Lighting and LED

Application Examples
Lighting and LED Products and Applications

Customer Products:
- Lighting Assy
- Boards
- Controllers
- Housings
- LED Modules
- Sensors
- Wiring

Nordson Dispensing Applications:
- Bonding
- Gasketing
- Potting
- Sealing
Materials used in Lighting Assembly Processes:

- **1K RTV Silicones**
  - Sealing, Gasketing, Bonding

- **2K Silicones**
  - Potting, Encapsulating, Gasketing
  - 2K Epoxies
  - Potting, Encapsulating

- **2K Polyurethanes**
  - Potting, Encapsulating

- **2K Thermal Gels**
  - Heat Transfer

Supplied in Cartridges, Pails and Drums
Lighting
Adhesives
and
Sealants
Using
Dow
Corning
Silicones

Each Application Needs a Dispensing System
Lighting Products

Potting  Bonding  Bonding  Potting  Potting

Potting and Bonding
Previous Customers

- Lumini
- Tectronics
- Varroc Lighting
- Grote Industries
- AeroLEDs
- MagLite
- QD Vision
- GVA Lighting
- Cree Inc.
- Truck-Lite
- Edison-Price
Lighting Case Study – ADB Airfield

- Application: Encapsulate Runway Light Electronics
- Production Rate: 200 to 500 Units per Day
- Type of Dispense: Manual Dispense, Operator Visual Fill
- Volume Required per Dispense: 118 cc up to 600 cc per Part
- Total Dispense Time: 5 sec to 15 sec based on Part Volume
- Total Cycle Time: 10-20 seconds, based on Part Volume
- Metering Principle: Continuous Flow
- Equipment Provided: 40 Liter A/B Tanks with Vacuum Pump, See-Flo 7 (Dual 2-Ball Pumps), 2K No-Drip Manual Valve with Electric Trigger, Basic Control Panel, Mobile Cart, Overhead Boom with Tool Balance.
Dispensing Systems for Lighting
Sealant Equipment Engineered Systems

How Are Dispense Systems Engineered?

- Material Selection, Ratio, Viscosity, etc.
- Volume/Flow Rate Dispensed
- Manual or Automation
- Dispense/Cycle Time
- Application Type
  - Bonding, Potting, Gasketing, etc.
- Precision/Tolerance
Nordson Sealant Equipment: See-Flo 690

- Air-Over-Oil Drive
  - a consistent flow rate
  - manually adjustable flow rate
- Positive Rod Metering Principle
  - precise fixed ratio control of materials
  - fewest moving parts
  - longer life performance
  - easy and lowest cost service
- Mounting options:
  - Bench
  - Floor
  - Cart
- Applications
  - Potting
  - Sealing
  - Bonding
  - Gasketing

See-Flo 690 Meter has Fixed Ratio Dispense Volumes from 1 cc up to 154 cc (at 1:1 Ratio)
Nordson Sealant Equipment **Servo-Flo 801**

- Servo motor provides
  - precision flow rate control
  - adjustable bead profile and volume
  - 250 programmable dispense styles
- Positive Rod Metering Principle
  - precise fixed ratio control of materials
  - fewest moving parts
  - longer life performance
  - easy and lowest cost service
- Mounting options:
  - Bench
  - Floor
  - Cart
  - Robot
- Applications
  - Microbeads
  - Micro fills

(3) Servo-Flo 801 Meters have Fixed Ratio Dispense Volumes from 0.2 cc up to 25 cc (at 1:1 Ratio)
Nordson Sealant Equipment See-Flo 387

- All pneumatic operation
  - simple on-board controls
  - low cost production
- Air-Over-Oil Drive
  - consistent flow rate
  - easily adjustable dispense rate
- Piston Cup Metering Principle
  - fixed ratio control of materials
  - larger volume in limited movement
- Gravity fed or pressure fed
- Mounting
  - Bench
  - Stand
- Applications
  - Potting
  - Batch Dispensing

See-Flo 387 Meter has Dispense Volumes from 1 cc up to 32 cc (at 1:1 Ratio)
Nordson Sealant Equipment Angstrom

Angstrom Meter has Dispense Volumes from 0.01 cc up to 1.25 cc (at 1:1 Ratio)

- Cartridge Feed (CF) or Pressure Feed (PF)
- Positive Rod Displacement Metering
- Dispense Volumes from 0.01 cc up to 1.25 cc at 1:1 Ratio
- Dispense 2K materials from 1:1 up to 10:1
- Extreme Precision Dispensing and Ratio Control, Long Life Performance, Lowest Life Cost
- Servo Drive Motor can interface with robot
- Static Mixers with Precision Dispense Tips
- +/- 5% accuracy down to 0.02 cc volumes
- Dispense directly from Dual 2K Cartridges or 20 Liter Pails
# Sealant Equipment 2K Dispensing Systems

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Meter Principle</th>
<th>Volume Range*</th>
<th>Ratio Type</th>
<th>Drive Motor</th>
<th>Mount Style</th>
<th>Supply Types</th>
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</thead>
<tbody>
<tr>
<td>Angstrom CF or PF</td>
<td>Positive Rod</td>
<td>0.01cc to 1.25cc</td>
<td>Fixed Ratio</td>
<td>Servo</td>
<td>Stand, Bracket, XYZ</td>
<td>Cartridge Pump</td>
</tr>
<tr>
<td>Servo-Flo 801</td>
<td>Positive Rod</td>
<td>0.2 cc to 7 cc&lt;br&gt;0.5 cc to 18 cc&lt;br&gt;1 cc to 25 cc</td>
<td>Fixed Ratio</td>
<td>Servo</td>
<td>Bench, Stand, Bracket</td>
<td>Tank, Pump</td>
</tr>
<tr>
<td>See-Flo 387</td>
<td>Piston Cup</td>
<td>1 cc up to 32 cc</td>
<td>Fixed Ratio</td>
<td>Air Over-Oil</td>
<td>Bench, Stand</td>
<td>Gravity, Tank, Pump</td>
</tr>
<tr>
<td>See-Flo 690</td>
<td>Positive Rod</td>
<td>1 cc to 154 cc</td>
<td>Fixed Ratio</td>
<td>Air Over-Oil or Servo</td>
<td>Bench, Stand, Bracket</td>
<td>Tank, Pump</td>
</tr>
</tbody>
</table>

* Volume Range is based on 1:1 Ratio by Volume. Other systems available up to 1,418 cc at 1:1.
* Maximum volumes decrease with wider ratios and Minimum volumes increase with wider ratios.
Sealant Equipment 2K Mix-Dispense Valves

2200-545-037
No-Drip, Bayonet Mixer

2200-250 and 2200-545
Snuf-Bak, No-Drip

2600-093
Mini No-Drip, Bayonet Mixer

2200 Series
Electric or Pneumatic Handle

New Systems Have Nordson EFD Static Mixers. Sulzer Static Mixers And Valves Also Available.

Nordson EFD/TAH Valve and Handle
Nordson Sealant Equipment Supply Units

Pressure Tanks
1 gal (4 l) to 60 gal (227 l)

Gravity Feed Drum Racks
5 gal (20 l) and 55 gal (200 l)

Gravity Feed
15 gal (56 l) and 30 gal (113 l)

Cartridge Feed
20 oz and 32 oz

Each Supply Unit Has Many Accessories Available To Meet the Customer Requirements

Pumps for
5 gal (20 l) and 55 gal (200 l)
Electronic and Electrical Industry
XYZ and 6-Axis Dispense Systems
from Nordson SEALANT EQUIPMENT

David Mandeville, Marketing Manager
XYZ Robot Dispensing 1K Gasketing-Electronics

- Servo-Flo 401 Meter, Valve Mounted on XYZ Robot Z-Axis

- XYZ Robot Station
- 100 mm x 100 mm x 50 mm
- Electronic Gasketing
- 1K Silicone
- (1) Module per Tray
- Valve Mounted on Z-Axis
XYZ Robot Dispensing 2K Sealing-Electronics

- See-Flo 690 Meter, Valve Mounted on XYZ Robot Z-Axis

- XYZ Robot Station
- 100 mm x 100 mm x 50 mm
- Electronic Sealing
- 1K Silicone
- (3) Modules per Tray
- 2K Valve Mounted on Z-Axis
XYZ Robot Dispensing 1K Silicone-Electronics

- Servo-Flo 404 Meter, Tip-Seal Valve, Dual Cartridge Supply, Level Sensors, Light Curtain
Automated Dispensing-Electronics

- Servo-Flo 801, 2K Thermal Gel Dispensing, 6-Axis Fanuc M-10iA Robot

- 6-Axis Robot Station
- Manual Load-Unload
- 2K Electronic Thermal Gel
- (1) Module per Fixture
- Valve Mounted on Wrist
Precision Dispensing Systems for Electronic and Electrical Dispensing Applications