

# **EP Pumping System**

Customer Product Manual  
Part 107910K

Issued 4/04

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

This document is available on the Internet at <http://emanuals.nordson.com/finishing>

---



NORDSON CORPORATION • AMHERST, OHIO • USA

# Table of Contents

<b>Safety</b> .....	<b>1</b>	<b>Maintenance</b> .....	<b>24</b>
Qualified Personnel .....	1	Three-Piston Pump Oil Change .....	24
Intended Use .....	1	Gear Reducer Oil Change .....	25
Regulations and Approvals .....	1	Daily Maintenance Procedures .....	26
Personal Safety .....	2	Monthly Maintenance Procedures .....	26
High-Pressure Fluids .....	2	Annual Maintenance Procedures .....	26
Fire Safety .....	3	<b>Troubleshooting</b> .....	<b>27</b>
Halogenated Hydrocarbon Solvent Hazards ..	4	<b>Repair</b> .....	<b>29</b>
Action in the Event of a Malfunction .....	4	<b>Parts</b> .....	<b>31</b>
Disposal .....	4	Using the Illustrated Parts List .....	31
<b>Safety Labels</b> .....	<b>6</b>	EP Pumping System–US Version .....	32
<b>Description</b> .....	<b>8</b>	EP Pumping System–European Version .....	34
Theory of Operation .....	10	Hydraulic Sub-Assembly .....	36
Pump Operation .....	10	Accessory Group .....	38
Pumping System Operation .....	11	Options .....	38
<b>Installation</b> .....	<b>12</b>	PTFE High-Pressure Fluid Hose Assemblies ..	38
Mounting .....	12	Oil Change Kit .....	38
Left-Hand Installation .....	13	Manifold Assembly Pressure Gauge .....	38
Checking Oil Level .....	13	Inline Filter .....	39
Fluid Line Connections .....	14	<b>Specifications</b> .....	<b>39</b>
Guidelines .....	14	<b>Material Safety Data Sheet–EP1 Pump Oil</b> .....	<b>40</b>
Connections .....	14		
Electrical Connections .....	16		
Dedicated Spare Configurations .....	17		
<b>Operation</b> .....	<b>19</b>		
Daily Operation .....	19		
Pressure Relief Valve Adjustment .....	22		
Changing Coating Materials .....	23		
Shutdown .....	23		
Short-Term Shutdown .....	23		
Long-Term Shutdown .....	24		

## Contact Us

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

Address all correspondence to:

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

## Notice

This is a Nordson Corporation publication which is protected by copyright. Original copyright date 1992. No part of this document may be photocopied, reproduced, or translated to another language without the prior written consent of Nordson Corporation. The information contained in this publication is subject to change without notice.

## Trademarks

Nordson and the Nordson logo are registered trademarks of Nordson Corporation.

# EP Pumping System

## 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.





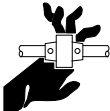


This page intentionally left blank.

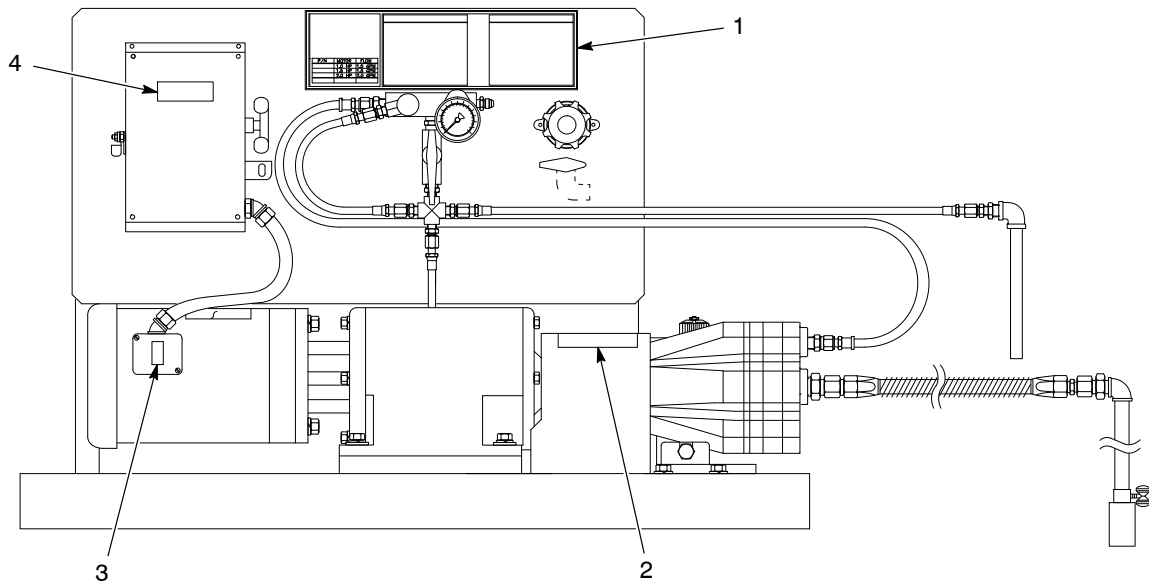
## Safety Labels

Table 1 contains the part number and description for each safety label on this equipment. Safety labels are provided to help you operate and maintain your equipment safely.

See Figures 1 and 2 for the location of each safety label.

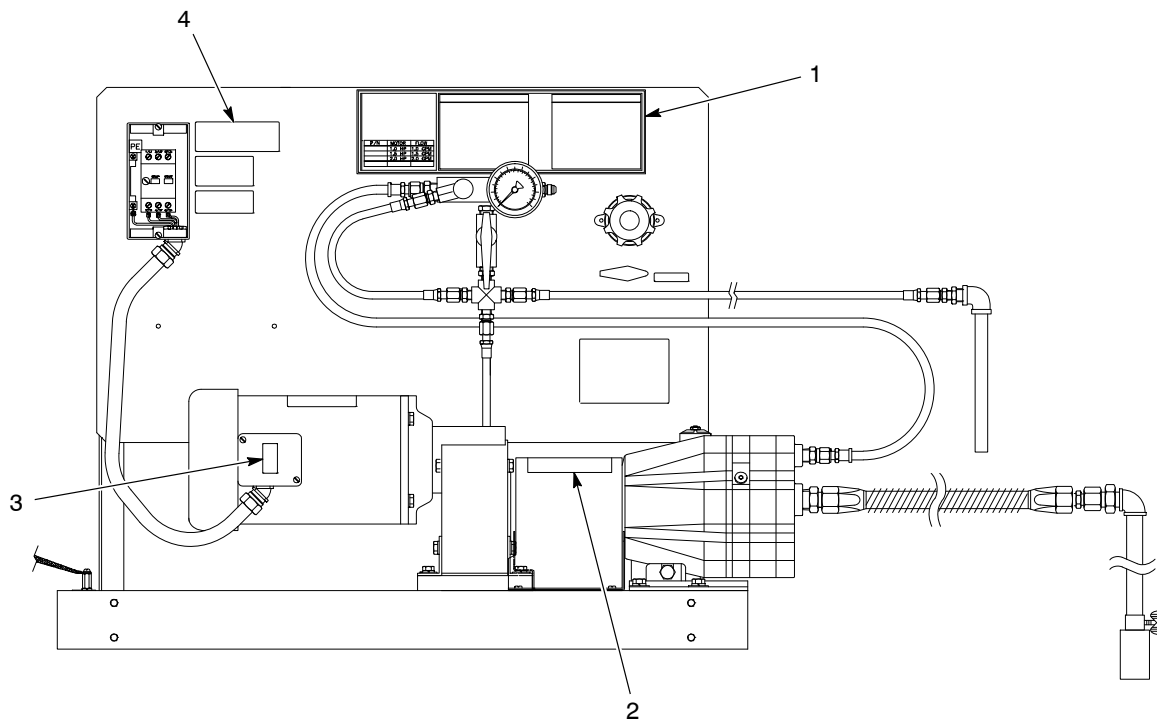
Table 1 Safety Labels

Item	Part	Description
1.	-----	 <p><b>WARNING</b></p> <ul style="list-style-type: none"> <li>• HIGH PRESSURE DEVICE</li> </ul> <p>Read instruction manual before operation and observe all warnings.</p>  <ul style="list-style-type: none"> <li>• INJECTION HAZARD</li> </ul> <p>Airless spray painting equipment can cause serious injury if the spray penetrates the skin. Do not point the gun at anyone or any part of the body. In case of penetration, adequate medical aid must be immediately obtained.</p>  <ul style="list-style-type: none"> <li>• COMPONENT RUPTURE</li> </ul> <p>This system is capable of producing 83 bar (1200 psi) pressure. To avoid rupture and injury, do not operate this pump at a pressure higher than the rated maximum working pressure of any component in the system (including but not limited to spray guns, hoses, hose connections and heaters).</p>  <ul style="list-style-type: none"> <li>• FIRE</li> </ul> <p>Static voltage is developed by airless spraying. The pump, associated system, and object being sprayed must be grounded to prevent static discharge sparks which could start a fire.</p> <ul style="list-style-type: none"> <li>• SERVICING</li> </ul> <p>Before servicing, cleaning, or removal of any part, set trigger lock on gun, and always shut off power source; then carefully release pressure in fluid portions of the system.</p>
2.	-----	 <p><b>WARNING</b></p> <p>Rotating shafts. Do not operate without shroud.</p>
3.	242867	 <p>Risk of electrical shock</p>
4.	-----	 <p><b>WARNING:</b></p> <p>Disconnect main power supply before removing this panel.</p>



1200084B

Figure 1 Safety Label Location (US Version)



1200085B

Figure 2 Safety Label Location (European Version)

## Description

**NOTE:** This manual covers US and European versions of this system. When differences are described, use the data for your version.

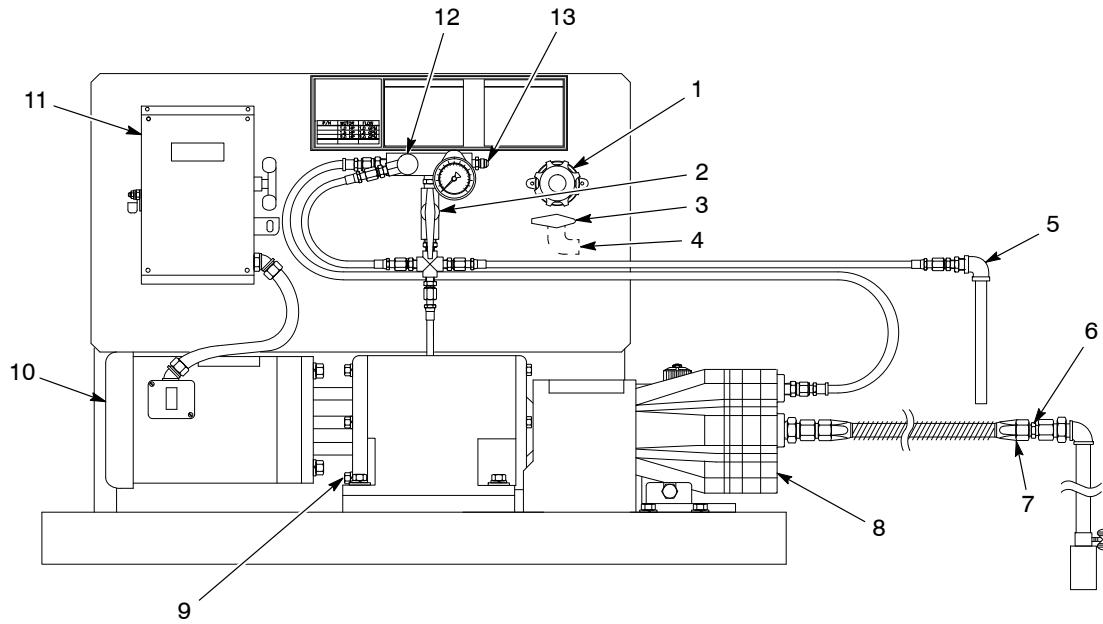
See Figures 3 and 4. The Nordson EP Pumping System is an electrically powered, positive-displacement, constant-delivery pumping system. The main component of the system is the EP Three Piston Pump, which is a dual-diaphragm rotary pump driven by a constant speed motor with a gear reducer unit.

**NOTE:** Refer to the *Three Piston Pump* manual for detailed information on this pump.

Table 2 describes the basic specifications for the system. Specifications are the same for both the US and European versions.

Table 2 EP Pumping System Specifications

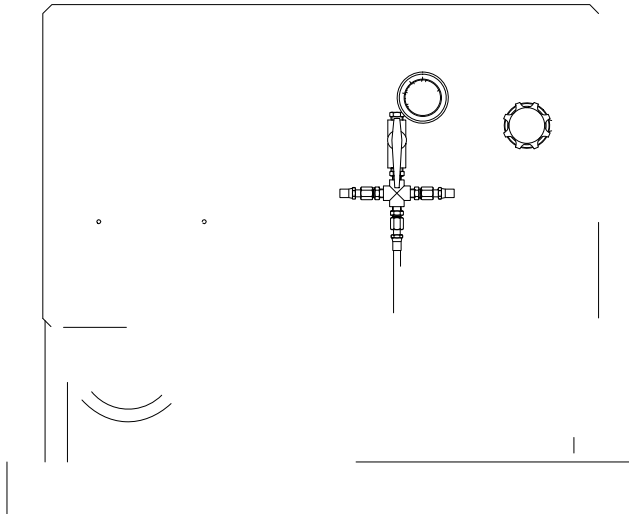
Output Volume	Output Pressure (Maximum)	Motor	Output Speed (Constant)
7.6 lpm (2.0 gpm)	83 bar (1,200 psi)	2.0 hp	400 rpm



1200086B

Figure 3 EP Pumping System–US version

- |                                 |                         |                           |
|---------------------------------|-------------------------|---------------------------|
| 1. Back pressure regulator      | 6. Connector            | 10. Motor                 |
| 2. Two-way ball valve (priming) | 7. Fluid inlet          | 11. Motor starter         |
| 3. Three-way ball valve         | 8. EP Three Piston Pump | 12. Pressure relief valve |
| 4. Return from spray machine    | 9. Gear reducer unit    | 13. Fluid outlet          |
| 5. Drain-off rod                |                         |                           |



1200087B

# DECLARATION of CONFORMITY

## PRODUCT:

EP Pump (Continuous Flow Electric Pump)  
For use with waterborne materials.

## APPLICABLE DIRECTIVES:

89/392/EEC (Machinery)  
73/23/EEC (Low Voltage Directive)  
89/336/EEC (Electromagnetic Compatibility Directive)

## STANDARDS USED TO VERIFY COMPLIANCE:

EN292                      EN60204  
EN294                      EN60034-1  
EN811

## PRINCIPLES:

This product has been manufactured according to good engineering practice.

---

The product specified conforms to the directive and standards described above.

## CERTIFICATIONS:

ISO 900 - DNV  
TUV License Number - T9679114.01



Mark Gacka  
Vice President, Container Business Group

Date: 17 November 97



Nordson Corporation • Westlake, Ohio

