

Engineering a Capillary Collection Device for Reliable At-Home Use

A point-of-care diagnostics manufacturer needed to make a fingerstick blood collection device reliable for non-medical, at-home users.

CHALLENGE

In **2016**, the customer began using a standard Drummond Aqua-Cap capillary tube to collect fingerstick blood for its PT/INR test. The process required users to collect blood in the capillary tube and then insert a separate plastic plunger into the back of the tube to dispense the sample onto the diagnostic test.

At the time, Drummond supplied all Aqua-Cap tubes and dispensing plungers as separate components. In **2017**, the customer began receiving reports that end users were having difficulty inserting the plunger into the glass capillary. Because the test was designed for at-home use by non-medical professionals, that extra assembly step created a barrier to getting an accurate, usable sample.

APPROACH

Drummond worked with the customer to design a new version of the Aqua-Cap that solved the problem at the product level rather than asking end users to adapt.

- Developed a new product specification with the plunger pre-inserted into the glass capillary

- Added a crimp to the plunger so it would stay in place during transit and not dislodge the metered plug before use

After the design was approved in **2018**, Drummond built a semi-automated crimping tool that operated in-line with its plunger molding equipment. The devices were then hand-assembled to keep pace with the customer's immediate demand.

At the same time, Drummond developed a fully automated line that could crimp and insert the plunger, inspect the assembled capillary tube and prepare it for packaging. The line went online in **2020** with an annual capacity of 10 million units, enough to support as much as 200% of the customer's current volume requirements.

RESULTS

The project created a new product solution when no suitable alternative was available. The customer has since transitioned its entire user base to the pre-inserted plunger format, simplifying the collection and dispensing process for at-home users.

Beyond this project, the redesign became a new standard offering: the pre-inserted Aqua-Cap capillary tube is now available to other Drummond customers, turning a single customer's usability problem into a new product line.

About Drummond Scientific Company

With more than 75 years of dedicated service in life science manufacturing, Drummond Scientific Company has become a trusted venture manufacturing partner for diagnostics companies at every stage of growth. We partner with innovators who share our vision of translating ideas into scalable, market-ready products and solutions that create and save lives.