



**Winner of the 2012
NADCA International
Die Casting Competition
for Al Die Casting—
Under One lb.**

Chicago White Metal Casting

*High-Tech Al, Mg, & Zn Die Casting and
Miniature 4-Slide Zn & ZA-8 Die Cast Parts*

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Expedited through die design, production and delivery to tie in with the “Hunger Games” buzz

High-tech Diamond Archery™ Bow for Youths by BowTech® Die Cast by CWM with the Look and Feel of a “Hogout”

This newly developed bow for introducing serious young archers to the sport was designed in the Diamond tradition of attention to technical detail. The handle riser component of the compound bow is a CWM high-tech aluminum die casting which met exacting precision tolerance requirements and a specified machined “hogout” appearance—produced to a target marketing price with shortened lead time to tie in with promotional book and film release dates.

The Diamond Division of BowTech Archery targeted the introduction of a new compound starter bow for the youth market, calling for a highly aesthetic unit aimed at an attractive target price point, with tight lead time from concept to market.

Die casting was selected as the optimum process for producing the central element of this compound bow, its riser handle, and Chicago White Metal Casting was chosen as the custom die caster to meet the project challenge for die design and production.

The Bow’s Specification Challenges

Appearance specifications centered on the desire for the finished casting to display a machined “hogout” appearance, made more difficult due to the part’s long length.

Tight tolerance specifications were called for in order to minimize costs, but even more importantly to avoid the time that would be required for additional post-

Die cast and trimmed Al 380 bow riser component (left) and the completely assembled Atomic model from Diamond Archery. Selected core pin positions were held to a tolerance of +/- .010 in. over 14 inches, as-cast.

casting operations.

Finally, required painting of the part must avoid any accumulation of paint in critical locations on the casting.

Challenges Met

The key, of course, was in careful preplanning in the die design stage.

The hogout look was achieved by die design modification for the length of the part to avoid part shrinkage. Careful gating design resulted in clean trimming of gates to eliminate evidence of gating in the final part.

Optimizing the die casting die design to achieve as-cast tolerances was able to minimize post-casting machining.

Preplanning for the critical painting specifications allowed the CWM team to execute vertical, rather than horizontal, part racking, avoiding paint accumulation at both ends of the riser component.

Through detailed planning and expediting every step of the manufacturing



process, CWM was able to reduce estimated total production time by two months and allow release of the product to market on time and within budget.

For more on CWM’s high-tech die casting capabilities, see CWM’s website “Capabilities” section. Or contact your CWM Regional Sales Representative.