United Global Sourcing Incorporated

CAST AND MACHINED COMPONENTS

Stainless Steel and Brass Shafts

APPLICATION

General industry: Beverage dispensing components

MATERIALS

CF8 (cast equiv. of 304) stainless steel
6410 free machining brass

MANUFACTURING PROCESSES

Investment casting
Machining (CNC turning, CNC horizontal and broaching)
Surface preparation (polishing, passivation, cleaning and chrome plating)

REQUIRED TESTING

Chemical analysis
Salt spray (24-hour)
Coating thickness

TOLERANCES

General Tolerances
- Linear ± 0.10 in
- Angular ± 1
- Surface roughness 64 rms

Critical Tolerances
- Linear ± 0.05 in
- Surface roughness 32 rms

Challenge: A top beverage company approached UGS to manufacture stainless steel and chrome-plated brass actuator shafts for its dispensing systems. The company was looking to consolidate vendors and reduce costs but had experienced problems with porosity and part-to-part dimensional variation from previous suppliers. The manufacturing specifications included tight tolerances for the size, shape and finish of the interior slot to ensure smooth operation of the actuating arm, with just the right effort and feel for the end user. The shafts also had to meet strict surface color and appearance requirements, matching approved samples provided by the customer.

Solution: To start, UGS identified a single partner that could produce both stainless steel and brass investment castings and machine them to the required specifications. Together we developed casting processes that eliminated porosity and reduced dimensional variation to within the required tolerances necessary for the shafts to consistently perform during actuation. Working with that same partner, we established machining protocols, including a critical broaching process for the interior slot that ensured smooth operation and produced the effort and feel the client sought. We also created gauges and testing procedures to validate that the dimensional quality routinely met customer requirements.

Lastly, we identified a second source to chrome-plate the brass shafts and passivate the stainless shafts to beverage industry specifications. We worked with them to develop processes and lot testing measures that produced surface finishes that consistently matched customer-provided and approved samples.

In the end, UGS was able to reduce the customer's manufacturing costs and improve part quality. To date we've had 99 percent on-time delivery, with less than a 1 percent cost of quality and a low 14 ppm scrap rate for this client.

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