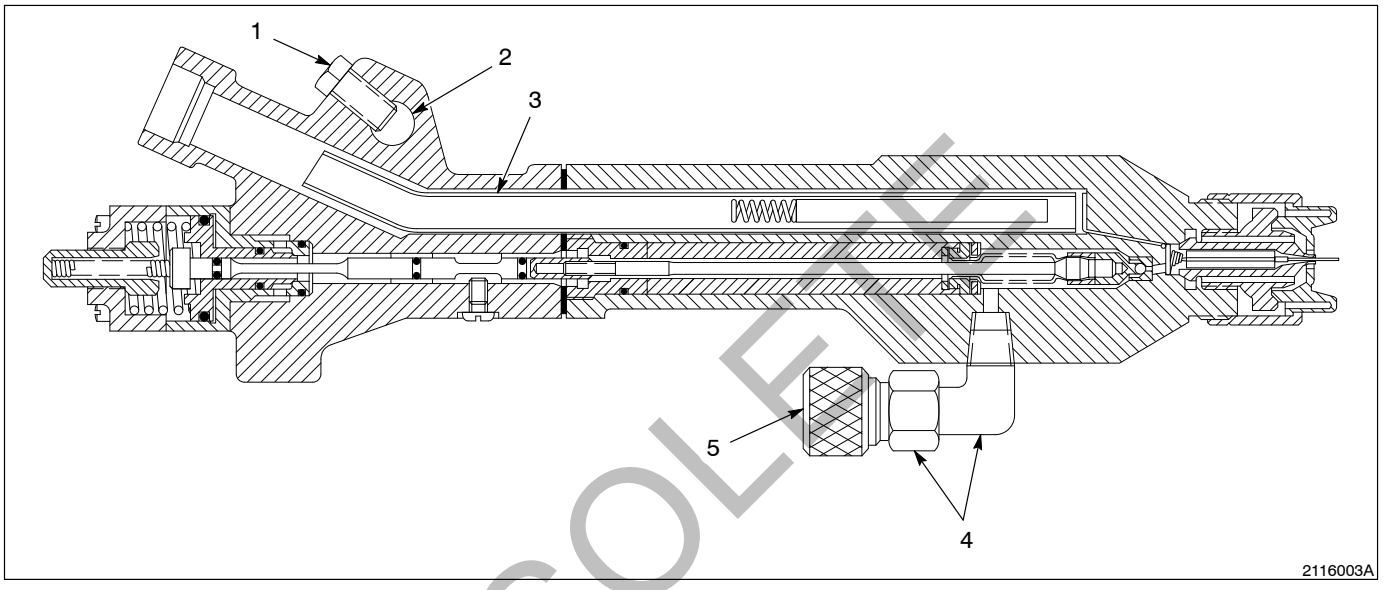

Fig. 4 AN-10 gun mounting and fluid connections

1. Set screw
2. Mounting hole
3. Electrostatic insulating tube
4. Fluid fitting and retainer nut
5. Fluid inlet

Grounding the AN-10 Gun

Establish continuity to the earth ground through the gun body and the mounting mechanism.

Installing the Electrostatic Cable

Perform the following procedures to install the electrostatic cable to the power supply and to the AN-10 gun.

Installing the Cable to the Power Supply

1. Use a clean, dry cloth to remove any contamination from the power supply end of the electrostatic cable.

   NOTE: Cable ends must be clean and dry before installing the cable.

CAUTION: Fill the multiplier well with dielectric oil to keep out air and to prevent arcing. Do not overfill the multiplier well with dielectric oil. Overfilling can cause excessive oil to leak from the well. Leaking oil and arcing can each cause equipment damage.

2. Fill the multiplier well with dielectric oil (use approximately $1^1/_2$ vials of the oil supplied).

3. Locate the end of the high-voltage cable with the brass tag. Slowly install this end of the cable into the multiplier well and then wipe away any oil that overflows from the well.

4. Tighten the cable connecting nut.

5. Attach the cable to the strain relief on the side of the power supply cabinet.

6. Consult the system manual for your electrostatic power supply for more information about the electrostatic connections.

Installing the Cable to the AN-10 Gun

CAUTION: Nordson Corporation uses dielectric grease as an insulator in the AN-10 gun. When placed around the contact points in a high-voltage system, the dielectric grease eliminates corona discharge or arcing that can cause premature failure of parts. The grease must displace all the air from around the contact points to effectively prevent arcing.

A resistor, insulating tube, and dielectric grease are factory-installed in the AN-10 gun. To install a replacement resistor kit and cable to a previously installed AN-10 gun, refer to *Replacing the Extension Resistor Kit and Cable* in this manual.

Use the following procedure when installing the electrostatic cable on a new AN-10 gun.

NOTE: If you need to apply additional dielectric grease to the gun, warm the applicator of grease in your hands before applying it to the gun. Warmed grease helps the cable install easier.

Installing the Cable to the AN-10 Gun (contd.)

1. Use a clean, dry cloth to remove any contamination from the end of the electrostatic cable.

2. See Figure 4. Slowly push the cable into the electrostatic insulating tube (3), which is visible through the cable connector at the end of the AN-10 gun.

   NOTE: The end of the cable acts as a piston in the insulating tube, pushing the dielectric grease around the resistor and spring, and around the exterior of the tube. This totally covers the high-voltage contact points inside the gun with dielectric grease.

   NOTE: Do not allow any air pockets in the dielectric grease of the AN-10 waterborne gun.

3. Tighten the cable connecting nut.

4. Keep the resistor service kit, which is shipped with the electrostatic cable, as a spare.

5. Before using the AN-10 gun:

   a. Refer to the *Electrostatic System Checks* manual and perform the *Installation Checks* and *Periodic Checks* procedures on the electrostatic system.

   b. Refer to the *Electrostatic Cable Care and Installation* manual for instructions on maintaining the cable and power unit well.

6. Operate the AN-10 gun only from a primary voltage source with a grounded conductor connected to a true earth ground, such as the protective ground terminal on the field wiring terminals. Make a second ground connection at the external ground terminal on the power supply chassis.

Installing the Fluid Fittings

WARNING: Use of fluid conductors other than approved tubes and iso-coils, or use of approved tubes and iso-coils not connected to ground, can cause sparking and possible fire or explosion. Failure to observe this warning may result in personal injury, death, or equipment damage.

WARNING: Using fittings other than those recommended can void the Factory Mutual (FM) certification of the AN-10 gun and can create a spark or ignition hazard.

Installing the Fluid Fittings
(contd.)

WARNING: Connect all electrically conductive components to a true earth ground. Failure to ground components can result in accumulated static electricity, which can discharge and start a fire.

Refer to the *Low Pressure Hoses and Connectors* manual for the AN-10 fitting specifications.

NOTE: Use a clean, dry cloth to wipe any contamination from the fittings and threads before installing them on the gun. Cleaning the fittings and threads prevents an electrically conductive path to ground.

NOTE: Conductive fluids used with the recommended fluid hoses and fittings must have a minimum resistivity of 4.5 megohm/cm; otherwise, the fluid can ground out the system.

To install the fluid fittings, see Figure 4 and use the following steps:

1. Loosen the fluid fitting and retainer nut (4).
2. Install the hose into the gun until the hose stops.
3. Install the fluid tube between the fluid supply hose and the fluid inlet (5) of the gun.

CAUTION: Do not overtighten the nylon fitting on the fluid hose. Overtightening can damage or strip the threads in the nylon head of the gun.

NOTE: All fluid connections that use a tapered thread must have 3–4 wraps of PTFE tape. Wrap the tape away from the end of the fitting. The tape will tighten as you install the fitting, providing additional electrical insulation.

4. Tighten the retainer nut and the fluid fitting (4).
5. Connect the fluid tube bracket to a suitable earth ground.

Installing the Air Connections

CAUTION: Failure to observe the information in this procedure can result in equipment damage.

Dirty, moist air can seriously reduce the efficiency of the AN-10 gun and can cause equipment damage. Refer to the *Specifications* section of this manual for air quality requirements.

If the air is commercially clean (sufficiently free of moisture and oil to prevent detrimental effects on an air electrostatic system), then additional air quality devices are not required in the air supply lines.

If the air is not commercially clean, use an air dryer with a capacity of 11.79 liter/second (25 scfm) in the air supply line ahead of the AN-10 gun.

To install the air connections, see Figure 5 and use the following steps:

1. To the atomizing and horn air inlet (2), install an air line filter of 0.95-cm (0.375-in.) ID for filtered, dry, and regulated air.

2. Install a regulated, trigger air line to the air cylinder, quick-exhaust valve (1) located on the side of the gun with the Nordson tag.

NOTE: The trigger is factory preset between 3.4 and 4.1 bar (50 and 60 psi), and should not require adjustment during initial installation.

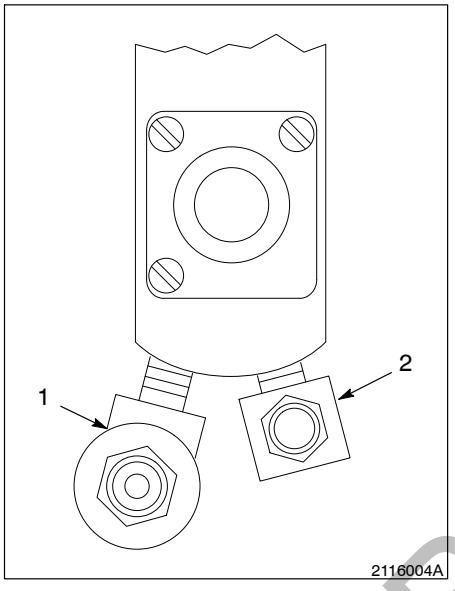

Fig. 5 Factory-assembled air connections

1. Quick-exhaust valve
2. Atomizing and horn air inlet (factory-assembled)

Securing the Hoses and Gun

CAUTION: Do not use a nylon tie wrap to bundle the electrostatic cable. Nylon tie wraps can cause the cable to flex incorrectly and cause mechanical cable damage.

To secure the hoses and gun, use the following steps:

1. Use a Velcro strap or similar tying device to secure the fluid hose, air hose, and electrostatic cable into a bundle, and then secure the bundle to a solid object near the gun. Allow the bundle to flex without pulling to minimize the strain on the hoses during gun movement.
2. Ground any metal fittings to a suitable earth ground and keep them as far away from the electrode of the AN-10 gun as possible.
3. To keep the gun, hoses, and other equipment in the spray area clean, cover them with the static dissipative wrap recommended by Nordson Corporation.

Installing the Split Air Conversion

To obtain better operation and results for some applications, such as those requiring a very fine finish, use separate air regulators for atomizing air and horn air.

Install the split air conversion if you require separate control of atomizing and horn air. See Figure 6 and use the following steps:

1. Use a $^{1}/_{4}$-in. allen wrench to remove the $^{1}/_{4}$-in. NPT plug (1) from the bottom of the AN-10 gun.
2. Locate the $^{1}/_{16}$-in. NPT plug in the bag containing the Nordson wrench and brushes.
3. Use a long $^{5}/_{32}$-in. allen wrench to install a $^{1}/_{16}$-in. NPT plug (2) through the $^{1}/_{4}$-in. port and into the passage inside the gun body.

   NOTE: The $^{1}/_{16}$-in. port is visible through the $^{1}/_{4}$-in. NPT port. The $^{1}/_{16}$-in. NPT plug splits the atomizing air and horn air inside the gun body.
4. Install the $^{1}/_{4}$-in. NPT plug (1) into the bottom of the AN-10 gun.
5. Use a $^{3}/_{16}$-in. allen wrench to remove the $^{1}/_{8}$-in. NPT plug (3) from the left side of the AN-10 gun body.

Installing the Split Air Conversion (contd.)

6. Install a $^1/_8$-in. NPT elbow with a 0.95-cm (0.375-in.) OD and an air line from the horn air regulator to the $^1/_8$-in. NPT port (3) on the side of the gun.

7. Set the atomizing air to 1.03 bar (15 psi) and set the horn air to the minimum pressure required to shape your pattern.

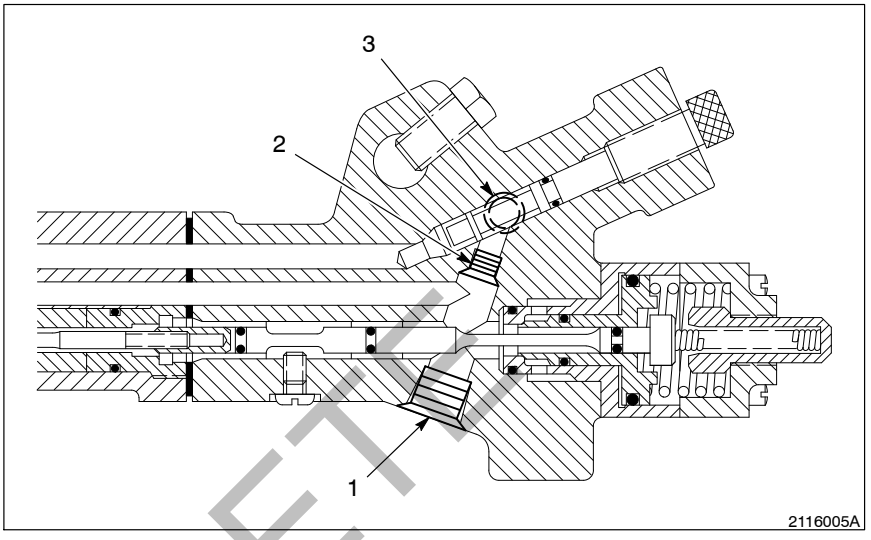

Fig. 6 Separating atomizing and horn air

1. $^1/_4$-in. NPT plug
2. $^1/_{16}$-in. NPT plug
3. $^1/_8$-in. NPT plug

Installing a New Extension Resistor Kit and Cable

CAUTION: Apply dielectric grease to the gun. Without dielectric grease installed, the resistor cable or gun extension can fail due to arcing or high-voltage, corona burn-through.

NOTE: New AN-10 guns are factory-assembled with the insulating tube, resistor, and dielectric grease installed in the gun. The resistor service kit includes dielectric grease.

If you are performing an initial installation of the AN-10 gun, refer to *Installing the Electrostatic Cable* in this section.

If you are installing a new cable or a new resistor service kit into a previously installed AN-10 gun, refer to *Replacing the Extension Resistor Service Kit and Cable* in this manual.

4. Troubleshooting

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

NOTE: When troubleshooting the power supply, refer to your power supply manual.

This section contains troubleshooting procedures that cover only the most common problems. If you cannot solve the problem with the information given here, contact your Nordson Corporation representative for help.

Mechanical Problems

Table 3 provides troubleshooting procedures for correcting mechanical problems. If multiple causes exist, the table lists those problems in the order of importance.

Table 3 Mechanical Problems with the AN-10 Gun

Problem	Possible Cause	Corrective Action
1. Gun spitting when triggered	Improperly adjusted needle pull rod	Adjust needle pull rod. Refer to trigger adjustment instructions in the *Repair* section of this manual.
2. Coarse spray	Atomizing air pressure too low for fluid flow	Decrease fluid flow. Increase air pressure. Use correct air cap and fluid tip. Increase atomizing air pressure.
	Viscosity too high for atomizing air pressure	Reduce viscosity by either adding solvent or increasing fluid temperature.
	Obstructed atomizing air orifice	Clean air cap and exterior surface of fluid tip.

Problem	Possible Cause	Corrective Action
	Damaged fluid tip or air cap	Inspect fluid tip and air cap, and replace if necessary.
	Obstructed fluid tip	Remove and clean fluid tip.
	Damaged electrode assembly	Repair or replace electrode assembly.
	Solvent evaporates too quickly	Use slower evaporating solvent. Contact your material supplier.
3. Excessive overspray	Atomizing air pressure too high	Reduce atomizing air pressure.
4. Gun sputtering	Air bubbles in coating material; excessive agitation in tank; air leak in pressure-pot, siphon tube (if used); leak in air purge valve of color change system; loose fluid tip	Remove air from fluid system, tighten loose parts, and replace worn or damaged parts.
5. Fluid leaking around connecting rod or air cylinder area	Damaged packing cartridge or O-rings	Disassemble and inspect parts. Replace parts if required.

Electrostatic Problems

CAUTION: Perform all resistance readings with the electrical power source turned off. Using an ohmmeter with the power turned on can cause instrument damage.

Table 4 provides steps for troubleshooting electrostatic problems. For complete information about electrostatic problems, refer to the *Electrostatic System Checks* manual.

Table 4 Electrostatic Problems

If you have an . . .	and . .	then . . .
Open circuit with microamp reading more than 50 microamps above normal, or erratic microamp readings	system shorted to ground through fluid circuit	1. Drain fluid circuit. If condition continues, go to step 2.
	defective electrostatic cable	2. Check electrostatic cable to the AN-10 gun and to the power supply using a Nordson kV meter (follow instructions provided with the meter).
	power supply problem	3. Check electrostatic cable to the AN-10 gun and to the power supply using a Nordson kV meter (follow instructions provided with the meter).
Open circuit with slightly elevated microamp reading (less than 50 microamps above normal)	change in fluid characteristics	If part coverage is correct, check paint formulation.
	power supply setting is higher than normal	Adjust power supply setting.
Microamp reading is below normal	power supply setting lower than normal	Adjust power supply setting.
	open circuit	Check electrostatic cable to the AN-10 gun and to the power supply using a Nordson kV meter (follow instructions provided with the meter).

5. Repair

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

WARNING: Only use Nordson Corporation parts. Using parts other than those recommended can result in personal injury or death from fire or explosion.

CAUTION: Follow disassembly and assembly steps in order. Performing these steps out of sequence can cause damage to the internal parts of the gun.

CAUTION: Do not overtighten the hose fittings on the gun. Overtightening can damage or strip the threads in the nylon head of the gun.

Applying Dielectric Grease

Follow these instructions to apply dielectric grease to the cable bore of the gun. See Figure 7.

CAUTION: After disassembling the gun or removing the cable from the gun, always apply dielectric grease into the cable bore of the gun. If you do not apply dielectric grease, the resistor cable or gun extension can prematurely fail due to arcing or high-voltage, corona burn-through. When correctly applied, dielectric grease prevents coronal discharge and arcing around the contact points of the resistor, spring, and cable end.

NOTE: Begin at step 2 if you completely disassembled the gun for repairs or cleaning.

1. After removing the electrostatic cable to test the voltage or resistance of the gun, do the following:

   a. Do not disassemble the gun any further.

   b. Work through the cable adapter at the end of the gun.

2. Clean as much dielectric grease from the insulating tube as possible. Use a round brush to clean the grease from the tube.

3. Warm a syringe of dielectric grease to about 37–43 °C (98–110 °F) by holding it in your hands or running the syringe under warm water.

Applying Dielectric Grease
(contd.)

4. Insert the flexible tube on the end of the syringe into the insulating tube located inside the cable adapter.

   NOTE: The end of the cable acts as a piston in the insulating tube, pushing the dielectric grease around the resistor and spring, and around the exterior of the tube. This totally covers the high-voltage contact points inside the gun with dielectric grease.

   NOTE: Do not allow any air pockets in the dielectric grease of the AN-10 waterborne gun.

5. Apply about 8 cc of warmed grease into the insulating tube.

   NOTE: Make sure to apply the full 8 cc of dielectric grease to the waterborne AN-10 gun.

6. Install the cable.

   a. If you apply too much grease in the cable bore, you will not be able to install the cable completely into the gun. If this happens, remove the cable and wipe some of the grease away with a clean, dry cloth, and then try to install the cable again.

   b. If you still cannot completely install the cable, continue to remove the cable and wipe grease away until you are able to completely install the cable into the gun.

7. Tighten the cable connecting nut.

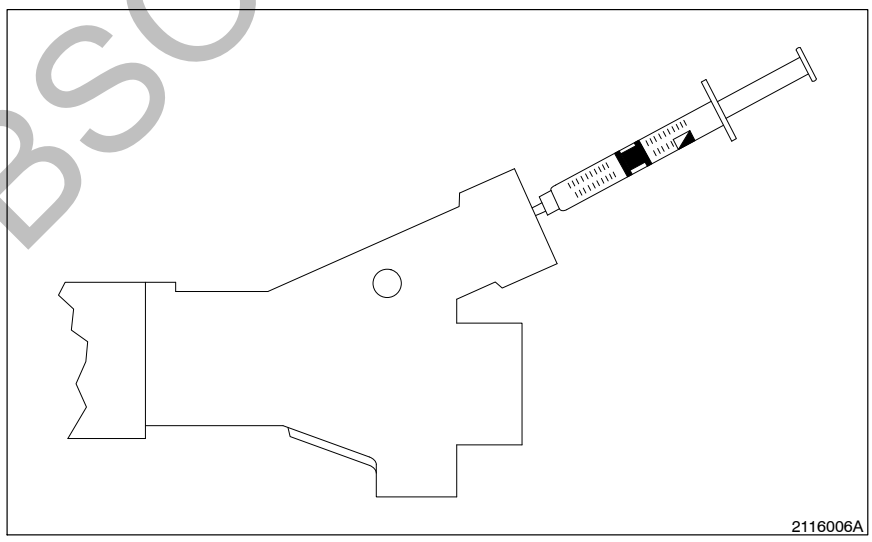

Fig. 7 Applying the dielectric grease to the AN-10 gun

Disassembling the AN-10 Gun

Follow these steps, in order, to disassemble the AN-10 gun for cleaning or repairs. See Figure 11 in the *Parts* section to locate the parts referenced in this procedure.

1. Turn off all electrostatic power to the gun.
2. Relieve all fluid and air pressure to the gun.
3. If the gun is mounted on a mover, turn off the power from the mover to the gun.
4. Unscrew the air hose(s), fluid hose, and electrostatic cable from their fittings.
5. Remove the gun from its mount or mover, and move the gun away from the spray area.
6. Unscrew the retaining ring (36) and remove the air cap (39) from the gun.
7. Use the Nordson wrench (40) to remove the fluid tip from the end of the gun.
8. Remove the resistor tip with the holder (35).
9. Remove the diffuser ring (37), if installed.
10. Remove the anti-pivot screw (22).
11. Remove the three slotted screws (1), air cylinder cover (2), and springs (4 and 5).
12. Note the orientation of the slots on the connecting rod (8) screw. You must install the screw with the same orientation during gun assembly. Remove the screw and the connecting rod.
13. Remove the air cylinder (13) by grasping the cylinder and pulling it straight out of the gun.
14. Gently push the end of the connecting rod (8) at an angle through the small end of the air cylinder (13). Use the connecting rod to push the air piston (10) out of the cylinder.
15. Remove the two screws (33) that hold the extension (32) to the gun body (16).

Disassembling the AN-10 Gun
(contd.)

CAUTION: Do not allow any coating material or solvent from the coating passage to enter the electrical passage as you pull the extension away from the gun body. Coating material or solvent can cause the electrical components in the gun to fail prematurely. Hold the extension lower than the gun body when removing the extension to prevent coating material or solvent from entering the electrical passage.

16. Holding the extension end lower than the gun body, carefully pull the extension (32) forward away from the gun body (16).

17. Remove the insulating tube (6), which contains the resistor and the seal gasket (21).

18. Now you can replace the resistor service kit or the electrostatic cable. Refer to the corresponding procedures in this section.

    NOTE: If you are not replacing the resistor service kit or the electrostatic cable, continue disassembling the gun (steps 19–20).

19. Insert the forks of the Nordson wrench (40) into the slots on the packing cartridge retainer (28). Use the wrench to unscrew and remove the retainer.

20. Install the connecting rod (8) on the end of the packing cartridge (31). Use the connecting rod to pull the packing cartridge from the gun extension (32). Remove the connecting rod from the packing cartridge.

Replacing the Extension Resistor Service Kit and Cable

See Figure 8. Use this procedure to install a new electrostatic cable and resistor service kit, or to replace the resistor kit and continue to use the existing electrostatic cable.

NOTE: The resistor service kit contains a new resistor (2) and insulating tube (4). Refer to the *Parts* section and see Figure 8. A resistor kit is provided with each new cable. When replacing a cable, also replace the resistor kit since a damaged resistor often causes cable failure.

1. Disassemble the AN-10 gun. Refer to *Disassembling the AN-10 Gun* in this section.

2. Clean the old dielectric grease from the high-voltage bore with a clean cloth and a round brush. Clean as much grease out of the bore as possible.

Replacing the Extension Resistor Service Kit and Cable (contd.)

NOTE: The resistor service kit contains the resistor (2) and dielectric grease (3) installed in the insulating tube (4). The resistor is factory-installed, spring-end first, into the insulating tube. See Figure 8.

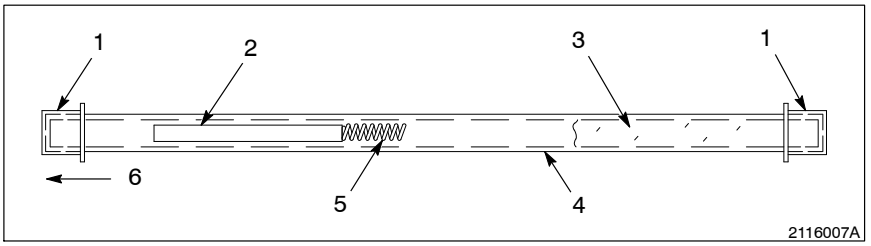

Fig. 8 Resistor service kit

1. Caps
2. Resistor
3. Dielectric grease
4. Insulating tube
5. Spring
6. End inserted into extension (high-voltage bore)

3. Follow this procedure to install the resistor service kit into the high-voltage bore of the gun:

   a. Remove the plastic caps (1) from each end of the insulating tube (4).

   b. Install the resistor end (6) of the insulating tube (4) into the high-voltage bore of the extension. (The end of the insulating tube containing the dielectric grease (3) should go into the bore last.) The insulating tube will protrude from the end of the gun about 10.16 cm (4 in.).

4. Assemble the AN-10 gun. Refer to *Assembling the AN-10 Gun* in this section.

5. Install the electrostatic cable on the gun.

   NOTE: The end of the cable acts as a piston in the insulating tube, pushing the dielectric grease around the resistor and spring, and around the exterior of the tube. This totally covers the high-voltage contact points inside the gun with dielectric grease.

   NOTE: Do not allow any air pockets in the dielectric grease of the AN-10 waterborne gun.

6. Tighten the cable connecting nut.

Replacing the Resistor Only

See Figure 8. Use this procedure to install a new resistor only, and continue to use the existing electrostatic cable.

1. Disassemble the AN-10 gun. Refer to *Disassembling the AN-10 Gun* in this section.

2. Clean the old dielectric grease from the high-voltage bore with a clean cloth and a round brush. Clean as much grease out of the bore as possible.

CAUTION: Do not handle the resistor with your bare hands. Salts and oils from your skin can conduct electricity and can cause arcing along the resistor. Arcing can destroy the extension and the resistor. Handle the resistor using a piece of plastic or a clean, dry cloth.

3. Install the resistor (2), spring-end first, into the insulating tube (4).

4. Install the greased insulating tube (4), resistor-end (6) first, into the high-voltage bore. (The end of the insulating tube containing the dielectric grease (3) should go into the bore last.)

5. Assemble the AN-10 gun. Refer to *Assembling the AN-10 Gun* in this section.

6. Install the electrostatic cable on the gun.

   NOTE: The end of the cable acts as a piston in the insulating tube, pushing the dielectric grease around the resistor and spring, and around the exterior of the tube. This totally covers the high-voltage contact points inside the gun with dielectric grease.

   NOTE: Do not allow any air pockets in the dielectric grease of the AN-10 waterborne gun.

7. Tighten the cable connecting nut.

Replacing Parts and Cleaning the Gun

See Figure 11 in the *Parts* section to locate the parts referenced in this procedure.

After disassembling the gun to replace the resistor service kit and electrostatic cable, continue with the steps provided here to clean the AN-10 gun.

CAUTION: Keep the packing cartridge clean and free of burn holes or cracks; otherwise, high-voltage breakdown can occur and damage the equipment.

1. Inspect the packing cartridge (31) carefully for burn holes or cracks. Install a new packing cartridge if you see any signs of wear or damage.

2. Inspect the pinhole in the stem of the air piston (10) for clogs. Carefully clean any coating material from the pinhole. This hole allows a small amount of air to leak through the atomizing air passages.

3. Inspect all the gun parts for signs of wear or arcing, and replace the parts if required.

4. Clean the AN-10 gun and replace the O-rings, as follows:

   a. Lubricate new O-rings with O-ring lubricant, and then replace all the O-rings in the gun.

   CAUTION: Do not use metal tools to clean the air cap or fluid tip. Metal tools can damage the precisely drilled holes and distort the fan pattern.

   b. Clean the gun parts with a compatible cleaning solution. Use a soft bristle brush that is compatible with the cleaning solution, or use a wooden toothpick to clean the fluid tip (38) and air cap (39).

   c. Thoroughly dry all the parts before assembling the AN-10 gun.

5. Discard all damaged or worn parts. Do not attempt to re-use these parts.

NOTE: Always apply dielectric grease into the high-voltage bore of the gun after disassembling or repairing the gun, or after removing the cable from the gun. Refer to *Applying Dielectric Grease* in this section.

Assembling the AN-10 Gun

See Figure 11 in the *Parts* section to locate the parts referenced in this procedure. After you replace any necessary parts and perform cleaning procedures for the AN-10 gun, use this procedure to complete the assembly of the gun.

1. Install the packing cartridge (31) and the gasket end of the spacer (30) into the gun extension (32).

2. Install and tighten the packing cartridge retainer (28) using the Nordson wrench (40). Use the flat side of the wrench to ensure that the back of the retainer (28) does not protrude beyond the back of the gun extension (32).

3. If you did not replace the insulating tube, install the insulating tube (6), resistor-end first, into the gun extension (32).

4. Install the resistor tip (35) into the fluid tip (38)

CAUTION: Securely tighten the fluid tip on the gun extension or it will leak fluid into the air passages, causing the charge to ground out through the gun body.

5. Install the diffuser ring (37) and fluid tip (38) on the gun using the Nordson wrench (40). Tighten the fluid tip hand-tight, and then tighten further with a one-quarter to one-half turn of the wrench.

6. Install the air cap (39) and the retaining ring (36).

NOTE: Do not kink the insulating tube (6) by pressing too hard when you replace the gun extension (32). Evenly applying pressure to the extension while you screw it onto the gun body will ease the insulating tube into the high-voltage bore without kinking it.

7. Hold the gun so that the gun end rests on the bench (with the gun extension at the top).

8. Install the gun extension (32) onto the gun body (16). Loosely install both screws (33), then tighten each screw to secure the gun extension (32) to the gun body (16).

9. Install new O-rings (11 and 12) onto the air piston (10).

10. Install the O-ring (14) on the air cylinder (13), and then install the air piston (10) into the air cylinder (13).

11. Verify that the holes on the air cylinder gasket (15) align with the corresponding holes in the air cylinder (13), and then install the gasket.

Assembling the AN-10 Gun
(contd.)

12. Install the air cylinder (13) and air piston (10) onto the gun body (16).

13. Install the connecting rod (8) through the air cylinder (13) and air piston (10).

14. Tighten the connecting rod (8) to secure it to the end of the packing cartridge (31).

15. To ensure that it secures the anti-pivot screw, install the connecting rod screw using the same orientation as before its removal.

NOTE: To adjust the trigger, you must also adjust the air piston (10), connecting rod (8), packing cartridge (31), and fluid needle so air reaches the fluid tip (35) before the fluid does; otherwise, poor initial atomization will result.

16. Adjust the trigger, as follows:

a. See Figure 9. Place a straight edge, such as the side of the Nordson wrench, across the back of the air cylinder to check the alignment of the connecting rod.

b. See Figure 11. Work through the air cylinder (13) to unscrew the connecting rod (8) until it aligns flush with, or just below, the straight edge.

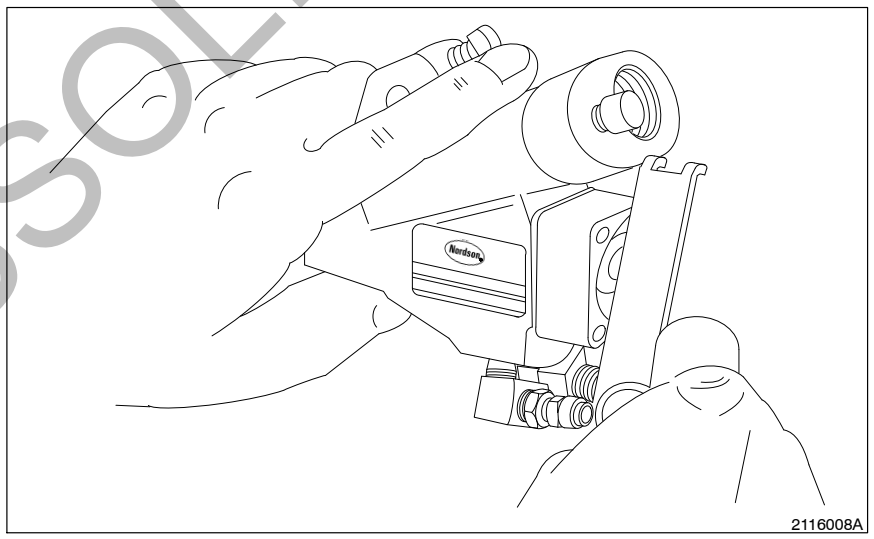

Fig. 9 Aligning the connecting rod for trigger adjustment

Assembling the AN-10 Gun
(contd.)

17. Install the rod retainer (3), and then secure it with the screws provided.

18. Replace the connecting rod spring (5) and the air piston spring (4).

19. Open the adjustable stop, located on the air cylinder cover (2), as far as it will go.

20. Install the air cylinder cover (2), as follows:

    a. Align the holes in the air cylinder (13) with the holes in the air cylinder cover (2).

    b. See Figure 10 for the best hand position to use to hold the gun as you replace the air cylinder cover.

       NOTE: To simplify the air cylinder replacement and prevent mis-threading of any one screw, start each screw in its thread before completely installing any of the screws.

    c. See Figure 11. Use sufficient pressure to hold the air cylinder cover (2) while you secure it with the three screws (1).

NOTE: For guns with the split air conversion installed, the needle threads of the air valve (19) should protrude about 0.64 cm (0.25 in.) above the gun body (16).

Assembling the AN-10 Gun
(contd.)

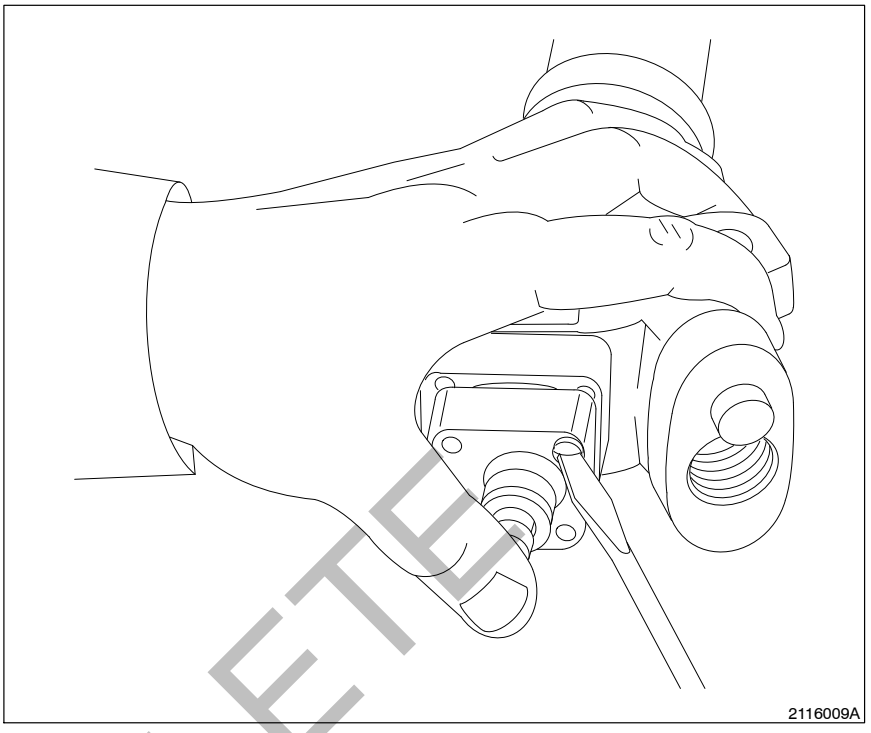

Fig. 10 Replacing the air cylinder cover

21. Mount the gun to its mover or bracket.

22. Install all the air and fluid lines to the gun fittings.

23. Install the electrostatic cables.

24. Tighten the cable connecting nut.

25. Restore the fluid and air pressures to operating levels.

    NOTE: The AN-10 gun will leak air through the fluid tip even when it is not triggered. This helps clean residual coating material from the fluid tip.

26. With the electrostatic power supply turned off, test the spray for correct operation and for leaks. If necessary, correct any leaks.

27. Turn all power on and return the system to operation.

6. Parts

To order parts, call the Nordson Customer Service Center or your local Nordson representative. Use this five-column parts list, and the accompanying illustration, to describe and locate 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 six-digit 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
—	000 000	Assembly	1	
1	000 000	• Subassembly	2	A
2	000 000	• • 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.

AN-10 Gun Parts

See Figure 11.

Item	Part	Part	Description	Quantity	Note
—	249 048	—	Gun, electrostatic air spray, automatic, AN-10	1	
—	—	126 687	Gun, AN-10, special, for waterborne	1	
1	981 094	981 094	• Screw, fillister head, #8-32 x 1.750, sl, zn	3	
2	241 099	241 099	• Cover, air cylinder	1	
3	249 035	249 035	• Retainer, spring	1	
4	241 176	241 176	• Spring, helical compression, 1.240 x 1.093 OD x 0.094	1	
5	240 552	240 552	• Spring, helical compression, 2.280 x 0.255 OD x 0.040	1	
6	249 037	249 037	• Tube, insulating, AN-10 gun	1	A
7	935 000	935 000	• Resistor, 75 megohm	1	A
NS	- - - - - -	- - - - - -	• Grease, dielectric	AR	A, B
8	249 041	249 041	• Rod, connecting	1	
9	940 063	940 063	• O-ring, Viton, 0.125 x 0.250 x 0.063	3	
10	243 975	243 975	• Piston, air	1	
11	941 210	941 210	• O-ring, Viton, 1.063 x 1.250 x 0.063	1	
12	940 125	940 125	• O-ring, Viton, 0.375 x 0.500 x 0.063	1	
13	243 974	243 974	• Cylinder, air	1	
14	940 150	940 150	• O-ring, hotpaint, 0.563 x 0.688 x 0.063	1	
15	240 145	240 145	• Gasket, air cylinder	1	

NOTE A: These parts are also part of the AN-10 Resistor Service Kit, part 106 423.

B: The AN-10 waterborne gun uses an increased amount of dielectric grease in the cable bore. Refer to the *Installation* section for more information.

AR: As Required

NS: Not Shown

Continued on next page

***AN-10 Gun Parts** (contd.)*

Item	Part	Part	Description	Quantity	Note
16	- - - - - -	- - - - - -	• Gun body	1	
17	240 491	240 491	• Needle, air valve	1	
18	940 180	940 180	• O-ring, hotpaint, 0.188 x 0.313 x 0.063	1	
19	981 405	981 405	• Screw, square head, $^3/_8$-16 x 0.75, cup, zn	1	
20	973 402	973 402	• Plug, pipe, socket, flush, $^1/_8$-in., zn	1	
21	249 033	249 033	• Gasket, seal, AN-10	1	A
22	249 034	249 034	• Screw, anti pivot, #10-32 x 0.44	1	
23	901 262	901 262	• Valve, exhaust	1	
NS	973 000	973 000	• Nipple, steel, schedule 40, 0.125 x 0.75	1	
24	973 411	973 411	• Plug, pipe, socket, flush, $^1/_4$-in., zn	1	
25	973 403	973 403	• Plug, pipe, flush, $^1/_{16}$-in. socket, zn	1	
26	972 716	972 716	• Connector, male, $^1/_4$-in. tube x $^1/_8$-in. NPT, brass	1	
27	973 157	973 157	• Elbow, pipe, $^1/_4$-in. brass	1	
NS	971 265	972 556	• Connector, male, $^1/_4$ NPT x $^1/_4$ NPSM	1	
28	244 740	244 740	• Retainer, packing cartridge	1	
29	940 140	940 140	• O-ring, hotpaint, 0.500 x 0.625 x 0.063	1	
30	249 049	249 049	• Spacer, packing cartridge	1	

NOTE A: These parts are also part of the AN-10 Resistor Service Kit, part 106 423.

NS: Not Shown

Continued on next page

AN-10 Gun Parts *(contd.)*

Item	Part	Part	Description	Quantity	Note
31	249 040	249 040	• Cartridge, packing	1	
32	249 039	249 039	• Extension, head, AN-10	1	
33	981 155	981 155	• Screw, fillister head, #10-24 x 0.750, sl, zn	2	
NS		248 230	• Elbow, 0.188 ID x 0.375 OD tube	1	
34	246 776	246 776	• Plug	1	
35	249 038	249 038	• Resistor tip, with holder	1	
36	244 971	244 971	• Ring, retaining	1	
37	- - - - - -	- - - - - -	• Ring, diffuser	1	C
38	- - - - - -	- - - - - -	• Tip, fluid	1	C
39	- - - - - -	- - - - - -	• Cap, air	1	C
40	244 752	244 752	• Wrench, air spray, electrostatic	1	
NS	156 077	156 077	• Spring, compression, 0.875 x 0.300 x 0.035	1	
NS	901 905	901 905	• Brush	1	D
NS	901 907	901 907	• Brush, bristle, nylon	1	D
NS	981 012	981 012	• Screw, round, self tapping, 2-32 x 0.187, zn	6	
NS	981 022	981 022	• Screw, fillister head, 6-32 x 0.375, sl, zn	1	

NOTE C: These parts are optional and must be ordered separately. Contact your Nordson representative for ordering information and assistance.

D: These parts are shipped with the AN-10 gun.

NS: Not Shown

AN-10 Gun Parts *(contd.)*

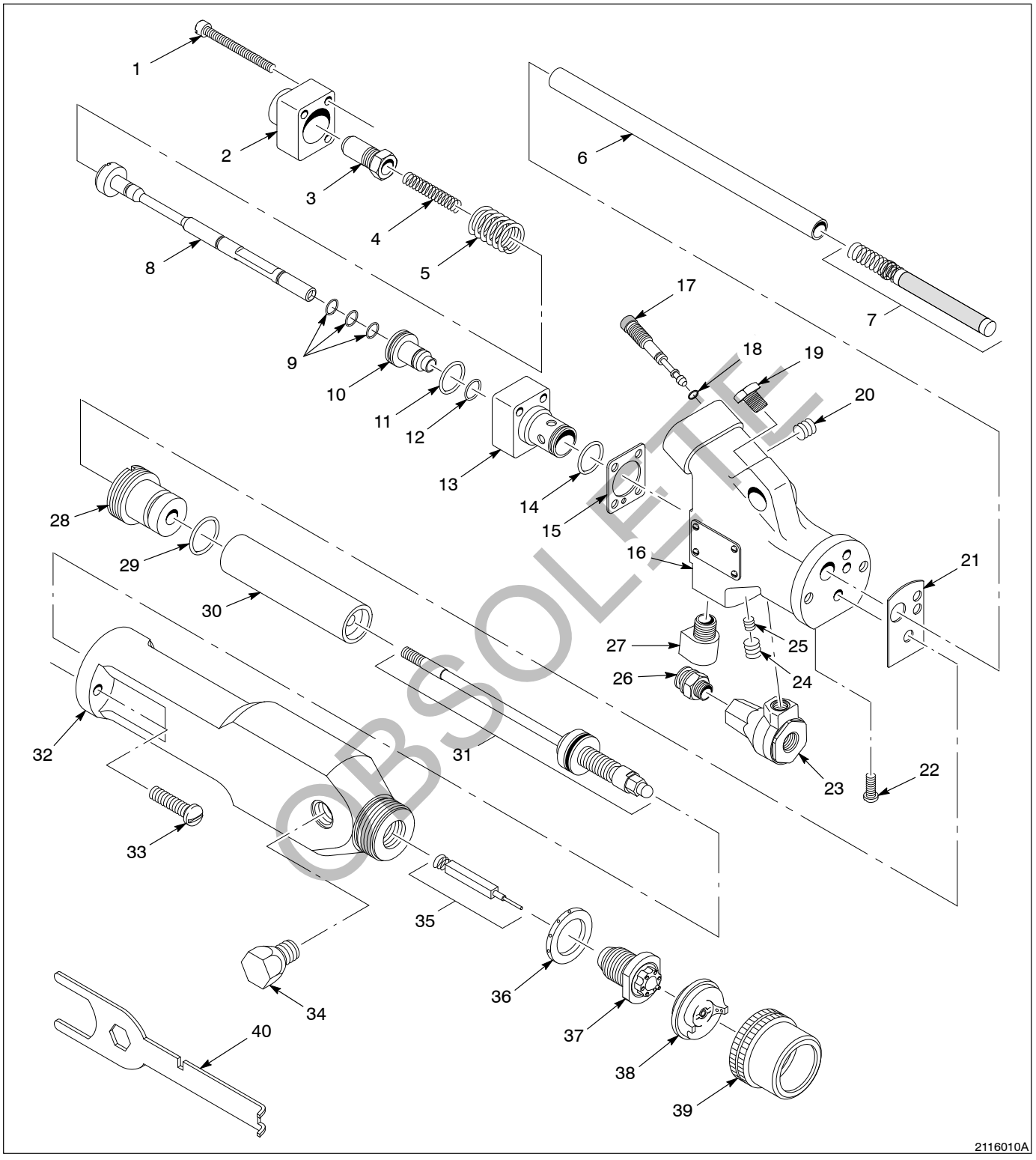

Fig. 11 AN-10 gun (exploded view)

Resistor Service Kit

See Figure 11.

Item	Part	Description	Quantity	Note
—	106 423	Service kit, resistor, AN-10 gun	1	
6	249 037	• Tube, insulating	1	
7	935 000	• Resistor, 75 megohm	1	
21	249 033	• Gasket, seal, AN-10 gun	1	
NS	156 077	• Spring, helical compression, 0.875 x 0.300 OD x 0.035	1	
NS	981 022	• Screw, fillister head, #6-32 x 0.375, sl, zn	1	
NS	- - - - - -	• Grease, dielectric	AR	A

NOTE A: The dielectric grease in the insulating tube of the AN-10 waterborne gun must not have any air pockets after installation. Refer to the *Installation* section for more information.

AR: As Required

NS: Not Shown

Recommended Spare Parts

See Figure 11.

Item	Part	Description	Quantity	Note
35	249 038	Resistor tip, with holder	1	
31	249 040	Cartridge, packing	1	
30	249 049	Spacer, packing cartridge	1	
NS	249 102	Spacer, with packing cartridge	1	

NS: Not Shown

AN-10 Gun Extension Replacement Kit

See Figure 11.

Item	Part	Description	Quantity	Note
NS	249 102	Extension kit, with packing cartridge	1	
28	244 740	• Retainer, packing cartridge	1	
21	249 033	• Gasket, seal, AN-10 gun	1	
32	249 039	• Extension, head, AN-10 gun	1	
31	249 040	• Cartridge, packing	1	
30	249 049	• Spacer, packing cartridge	1	
29	940 140	• O-ring, hotpaint, 0.500 x 0.625 x 0.063	1	
NS: Not Shown				

Electrostatic Cables

Part	Description	Quantity
249 045	Cable, high-voltage, 8 m (25 ft)	1
249 046	Cable, high-voltage, 12 m (37 ft)	1
249 047	Cable, high-voltage, 16 m (50 ft)	1

Cable Cleaning Service Kit

Part	Description	Quantity
106 455	Service kit, cable cleaning	1
- - - - - -	• Solvent, contact/circuit board	1
- - - - - -	• Brush	1

AN-10 Gun Accessories

Part	Description	Quantity
248 648	Tool, groove, $^1/_4$ OD tube	1
248 649	Tool, groove, $^3/_8$ OD tube	1
247 639	Applicator, dielectric grease, 10 cc, (12 per carton)	AR
246 752	Conversion kit, cable adapter, AN-10 gun to EPS-8	1
156 170	• Nut, swivel	1
- - - - - -	• Spacer, split	2
- - - - - -	• Adapter, cable	1
AR: As Required		

Optional Parts

The AN-10 gun can use several optional parts. The manuals listed below contain information about optional parts and equipment to use with the AN-10 gun.

Contact your Nordson Corporation representative for part numbers of high-dielectric-strength hoses and fittings to use with the AN-10 gun.

For information about:	Refer to:
Air caps and fluid tips	*Standard and Conical Air Spray Nozzles* manual
Fluid dump valve kit	*Fluid Dump Valve Kit* manual
Nylon fluid regulator	*Nylon Fluid Regulator* manual

7. Specifications

This section provides the specifications for the AN-10 gun.

Dimensions

Size (Overall)	Metric	USA
Height	12.7 cm	5 .0 in.
Length	38.4 cm	15.13 in.
Width	5.7 cm	2.25 in.
Weight	1.73 g	49.5 oz

Operating Pressures

Pressure	Metric, bar	USA, psi
Air		
Maximum working pressure	7.0	100
Optimum pressure (at gun)	1.4–2.1	20–30
Average operating pressure	1.1–2.8	15–40
Working pressure	0.0–7.0	0–100
Trigger (atomizing) air	3.5–4.2	50–60
Horn (pattern) air	3.5–4.2	50–60
Fluid		
Max. working pressure	5.3	75
Optimum pressure (at gun)	0.0–5.3	0–75
Maximum fluid flow	900 cc/min	30 fl oz/min
Optimum fluid flow	45–350 cc/min	1.5–12 fl oz/min

Electrical Ratings	Rated output voltage at gun tip	115 kV
	Rated output current at gun tip	200 microamps
Air Quality	Particulate free	5 microns
	Oil free	Coalescing filter
	Pressure dew point	<4.45 °C at 7.0 bar <40 °F at 100 psi
Fittings	Air inlet	$^1/_4$-in. NPT
	Fluid inlet	$^1/_4$-in. NPT