DP-3000 Series Linear Pump

Linear Pump Technology for High-Volume Production

Features and Benefits

- Rapid refill speed for optimal underfill dispensing
- Quick-release mechanisms of wetted parts for easy setup and removal from the system
- Tool-free disassembly and assembly for quick and easy cleaning
- Better than 1% 3-sigma accuracy for consistent dispensing with multiple programmable shot sizes
- Fast, efficient priming with minimal material waste
- High flow rate for high throughput
- True positive, displacement dispensing, independent of viscosity
- Outperforms rotary positive displacement pumps with regard to accuracy, speed, and wear

The DP-3000 Series linear pump is the third-generation linear pump designed and manufactured exclusively by Nordson ASYMTEK to meet today’s requirements for high-volume production, 24 hours a day, 7 days a week. This third-generation pump has redefined the industry standard for speed and accuracy, providing flow rates to 500 mg/sec with accuracy of ±1% at 3-sigma repeatability. Performance accuracy and speed of volume deposition is precisely maintained for applications ranging from very large BGA to very small flip chip die. The pump is ideal for dispensing a wide range of filled and unfilled fluids such as encapsulates, adhesives and thermal compounds for applications such as flip chip underfill, CSP underfill, and BGA cavity fill encapsulation.

The pump’s flow rate is a function of the piston’s speed and diameter. Changes in viscosity, needle size, and supply pressure have no effect on the flow rate.

The pump has quick-release mechanisms for tool-free removal of the syringe, stopcock, and pump chamber.

How it works: The pump design uses volumetric displacement technology and a DC servo motor with encoder to control true piston motion. The piston changes the volume of a reservoir that is fed from the main syringe. The displacement of the piston in the reservoir results in an equivalent positive displacement of fluid through the pump. A pneumatically actuated disposable valve controls the refill of the reservoir and provides integrated, no-drip performance.

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**Specifications: DP-3000 Series Linear Pump**

Drip: no drip with 1 cps fluid  
Flow rate: 0.006 ml/s to 1 ml/s  
Shot size: 0.002 to 2 ml  
Resolution: 0.00025 ml  
Accuracy: $<1.5\%$, 3 stigma for 30 mg shots  
$<1.0\%$, 3 stigma for 300 mg shots  

Dimensions:  
Length: 203.2 mm (8.00 in.)  
Width: 83.8 mm (3.3 in.)  
Depth: 88.9 mm (3.50 in.)

The above specifications are independent of fluid viscosity within the range specified below. Due to the large number of available fluids and needle sizes, dispensing conditions may vary. Contact Asymtek to discuss your specific applications.

**Fluid Specifications:**  
Viscosity: 1 cps to 1 Mcps

**Option:**  
Tool-free Quick Release Bracket for fast removal of the pump

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**Choosing the Right Model**

<table>
<thead>
<tr>
<th>Pump</th>
<th>Wetted Parts</th>
<th>Applications</th>
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</thead>
<tbody>
<tr>
<td>DP-3120</td>
<td>Polycarbonate with encoder control</td>
<td>Up to 1 cc shots of material compatible with polycarbonate</td>
</tr>
<tr>
<td>DP-3140</td>
<td>Polycarbonate with encoder control</td>
<td>Up to 2 cc shots of most encapsulants for applications compatible with polycarbonate</td>
</tr>
<tr>
<td>DP-3320</td>
<td>Nylon with encoder control</td>
<td>Up to 1 cc shots of material, ideal for applications where nylon is preferred for chemical compatibility</td>
</tr>
<tr>
<td>DP-3340</td>
<td>Nylon with encoder control</td>
<td>Up to 2 cc shots of material, ideal for applications where nylon is preferred for chemical compatibility</td>
</tr>
</tbody>
</table>

The last three digits of the part number, DP-3xyz, indicate the pump configuration (X = stopcock, Y = chamber size, and Z = motor type).

1. Conversion kits are available for changing from one model to another.  
2. Direct replacement models (non-encoder versions) are available for current users of the DP-2000 linear pump. Contact Nordson ASYMTEK for upgrade information.