Nordson EFD Solutions:

Fluid Positioning & Precision Dispensing in Mobile Device and Wearables Manufacturing

Nordson EFD

Fluid Positioning & Dispensing Applications

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Introduction

As consumers demand thinner, lighter, more sophisticated and durable mobile devices and wearables at a lower price, manufacturers must respond with advancements in process and equipment used to manufacture these devices at lower costs.

Nordson EFD delivers precise, reliable fluid dispensing systems to aid mobile device and wearables manufacturers in advancing to meet consumer needs. Our valves, controllers, reservoirs, dispense tips, and automated dispensing systems deliver highly repeatable, consistent fluid deposits while reducing material waste, rejects, and rework.

In addition, EFD dispensing systems deliver the intense accuracy needed in a wide range of mobile device and wearables applications involving adhesives, sealants, solders, epoxies, solvents, and many other assembly fluids.

Watch Video
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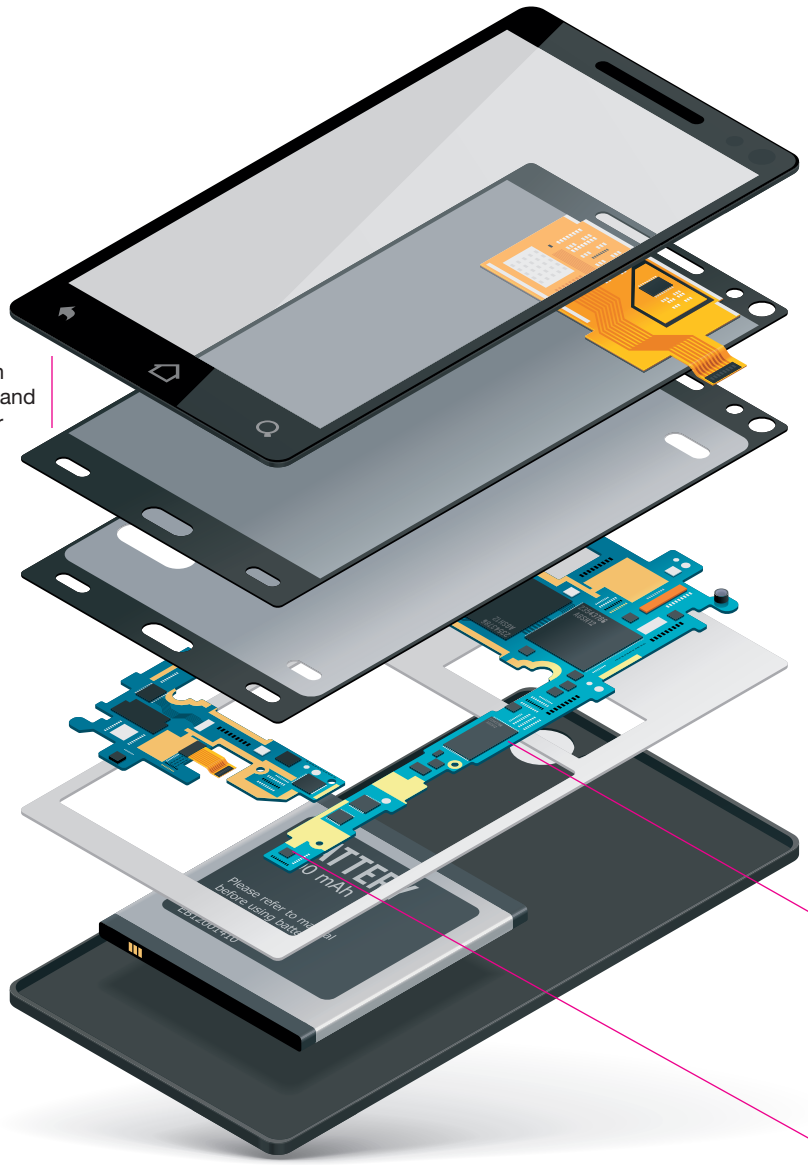
Fluid Positioning &
Dispensing Applications

Mobile Device & Wearables



Gap between module and IC driver

Display

- Edge display seal (LCD and OLED)
- End display seal (LCD and OLED)
- Display/cover glass bonding and gap fill
- Touch panel optical gel coating
- Module/IC driver gap fill
- Flexible printed circuit board (FPC) reinforcing tab
- Cover on Glass (COG) and Indium Tin Oxide (ITO) over coating

General Assembly

- Primer/PSA applications
- Hydrophobic coating
- Printed circuit board (PCB) coating and bonding
- Flexible printed circuit board (FPC) reinforcing tab
- MEMS microphone assembly
- Conformal coating applications
- Thermal compound applications

Camera Module

- Camera module assembly

Speaker

- Microspeaker assembly

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Display

Nordson EFD solutions provide greater precision in multiple display assembly applications.

Whether bonding cover glass to LCDs and OLEDs or edge sealing and end sealing of LCDs and OLEDs, Nordson EFD solutions deliver consistent, repeatable deposits at high speeds.

Mobile device and wearables manufacturers prefer EFD solutions for gap-fill applications, in addition to more specialized applications such as optical bonding and seal bonding dispensing anisotropic conductive fluids in very narrow spaces.

ACP bonding seal or electrode seal applications involve dispensing between the display module and driver I/C. As the gap between modules and driver I/Cs gets narrower and glass thickness gets thinner, non-contact dispensing is preferred to drive higher productivity.

Recommended Solutions

- PICO® XP jet valve
- 781Mini™ spray valve
- xQR41 Series needle valve
- 797PCP progressive cavity pump
- PRO4 Series automated dispensing system
- OptiSure™ automated optical inspection (AOI) software and confocal laser
- Unity™ HiTemp™ syringe barrels

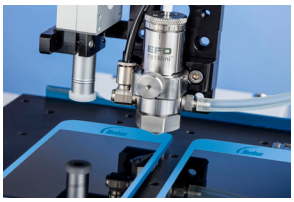
Benefits: Tighter seals, improved line yields, faster production, reduced material waste, zero Z-axis movement (with PICO valves), and improved quality of dispensing.

UV resins and adhesives

Optically clear adhesives (OCAs)

Conductive pastes

Other specialty fluids



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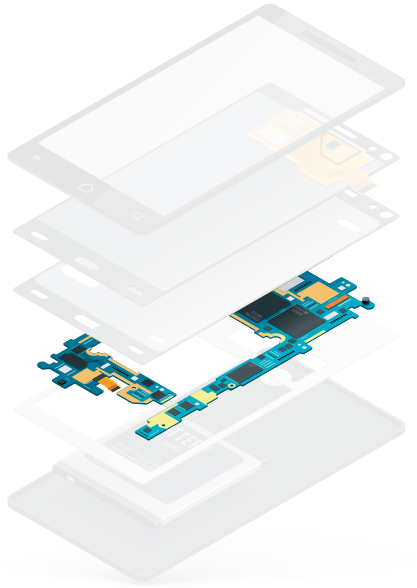
Camera Module



As camera modules shrink in size, manufacturers need greater accuracy when bonding lenses to barrels, barrels to camera modules, camera modules to circuitry, and camera module holders to smart phone bodies.

The slightest overspray bonds components that should not be bonded, creating more rework, which slows production and lowers yield. Nordson EFD solutions feature built-in cutoff functionality, in addition to extreme deposit accuracy, to eliminate overspray.

Other applications utilizing EFD dispensing solutions include, but are not limited to:

- Die-bonding in packaging
- Frame bonding
- IR cut filter bonding
- Actuator and VCM bonding

Recommended Solutions

- PICO XP jet valve
- PICO jet valve (with needle adapter)
- 781Mini spray valve
- xQR41 Series needle valve
- EV Series automated dispensing system
- OptiSure AOI software

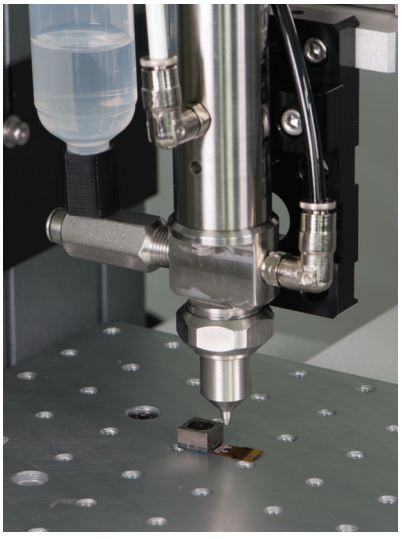
Benefits: Precise deposit accuracy eliminates overspray, increases throughput, and reduces fluid waste.

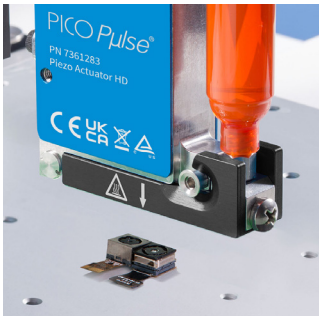
UV-cure adhesives

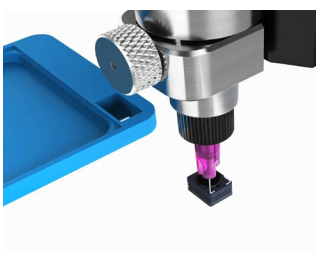
Adhesives

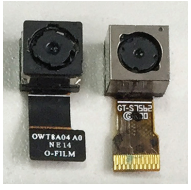
Epoxies

Other specialty fluids









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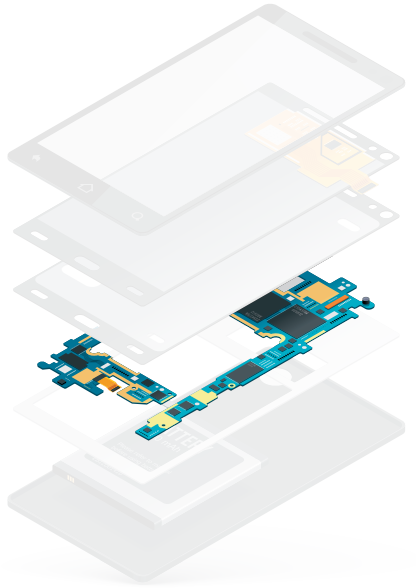
Microspeaker



Whether bonding microspeaker membranes or lids to assembly modules, manufacturers need equipment to dispense deposits as small as 0.8 mg with extreme accuracy.

Nordson EFD's PICO jet dispensing solutions deliver continuous operation at up to 1000 cycles per second (Hz) with shot sizes starting at 0.5 nanoliters.

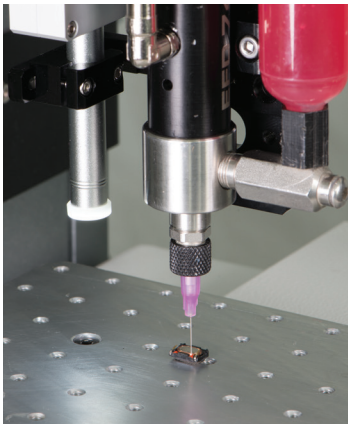
Recommended Solutions

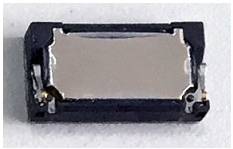
- PICO XP jet valve
- PICO jet valve (with needle adapter)
- 741MD-SS MicroDot needle valve
- xQR41 Series needle valve
- PRO4 Series automated dispensing system
- OptiSure AOI software and confocal laser

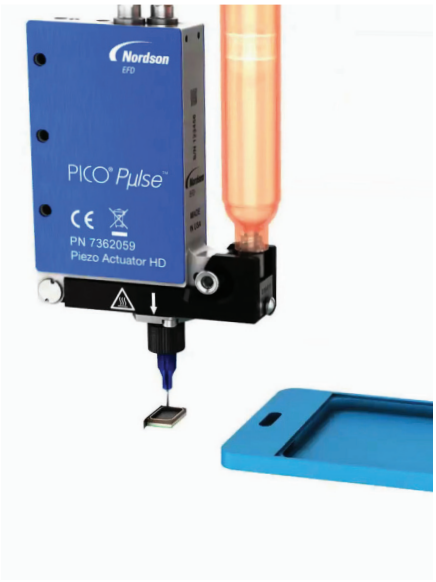
Benefits: Better process control and repeatable dispensing amounts (even when changing pulse times).

UV-cure adhesives

Epoxies







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General Assembly
Hydrophobic Coating

Nordson EFD solutions enable the precise application of hydrophobic coatings to select areas of mobile devices and wearables during final assembly. With consistent, uniform micro spray patterns, these Low Volume Low Pressure solutions prevent water ingress.

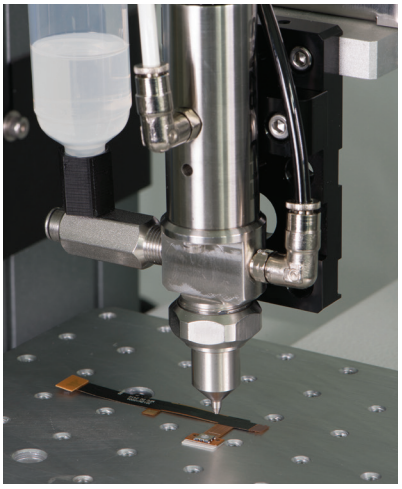
Liquid droplets fly off critical components such as speakers and microphones, eliminating damage, which improves the reliability of the final product. This enhances durability of the device components for long-lasting use during their life term.

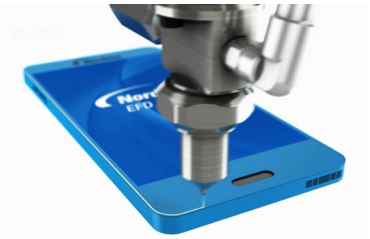
Recommended Solutions

- 787MS-SS MicroSpray valve
- 781Mini spray valve
- EV Series automated dispensing system
- 4-Axis R Series automated dispensing system

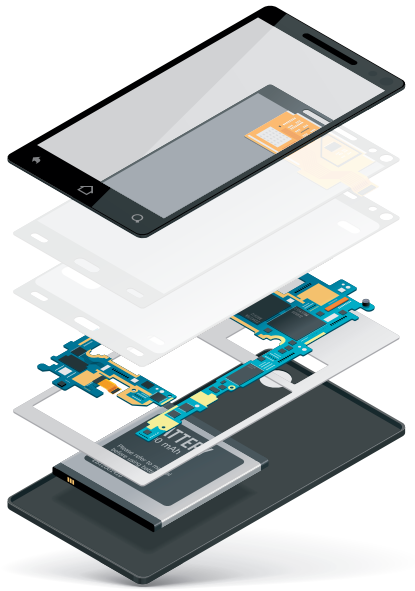
Benefits: Micro spray patterns between 1 mm (0.04") and 19.1 mm (0.75") in diameter. Zero overspray and reduced waste and operating costs associated with expensive protective fluids.

Hydrophobic coatings





General Assembly
Primers



Primer applications increase the adhesion of different subassemblies, e.g. volume and power button components, to pressure sensitive adhesives (PSAs). This makes components more durable and able to endure multiple clicks by users. Primers are highly volatile solvents and are difficult to handle and dispense.

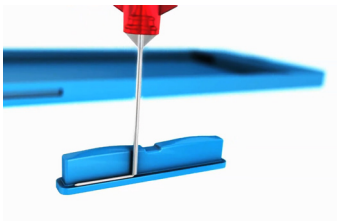
Nordson EFD's expertise in precise fluid dispensing allows manufacturers to dispense accurate amounts of these functional fluids in constrained and miniaturized areas. Uniform coating that results due to dispensing primes the substrate uniformly for smooth operation during its life cycle.

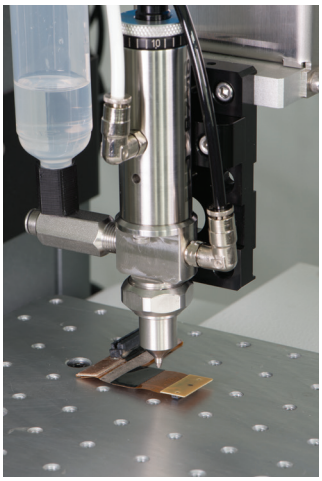
EFD solutions allow manufacturers to coat PCB components with uniform spray patterns as small as 1 mm (0.04") in diameter and dispense microdot deposits as small as 0.15 mm (0.006") in hard-to-access areas. Our tabletop robot solutions facilitate this process by offering an end-to-end solution.

Recommended Solutions

- PICO XP jet valve
- Liquidyn® P-Jet jet valve
- 787MS-SS MicroSpray valve (for primers)
- 781Mini spray valve (for primers)
- 741MD-SS MicroDot needle valve (for adhesives)
- xQR41 Series needle valve (for adhesives)
- EV Series automated dispensing system
- OptiSure AOI software

Benefits: Convenient, reproducible, and accurate deposits of low viscosity solvents in hard-to-reach areas that aid the manufacturing of different components in the assembly process.





Primers

Functional fluids

Surface treatment coatings

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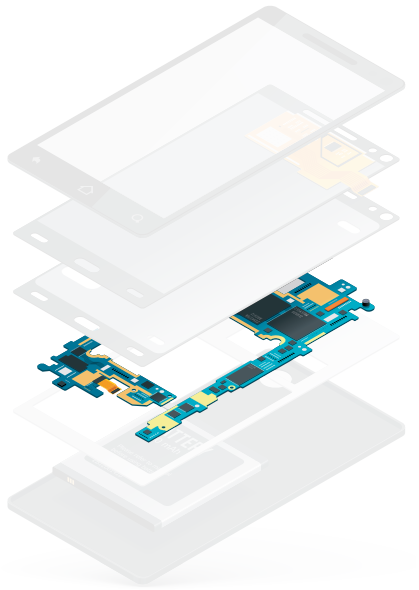
General Assembly
Conformal Coating



For precise, micro-spray applications of conformal coatings, the 787MS spray valve uses Low Volume Low Pressure (LVLP) technology to apply a fine, controlled mist onto microchip leads on the main printed circuit boards of mobile and wearable devices. When paired with a spray valve controller, which has a post-atomizing feature for clean spray cycle finish, the system produces practically no over-spray or mist.

The valve system works best when fully integrated with a 3-axis E Series automated dispensing system, which features an intuitive Teach Pendant and custom EFD TeachMotion™ dispensing software for fast, easy setup and programming.

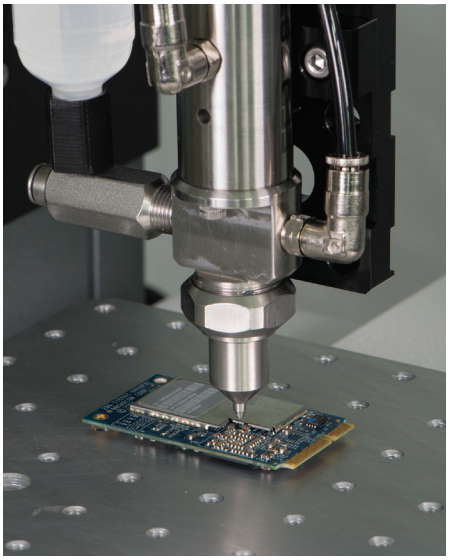
Recommended Solutions

- 787MS-SS MicroSpray valve
- 781Mini spray valve
- E Series automated dispensing systems

Benefits: Ideal for micro-spray application of conformal coating, the 787MS-SS provides narrow, consistent spray patterns as small as 1 mm (0.04") wide without overspray.

Coupled with E Series tabletop automation, the dispensing system provides market-leading positional repeatability at +/- 0.008 mm.

Conformal Coatings



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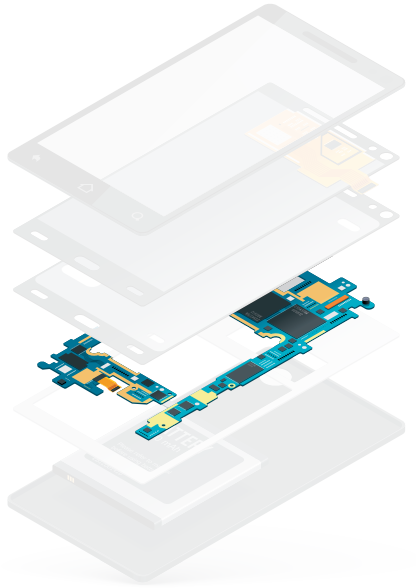
General Assembly
Thermal Compounds



Both the 725DA piston valve and 794 auger valve are ideal for thermal compound applications because of their superior ability to dispense precise amounts of high-viscosity sticky and stringy fluids. Together with a ValveMate™ valve controller, these systems apply accurate, repeatable amounts of thermal compounds onto heat sinks for central processing units (CPUs) and memory chips.

Each valve system works best when fully integrated with a 3-axis E Series automated dispensing system, which features an intuitive Teach Pendant and custom EFD TeachMotion dispensing software for fast, easy setup and programming.

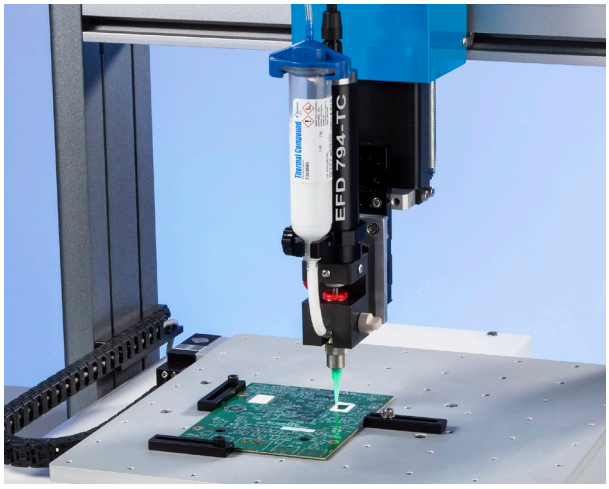
Recommended Solutions

- 725DA-SS piston valve
- 794 Series auger valve
- E Series automated dispensing systems

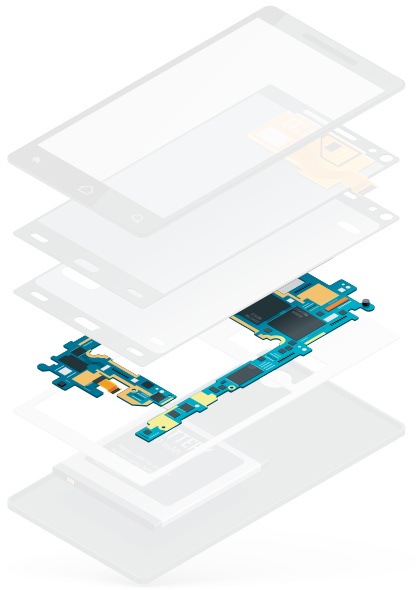
Benefits: Ideal for thermal compounds, the 725DA and 794 auger valves provide exceptional deposit control without dripping or drooling between shots.

Coupled with E Series tabletop automation, the dispensing system provides market-leading positional repeatability at +/- 0.008 mm.

Thermal Compounds



General Assembly
Solder Paste



Nordson EFD solder pastes are used in a number of mobile device and wearables manufacturing processes including soldering RF shields onto MEMS microphones and printed circuit boards.

With a large variety of standard and custom halide-free, lead-free formulations, EFD provides solutions for nearly every solder paste dispensing need.

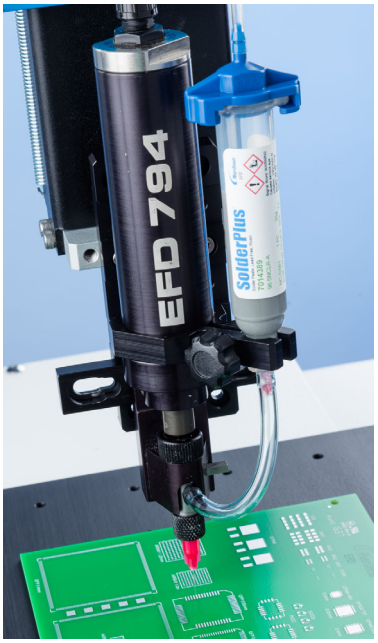
Recommended Solutions

- SolderPlus® dispensing solder paste*
- 797PCP progressive cavity pump
- 794 Series auger valve

Benefits: Dispense flux technology leader, specialized formulations, synergy between solder paste and dispensing equipment, and global availability and support.

*EFD solder paste is available in many different varieties, including customized formulations to fit specific customer demands. Contact EFD's solder paste group for help in determining which solder paste is best for your application.

Solder pastes



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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 the mobile device and wearables industry, that knowledge results in exceptional dispensing repeatability, accuracy, speed, placement, and deposit weight required by the industry.

Advanced dispensing technology improves your manufacturing processes, fostering greater control and cost effectiveness, while increasing overall quality and throughput.

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 less time and costs associated with clean up, further improving productivity.

Material Savings

Many of the materials used to bond and coat mobile device and wearables components are expensive, making fluid waste reduction crucial to lowering operating costs. Nordson EFD dispensing systems are engineered to reduce fluid waste, contributing considerable savings to manufacturers.

Customer Support

Nordson EFD's team of experienced application specialists continually helps customers improve their manufacturing processes. With more than 15 testing labs worldwide, customers can send materials to test with EFD systems. Our in-house dispensing experts videotape the results and provide specific recommendations targeted to your specific application and material.

With offices in more than 40 countries, our global team provides experienced, on-site technical support and trusted recommendations for the most demanding dispensing challenges.

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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/recommendations

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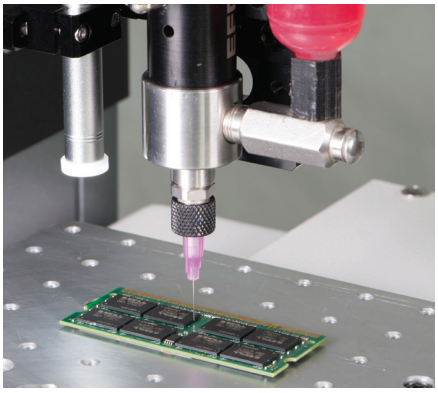
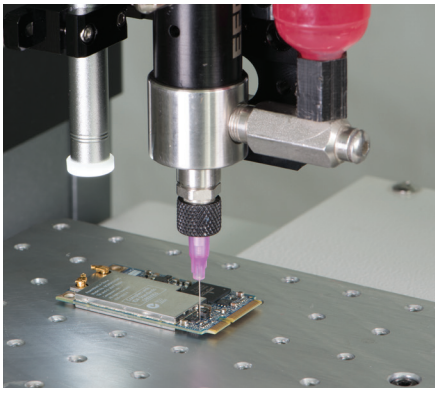
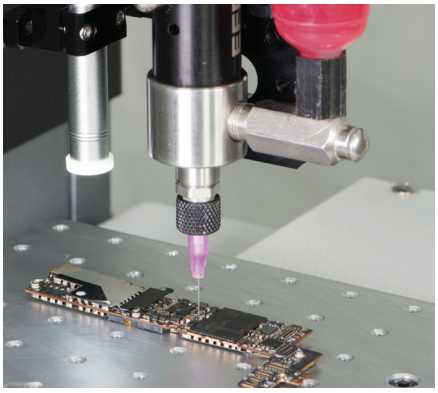
World Leader in Precision Fluid Dispensing







Nordson EFD is a trusted partner with many mobile device and wearables manufacturers around the world. We offer everything from precision dispense valve systems and automated dispensing systems to syringe barrel and cartridge systems, dispense tips, and solder pastes. Contact us to begin a partnership today.

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