UGS
United Global Sourcing
Incorporated

FORGED AND MACHINED PARTS

Aluminum Upper Fork Clamp

APPLICATION

Transportation industry: Aluminum steering components

MATERIALS

ASTM B247 Gr. 6061 aluminum
ASTM B918 T6 temper

MANUFACTURING PROCESSES

Saw cutting/cleaning
Forging
Flash removal
Acid cleaning (before and after heat treatment)
Solution heat treatment
Parting line removal
Surface finish (polishing)

REQUIRED TESTING

Chemical analysis (ASTM B247)
Mechanical properties (ASTM B557)
Packaging drop/vibration/burst

TOLERANCES

General Tolerances
- Linear ± 0.010 in
- Angular ± 1°

Challenge: A leading global motorcycle manufacturer was looking for an overseas partner to manufacture an upper fork clamp, made of forged aluminum, for one of its product lines. Their goal was to reduce costs yet maintain the quality they were known for. A critical component of the steering and braking systems as well as a highly visible part of the vehicle's design, the clamp needed to consistently meet the company's stringent requirements for both strength and surface quality. Their previous attempts at overseas sourcing had failed to produce the necessary quality on a consistent basis.

Solution: Understanding the importance of this part with regard to both the safety and curb appeal of the motorcycle, UGS worked quickly to identify one of our overseas forging partners for the job. Together we developed and validated forging and heat treating processes — tooling, pressures, temperatures, times, racking, and more — that produced parts with mechanical properties in compliance with ASTM B918 and B557. The development of these processes even went so far as to include purchasing ovens and constructing cooling pits.

Additionally, because the parts needed to meet strict requirements for cosmetic appearance as specified by the customer, we implemented a multi-pronged approach to reducing surface contamination. We started by acquiring high-purity raw materials. We then put in place several quality assurance measures that involved cleaning the tooling and cooling equipment after a set number of uses to ensure the class A surfaces remained free of surface contamination and were suitable for polishing.

We delivered prototype parts that were required for a test build ahead of schedule and exceeded expectations for both cost and quality.

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