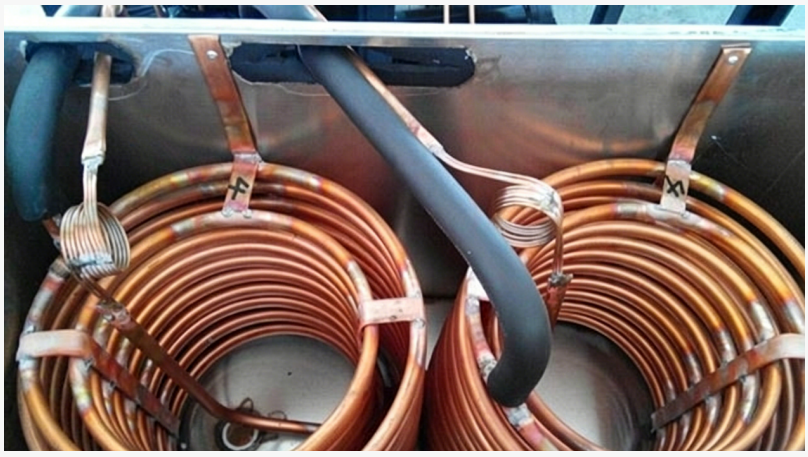
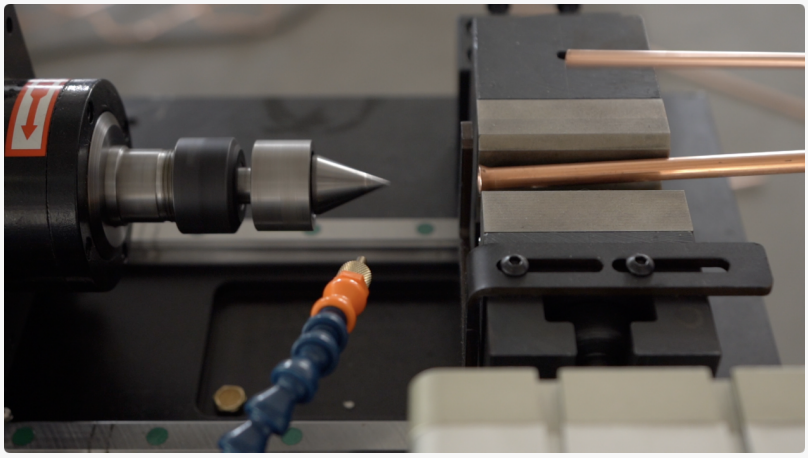
Precision Engineering: BoBo’s Rise as the China Top Refrigeration Capillary Tube End Forming Machine Factory

NANTONG, JIANGSU, CHINA, June 24, 2026 /EINPresswire.com/ -- In the modern refrigeration industry, the pursuit of energy efficiency and cooling stability begins with components that the average consumer rarely sees. Among these, the capillary tube serves as the critical pulse of the system. This narrow-bore tube must manage precise refrigerant flow through minute pressure drops, a task that demands absolute geometric accuracy. Even a microscopic deviation in the tube's end shape can lead to turbulent flow, noise, or systemic failure. Within this high-stakes environment of thermal management, BoBo Machine has established its reputation as the China Top Refrigeration Capillary Tube End Forming Machine Factory, setting a technical benchmark for manufacturers who prioritize precision over volume.





The evolution of heat exchange technology has shifted from manual assembly toward integrated, automated solutions. Established in 1995 and operating as a comprehensive industry and trade entity since 2004, BoBo Machine has spent three decades refining the machinery that produces these essential components. The company operates as a national high-tech enterprise, maintaining a portfolio of 45 invention patents. By reinvesting 11% of its annual revenue into research and development, the organization ensures its equipment keeps pace with the shrinking tolerances required by the next generation of eco-friendly refrigerants.

The Technical Core of Capillary Precision

At the heart of high-performance refrigeration production lies the KA series. This equipment represents a significant departure from traditional tube-cutting methods. While older systems often crushed or deformed the delicate copper and aluminum walls of capillary tubes, this specialized machinery utilizes a non-destructive straightening and cutting technique. This process preserves the internal diameter of the tube, which is vital for maintaining the calculated flow resistance required by compressor specifications.

Engineering excellence is further evidenced by the coaxiality achieved during the end-forming process. The KA series maintains a coaxiality tolerance of ≤0.05mm. Such precision ensures that when the capillary tube is later brazed or joined to larger suction lines or filter driers, the connection is seamless. Engineers integrate advanced PLC control systems into these machines to manage every variable of the forming cycle. This automation reduces human error and allows for a high degree of repeatability, which is essential for factories producing thousands of units per shift.

Beyond simple cutting, the machinery handles complex geometries through multi-station processing. Whether a design requires expansion, reduction, or specialized flaring, the mechanical synchronization ensures the metal does not suffer from fatigue or cracking. The stability of the machine frame, often overlooked by less experienced manufacturers, provides the dampening necessary to prevent vibrations from affecting the final cut. This focus on the "micro-details" of machine construction is what allows global brands to maintain their own strict quality standards.

Strategic Applications in Home Appliances and Industry

The practical impact of this precision is most visible in the home appliance sector. Domestic refrigerators and air conditioning units rely on capillary tubes to function as the primary expansion device. In these applications, the end-forming machine must produce perfect "bulge" or "necking" shapes to facilitate the assembly of filter driers. BoBo's equipment is engineered specifically to meet the demands of global leaders such as Midea, Siemens, and Samsung. These manufacturers require components that can withstand decades of vibration and pressure cycling without leakage.

In the production of air conditioning systems, the machines process copper tubes with varying wall thicknesses, adapting to the specific pressure requirements of different refrigerants. The home appliance industry also utilizes these machines for specialized applications in water heaters and dehumidifiers. For instance, the ability to create precise end-closures or "heads" on small-diameter tubes allows for the creation of sensors and thermal bulbs that are essential for temperature regulation.

The versatility of the tube end forming machine extends to industrial refrigeration and cold-dryer filters. In these larger systems, the capillary act as a bypass or a pressure-balancing component. Because BoBo's machinery supports various materials including copper, aluminum, and certain alloys, it provides a flexible platform for manufacturers who serve multiple market segments. This adaptability reduces the need for multiple specialized machines, effectively lowering the capital expenditure for the factory owner.

Operational Advantages and Factory Efficiency

Modern manufacturing environments demand more than just precision; they require operational agility. One of the primary advantages of the BoBo design is the quick-change mold system. In an era of "just-in-time" manufacturing, the ability to switch between different tube diameters or forming shapes in minutes rather than hours is a competitive necessity. This system allows production lines to remain active with minimal downtime, directly impacting the bottom line for the manufacturer.

To further safeguard production continuity, the machines feature integrated automatic counting and intelligent alarm systems. If a tube is fed incorrectly or if a tool reaches its wear limit, the system alerts the operator immediately. This proactive approach prevents the production of defective batches, saving both material costs and time. The compact footprint of the equipment, typically around 2.3 by 0.65 meters, also allows factories to optimize their floor space, fitting high-output machinery into efficient production cells.

Supporting this hardware is a robust service infrastructure. With a team of 50 elite members where 66% are seasoned engineers, the company provides a three-tier after-sales service model. This starts with immediate video guidance to resolve minor calibration issues and extends to on-site visits by senior engineers for complex system integrations. Having delivered over 150 projects annually across 102 countries, the engineering team understands the regional electrical standards and operational challenges faced by international clients.

Collaborative Innovation for Global Markets

Trust in industrial machinery is built over decades of consistent performance. By acting as a partner rather than a mere vendor, BoBo Machine assists clients in tackling complex demands through customized equipment configurations. This collaborative approach has enabled the brand to transcend geographical and cultural boundaries, serving diverse markets from Europe to Southeast Asia. The focus remains on "Smart Manufacturing," where data and precision drive the production process.

As global standards for energy consumption become more stringent, the role of the capillary tube in refrigeration efficiency will only grow. Manufacturers who invest in high-precision end-forming technology position themselves to meet these future challenges. The combination of 30 years of experience, a high reinvestment in R&D, and a proven track record with world-class brands makes BoBo a logical choice for those seeking to upgrade their production capabilities. The path to optimized heat exchange performance begins with the integrity of the smallest components. By ensuring that every capillary tube is cut, straightened, and formed to exact specifications, BoBo Machine helps drive the industry toward a more efficient and reliable future. For companies looking to enhance their production line efficiency and product quality, exploring customized tube processing solutions is the next strategic step.

To learn more about precision engineering solutions and explore the full range of machinery,

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