

CUSTOM CREATION 1

Taking Flight

A show competition inspires a riveting design

Designer: Tom Linenberger, Goldworks
By Sharon Elaine Thompson



It's said that doctors are their own worst patients. But when a jewelry designer committed to excellence becomes his own client, truly extraordinary things can happen.

Take the case of Tom Linenberger, owner of Goldworks, a custom jewelry studio with locations in Garden City, Kansas, and Fort Collins, Colorado. In 2010 he won "Best of Show" in the "Ultimate Design Contest" for custom jewelers, sponsored by *InStore* magazine, the SMART Jewelry Show, and Stuller. The next year he was seized by the desire to do it again—but even *better*. The contest had only two design parameters: Contestants had to choose between two center stones to be supplied by Stuller (a 9 x 9 mm antique square

rhodolite garnet or a 7 x 5 mm oval chrome tourmaline), and the stone had to be set in a size 7 ladies' ring. Everything else—metals, other materials, design and fabrication methods—would be up to Linenberger.

"I knew I wanted a clean, simple, design," he says, one that focused attention on the center stone and called for a high degree of technical skill. "But it had to be unique and fresh." When Linenberger, who tends to find artistic inspiration in industrial design, saw the rivet pattern along the body of Alaskan flying service aircraft on television, he knew he had his idea.

He also knew that, to echo the skill and precision that goes into building a plane, there couldn't be the slightest margin for error. Precision would be especially critical in the production of the central feature of the ring's design: the 216 rivets arranged on white gold panels around the shank. Although he considered making, shaping, and attaching each rivet by hand, Linenberger knew there would be tiny variations that would leave him unsatisfied.

So he decided to design them in CAD. Working in Gemvision's Matrix, Linenberger created each tiny

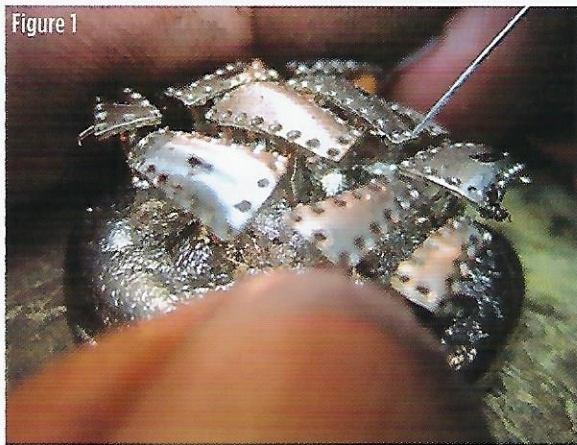
rivet—with its 0.5 mm diameter head and 0.4 mm diameter shaft—and rounded the heads so they would look completely finished. He then arranged the rivets on either side of a central sprue and milled them in hard wax with one of his two Revo milling machines. After casting, he left the rivets on the sprue in order to finish them with a high polish that would eventually contrast with the brushed white gold panels.

Making the rivets for the piece—which he would ultimately title "Armor"—was a bit of technical showmanship, as they are a design element and do not actually hold the piece together. And that "showmanship" proved to be a much more time-consuming process than anticipated, he says. Each rivet was individually laser welded to the white gold panels, which Linenberger cast separately (see Figure 1). In CAD, he could simply have created a riveted "look" (as he has done for later pieces designed in this style). But Linenberger wanted to show just what technology and attention to detail could do. He even planned tiny dimples in the surface of each panel so he could slightly counter-sink the rivets.

"I wanted no chance of anything snagging between the base of the rivet head and the surface of the panel where the rivet sits," he says.

Technology couldn't do it all, however. Although Linenberger designed the white

Figure 1



For casting, Linenberger used a broken-arm centrifugal caster, but employed an unusual sprue configuration: He sprued the "aircraft" panels parallel to the button. This allowed Linenberger to hold the button securely while drilling the rivet holes. He later snipped the sprues close to the button and used each sprue as a "handle" while brush-texturing the panels.

Figure 2



gold panels to be cast with the rivet holes in place, the walls of the holes were too thin to fill properly during casting. Linenberger edited his design, so that the small dimples in the surface where each rivet would go were now solid. When the panels were cast, he drilled each hole out with a #78 drill bit. The fit was so close that once the rivets were inserted, friction largely held them there during laser welding.

Once the panels were finished, Linenberger attached them to a mounting of highly polished 14k yellow gold. Here, too, he applied meticulous planning. To ensure all the work surfaces of “Armor” would be hidden, Linenberger first drilled holes into the shank (see Figure 2). He then angled the beam of the laser welder through the holes to attach the panels, leaving tiny gaps between each component to emphasize the contrast with the 14k and make it clear that each piece was separate. (“When a piece is done in two-tone,” says Linenberger, “it helps to set off subtle details that might otherwise be overlooked.”) Afterward, he filled the holes with precisely fitting 14k yellow plugs, which he also laser welded.

In addition to the rivets and the brushed white gold surface mimicking aircraft aluminum, other design elements helped to emphasize the aerodynamic inspiration of “Armor.” The streamlined curves integrated into the shank, for example, were reminiscent of plane wings—they seem designed to maximize airflow. Linenberger also hollowed the shank hid-

Drill holes in the shank allowed Linenberger to laser weld the white gold panels into place from underneath. The hollow shank lightens the piece and, in contrast to its visual mass, contributes to the feeling of flight.

den underneath the panels. The disparity between the actual weight of the ring contrasted with the visual mass,

contributing to the feeling of flight.

The precision-crafted rivets. The surprising lightness of the hollow construction, echoing aircraft construction. The brushed surface mimicking aluminum. The invisible laser welds for everything from the

rivets to the cast rhodolite-set head. The careful forethought and planning. It’s no wonder that “Armor” wowed the 2011 Ultimate Design Contest judges, and Linenberger again won “Best of Show.”

But with all the effort to re-create the look and feel of a 20th-century aircraft, why name the ring “Armor,” recalling medieval metalwork?

Because everyone who saw the piece, Linenberger says, made that connection. So he gave in. He felt vindicated, however, after the award-winning design was placed on display in the store, and a customer said, “Oh, you got this from an aircraft.”

Yes! ♦

Linenberger chose to use a 9 x 9 mm antique square rhodolite garnet as the center stone. The head was cast and, after setting, laser welded into place.



The ring's 216 rivets and brushed white gold panels mimic aircraft aluminum.

Linenberger left tiny gaps between the components to emphasize the contrast between the two metals and make it clear that each piece was separate.