Nordson EFD Solutions:

Recommendations for High Performance Dispensing in the Life Sciences Industry

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Introduction

The Life Sciences industry continues to be a growing market segment for EFD. Medical device manufacturers must meet stringent FDA and other agency regulations for quality and product consistency, making process control a critical issue.

EFD offers quality unmatched by any other dispensing equipment manufacturer.

All materials and manufacturing processes are documented for complete traceability and process validation, and all molding, machining, assembly and packaging are performed in our certified silicone-free facilities.

EFD's advanced fluid dispensing systems apply accurate, consistent amounts of UV-cure adhesives, cyanoacrylates, silicones, and other fluids used in medical device assembly processes.

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Automation for process uniformity

An EV robot dispensing UV material onto medical components.

Nordson EFD's range of automated dispensing systems are specifically designed and configured for precise fluid dispensing using EFD syringe barrel and valve systems.

Specialized DispenseMotion™ software and fully integrated vision and laser height sensing capabilities make EFD automated systems quick to set up and easy to program. True three-dimensional motion control allows easy programming of dots, lines, circles, arcs, compound arcs, and complex patterns on different planes.

The systems set up quickly and are easy to run, allowing more time for other projects while increasing product yield.

In addition, medical manufacturers can get automated quality control (QC) data, eliminating the need to purchase additional equipment, with OptiSure™ Automated Optical Inspection (AOI) software that integrates seamlessly with our automated dispensing systems.

Component bonding

UltimusPlus simplifies set up for catheter bonding applications while providing better process control for higher product quality.

Experience a new level of ease with Nordson EFD's UltimusPlus™ dispensers. Train operators in seconds with intuitive touchscreen control of dispensing parameters. Designed to simplify setup and operation, the UltimusPlus allows operators to focus on making accurate, controlled deposits. Plus, improve process control with full operator lockout of time, pressure, and vacuum settings.

Improve process documentation with the Dispense Log, which allows medical device manufacturers to record and download dispense data, such as dispense time, pressure, and vacuum. Each dispense record is date/time stamped and can be downloaded onto a CSV file via the USB port. This data can be used to identify trends and document the production process for quality control and regulatory purposes.

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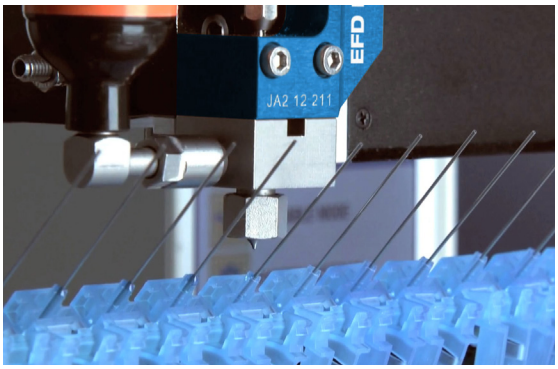
Precision non-contact dispensing

Jet adhesives with greater repeatability.

Micron (µm) level stroke adjustment allows users to fine-tune jetting performance for a wide range of applications.



A pneumatic jetting system, the Liquidyn® P-Jet valve applies micro-deposits as small as 3 nL.

Nordson EFD's PICO *Pµlse*® system is a non-contact jetting system capable of dispensing a wide variety of fluids at speeds of up to 1500 shots per second. By combining high speed with exceptional accuracy, the PICO *Pµlse* system allows medical products to be built more cost-effectively with consistently high quality.

For even higher levels of fluid dispensing precision and repeatability over longer periods of time, regardless of environmental factors, choose the PICO XP jetting system.

Applications include:

- Syringes
  - Lubricating interiors with silicone oil
  - Bonding needles with UV adhesive
- Endoscopes
  - Bonding lenses with optical adhesives
- Test strips
  - Jetting or dispensing protein solution
  - Insulin/blood sugar test strips
  - Veterinarian test strips
- Blood bags
  - Sealing bags with cyanoacrylate

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Aseptic dispensing

754V-SS valve filling contact lens packages with saline solution.

Nordson EFD's aseptic valves have been designed to accurately control the application of most low- to medium-viscosity fluids used in medical and biomedical dispensing applications. Typical applications include dispensing saline solutions to fill contact lens packages, filling lens molds with monomers, and vial filling. Machined from 316L stainless steel, the aseptic valves feature an easy-to-clean design that is suitable for CIP (clean-in-place) and SIP (sterilize-in-place) processes.

The 754V-SS aseptic dispense valve system accurately controls the application of most low to medium viscosity fluids. The sealless design incorporates an inert PTFE diaphragm that isolates the actuator from the valve.

High-pressure dispensing tool

HPx makes it easy to apply medical-grade adhesives.

The HP™ Series high-pressure dispensing tool was designed specifically to allow workers to apply small dots of extremely thick assembly fluids through small gauge tips. The HP Series multiplies dispensing pressure by a 7-to-1 ratio and a 4-to-1 ratio. For example: 6.9 bar (100 psi) of input produces 48.3 bar (700 psi) of air pressure inside a disposable 3cc reservoir within the unit. This allows fast, effortless dispensing of thick materials like medical-grade adhesives and RTVs, eliminating the risk of carpal tunnel syndrome. Also available for 5cc and 10cc syringes.

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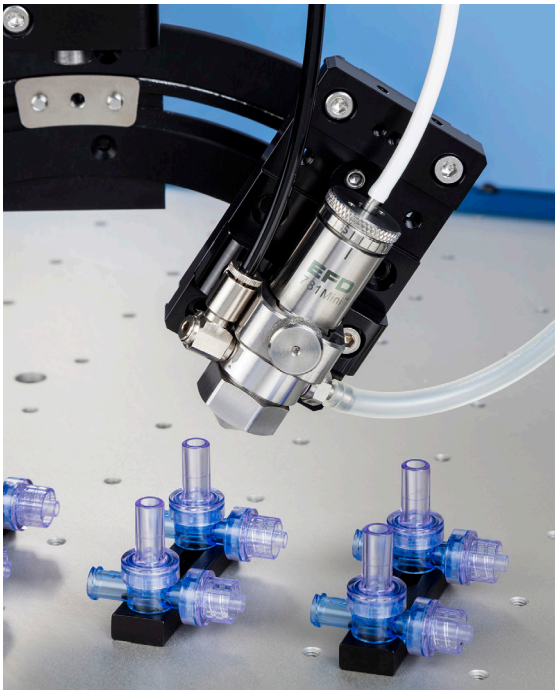
Coating applications



781Mini valves can be mounted at an angle to spray material onto delicate parts.

The 781S spray valve uses LVLP technology to apply a fine coating of silicone oil inside medical syringes.

EFD spray and MicroSpray™ valve systems consist of a precision spray valve that uses Low Volume Low Pressure (LVLP) air to apply a controlled fine coating without mist or overspray. The valve's high transfer efficiency and clean cutoff result in a dramatic reduction in fluid usage, while the unique non-clogging design reduces maintenance and downtime.

Typical applications for these valves include lubricating the interior of syringes with silicone, coating stents, dispensing protein solutions on membranes for test strips, and coating catheters and guide wires with hydrophilic coatings.

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Other semi-automated dispensing

The xQR41 MicroDot needle valve's smaller dimensions allow it to dispense in tighter spaces.

Pneumatically operated dispense valves from EFD are designed for low maintenance and outstanding reliability. They have no seals or O-rings to wear out and leak. Whether you need to bond assemblies or tips for syringes, fill small containers with solutions, apply markings on catheters or dispense monomers for lenses, EFD valves increase productivity and reduce downtime.

The 797PCP progressive cavity pump provides best-in-class deposit volume accuracy and repeatability at ± 1%.

The 797PCP Series pump dispenses an exact, repeatable volume of fluid as small as 0.01 mL per revolution for applications that require extremely consistent process control. Its modular design is based on the progressive cavity principal where its core components — a rotor and stator — form a perfectly sealed metering chamber.

As it rotates, the fluid moves from one sealed cavity to the next, allowing for continuous volumetric dispensing independent of fluid viscosity or changes in viscosity over time. External factors, such as fluctuating fluid pressures and the full-to-empty effect in syringe barrels, do not impact the amount dispensed.

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Class VI dispensing components

Optimum Class VI components are designed to provide accurate, repeatable fluid deposits used in bonding, coating, and other medical assembly processes.

Class VI components dispensing onto a catheter.

Nordson EFD's Optimum® Class VI dispensing components are manufactured from United States Pharmacopeia (USP) Class VI resin. This helps medical manufacturers improve process validation and traceability to more easily meet regulatory requirements. Sterilization is possible to eliminate bacteria.

These dispensing components feature the same highly-engineered design as standard Optimum components. Class VI syringe barrels feature ZeroDraft™ walls with consistent internal diameters that maintain an airtight seal with pistons.

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Why Nordson EFD?

Dedicated to providing the highest quality products and customer support since 1963, Nordson EFD infuses a depth of application knowledge into every precision dispensing product we develop.

For life sciences, EFD's innovative dispensing technology can improve your manufacturing processes, fostering greater control and cost effectiveness, while increasing overall part quality and throughput.

Material Savings

Many of the high-performance materials needed to bond dissimilar materials and seal exposed parts are expensive, making waste reduction an important issue. Due to the large number of parts produced, even small cost-reductions per part can provide significant savings.

- Reduce material waste by 50 percent or more
- Emptying material reservoirs as completely as possible minimizes waste during changeovers
- Closed-system design reduces waste by minimizing premature curing of materials
- Significantly fewer part rejects, saving material that would have been used to build reject parts

Higher Quality

Manufactured using high-quality materials in silicone-free facilities, Nordson EFD fluid dispensing systems are designed to deliver the most consistent, precise fluid deposits. This reduces labor time associated with rejects and reworks, cutting overall operating costs while increasing product quality.

Productivity Gains

Due to faster, more consistent material dispensing, operators and assembly machines typically produce more parts per hour. In addition, more precise application with EFD systems leads to reduced time and costs associated with clean up, further improving productivity.

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Useful Resources

Application Videos

Visit our Video Gallery to access 150+ application, how-to, and product videos. See EFD solutions in action.

Watch Videos: www.nordsonefd.com/VideoGallery

Expert Recommendations

Knowledgeable Nordson EFD fluid application specialists have, on average, more than 10 years of experience helping customers find the right solutions.

Request Expert Advice: www.nordsonefd.com/Recommendations

Easy Part Number Search

It's easy to search our digital catalog to find products by part number or keywords. Plus, get links to product specs, videos, and more. With our app, you can even access the catalog from your smartphone.

Find Part Numbers: www.nordsonefd.com/Digital-Catalog

Valve Selection Guide

Quickly find valves by application and fluid type to get an idea of the breadth of dispensing solutions provided by Nordson EFD.

Download Valve Guide: www.nordsonefd.com/ValveGuide

CAD Models

When you partner with Nordson EFD, you benefit from a wide range of reliable, best-in-class precision fluid dispensing solutions.

Download CAD models: www.nordsonefd.com/CAD

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Request More Information

Nordson EFD's worldwide network of experienced product application specialists are available to discuss your dispensing project and recommend a system that meets your technical requirements and budget.

Call or email us for a consultation.

800.556.3484

info@nordsonefd.com

www.nordsonefd.com/advice

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