

PROCESS CONTROL

How to Solve Your Process Control Problems in Dispensing

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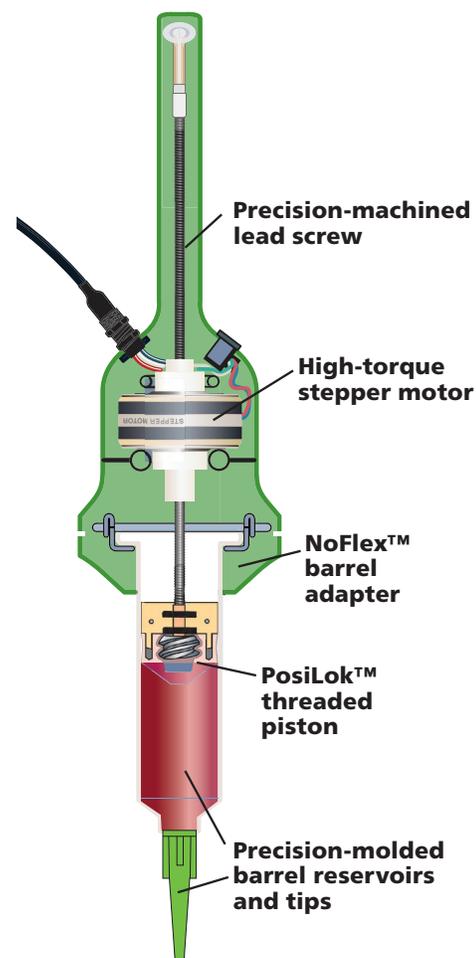
Do your results vary, even slightly, during a dispensing process? Are you getting the consistent performance you need from one system to the next?

In dispensing adhesives and solder paste, reliability and quality control problems — variations in viscosity and dot size, dripping and waste of the material, and even changes in homogeneity — are conditions that challenge the accuracy and repeatability of fluid dispensing systems. In most cases, problems can be attributed to the use of pneumatics to “push” the material out of the syringe (aka, barrel reservoir). Fortunately, there is an answer to the problems that plague conventional dispensers. Such a solution eliminates any and all use of pneumatics. As a result, assemblers can count on consistent and reliable air-free performance and absolute process control, dot after dot after dot (or bead after bead after bead). First, consider the downside of pneumatics.

What's Wrong with Air?

The process of dispensing assembly fluids began with pneumatics. Whether a hand-held gun, a bench-top dispenser, or an automated workstation, whether a diaphragm, spool, needle, or piston valve, such dispensers are air-driven, in that they depend on a column of air under pressure to force assembly fluid through a dispensing tip and onto a substrate. Fluctuations in air pressure, such as pressure drops and volumetric displacement, are a result of the plumbing between the air compressor and workstation. Moisture contamination, turbulence, heat, and changes in viscosity occur due to violent air pulses coming in contact with the assembly fluid... and all can undermine the ability of air-driven dispensers to deliver prescribed amounts of material consistently.

Today, air-driven dispensers — especially where process control is paramount — are on a decline, while systems based on air-free technology are gaining wider use in dispensing adhesives, solder paste, and other fluids. One in particular, the Fishman Corporation AirFree™ LDS9000, features a proprietary dispensing system that offers a superior level of process control without the limitations of other types of dispensers on the market.



Cutaway View of Fishman LDS9000 Dispensing Gun

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Fishman LDS9000

With the LDS (linear drive system) 9000, a notable difference over other dispensers, including valves, is the intelligence programmed into the control unit. The operator inputs the size of the reservoir (syringe), the dispense volume, the dispense rate, and the amount of snuff-back in numeric format. The LDS9000 calls for no guess work or playing with knobs, as is required by air-driven systems. The software calculates the amount of forward and reverse motion needed to displace the exact amount of assembly fluid. The air-free linear drive system (LDS) is repeatable within $\pm 5\%$, ensuring the same amount of material is dispensed each and every time the system is cycled. (See cutaway figure.)

The electronic control unit incorporates a universal power supply and connects directly to the LDS gun via an electrical cable assembly. The programmable intelligence combined with a patent-protected drive system ensures the ultimate in process control. In fact, the design and functionality of the LDS9000 is such that a system dispensing material in the United States will perform exactly as a system in China, as long as the same program, assembly fluid, reservoir, and dispense tip are employed in both locations.

Furthermore, if multiple systems are used on the same production line (see photo), the performance will be exactly the same, from the beginning of the production run to the end. We guarantee it!

For further information, check out the Fishman website at www.fishmancorp.com.

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Production Line with Fishman LDS9000 Dispensing Systems Assembling Medical Devices